

# **ECMPS Emissions Check Specifications**

United States Environmental Protection Agency  
Office of Air and Radiation  
Clean Air Markets Division  
Ariel Rios Building  
1200 Pennsylvania Avenue  
Washington, DC 20460

July 19, 2023

Table of Contents

Appendix D and E Status	1
Daily Calibration Status	46
Daily Calibration Test	61
Daily Emissions Data	114
Daily Interference Status	130
Daily Test	137
EM Weekly System Integrity Test	144
EM Weekly Test Summary	156
Emissions Audit Checks	166
Flow-to-Load Status	168
Hourly Aggregation	183

Hourly Appendix D	230
Hourly Appendix E	293
Hourly Apportionment	310
Hourly Calculated Data	338
Hourly Derived Data	396
Hourly General	465
Hourly Monitor Data	514
Hourly Operating Data	590
Leak Status	672
Linearity Status	683
LME	716
MATS Calculated Hourly Value Checks	770
MATS Derived Hourly Value Checks	799
MATS Hourly GFM Data	821
MATS Monitor Hourly Value Checks	831
MATS Operating Hour Checks	865
MATS Sampling Train Checks	890
MATS Sorbent Trap Data	913
NSPS4T Summary, Compliance Period and	933
Annual Checks	940
RATA Status	984
Weekly System Integrity Status	



**Check Category:**

**Appendix D and E Status**

**Check Code:** ADESTAT-1

**Check Name:** Determine Appendix E Status

**Related Former Checks:**

**Applicability:**

**Description:**

**Validation Tables:**

Fuel Code (Lookup Table)

**Specifications:**

Set *PriorAppendixERecord* = null.

Set *InvalidAppendixERecord* = null.

Set *CurrentAppendixEStatus* = null.

Set *PriorAppendixEEventRecord* = null.

Set *SubsequentAppendixERecord* = null

Set *AppendixEMissingOpDataInfo* = null.

If (*App E Op Code* in set {N, W, X, Y, Z} ) AND *AppE NOXE System ID* is not null)

Append *AppE NOXE System ID* to *NOXE System ID Array*.

Locate the most recent record in *AppendixETestRecordsByLocationForQASatus* for the location where the SystemID is equal to the *AppE NOXE System ID* and the TestResultCode is not equal to "INVALID" and the EndDate/Hour is prior to the *CurrentOperatingDate/Hour*.

if (*AppendixETestRecordsByLocationForQASatus* is found)

Set *PriorAppendixERecord* = the found record in *AppendixETestRecordsByLocationForQASatus*.

Locate the most recent record in *AppendixETestRecordsByLocationForQASatus* for the location where the SystemID is equal to the *AppENOXESystemID* and the TestResultCode is equal to "INVALID" and the EndDate/Hour is prior to the *CurrentOperatingDate/Hour* and the EndDate/Hour is greater than the *PriorAppendixERecord.EndDate/Hour*.

if (*AppendixETestRecordsByLocationForQASatus* is found)

Set *InvalidAppendixERecord* = the found record in *AppendixETestRecordsByLocationForQASatus*.

else

Locate the most recent record in *AppendixETestRecordsByLocationForQASatus* for the location where the SystemID is equal to the *AppE NOXE System ID* and the TestResultCode is equal to "INVALID" and the EndDate/Hour is prior to the *CurrentOperatingDate/Hour*.

if (*AppendixETestRecordsByLocationForQASatus* is found)

Set *InvalidAppendixERecord* = the found record in *AppendixETestRecordsByLocationForQASatus*.

if (*PriorAppendixERecord* is not null)

if (*PriorAppendixERecord.QANeedsEvaluationFlag* = "Y")

Set *CurrentAppendixEStatus* = "Prior Test Not Yet Evaluated".

else if (*PriorAppendixERecord.TestResultCode* = null)

Set *CurrentAppendixEStatus* = "OOC-Prior Test Has Critical Errors".

else

Set *PriorTestExpirationDate* = *PriorAppendixERecord*.TestExpirationDate

if (*PriorTestExpirationDate* is null)

Set *PriorTestExpirationDate* = 5 years (20 calendar quarters) after the end of the quarter of the *PriorAppendixERecord*.EndDate/Hour.

if (*CurrentOperatingDate/Hour* is AFTER the *PriorTestExpirationDate*)

Set *CurrentAppendixEStatus* = "OOC-Expired".

else

Locate the most recent record in *QACertificationEventRecords* where the SystemID is equal to the *AppENOXESystemID* and the RequiredTestCode is equal to 75 and the QACertEventDate/Hour is prior to the *CurrentOperatingDate/Hour* and the QACertEventDate/Hour is on or after the *PriorAppendixERecord*.EndDate/Hour

if (*QACertificationEventRecords* is found)

Set *PriorAppendixEEventRecord* = the found record in *QACertificationEventRecords*.

if (the number of calendar days ON OR AFTER the *PriorAppendixEEventRecord*.QACertEventDate and ON OR BEFORE the *CurrentOperatingDate/Hour* > 180)

Set *CurrentAppendixEStatus* = "OOC-Event".

else if (*PriorAppendixEEventRecord*.MinOpDaysPriorQuarter is null)

Set *PriorAppendixEEventRecord*.MinOpDaysPriorQuarter = 0

Set *PriorAppendixEEventRecord*.MaxOpDaysPriorQuarter = 0

for each quarter beginning with the quarter of the *PriorAppendixEEventRecord*.QACertEventDate and continuing through the quarter BEFORE the *CurrentOperatingDate/Hour*:

if (*EarliestLocationReportDate* <= the last day of the quarter being checked)

Locate the record in *OperatingSuppDataRecordsbyLocation* where the OpTypeCode is equal to "OPDAYS" and the reporting period is equal to the quarter being checked.

if (*OperatingSuppDataRecordsbyLocation* is not found)

Set *PriorAppendixEEventRecord*.MinOpDaysPriorQuarter = -1  
Set *AppendixEMissingOpDataInfo* = "[YEAR] Q[QTR]"  
(where [YEAR] is the year of the quarter being checked and [QTR] is the number of the quarter being checked.  
exit for.

else

If the quarter being checked is the quarter of the *PriorAppendixEEventRecord*.QACertEventDate

If (*OperatingSuppDataRecordsbyLocation*.OpValue

MINUS the number of calendar days in the quarter  
being checked that are PRIOR to the  
***PriorAppendixEEEventRecord.QACertEventDate > 0)***

Set  
***PriorAppendixEEEventRecord.MinOpDaysPrior***  
Quarter =  
***OperatingSuppDataRecordsbyLocation.OpVal***  
ue MINUS the number of calendar days in the  
quarter being checked that are PRIOR to the  
***PriorAppendixEEEventRecord.QACertEventDat***  
e

If (***OperatingSuppDataRecordsbyLocation.OpValue*** is  
less than the number of calendar days in the quarter  
being checked that are ON OR AFTER the  
***PriorAppendixEEEventRecord.QACertEventDate)***

Set  
***PriorAppendixEEEventRecord.MaxOpDaysPrio***  
rQuarter =  
***OperatingSuppDataRecordsbyLocation.OpVal***  
ue.

else

Set  
***PriorAppendixEEEventRecord.MaxOpDaysPrio***  
rQuarter = the number of calendar days in the  
quarter being checked that are ON OR AFTER  
the  
***PriorAppendixEEEventRecord.QACertEventDat***  
e.

else

Set  
***PriorAppendixEEEventRecord.MinOpDaysPriorQuarter***  
=  
***PriorAppendixEEEventRecord.MinOpDaysPriorQuarter***  
+ ***OperatingSuppDataRecordsbyLocation.OpValue***.

Set ***PriorAppendixEEEventRecord.MaxOpDays***  
PriorQuarter =  
***PriorAppendixEEEventRecord.MaxOpDaysPriorQuarter***  
+ ***OperatingSuppDataRecordsbyLocation.OpValue***.

If (***CurrentAppendixEStatus*** does NOT begin with "OOC")

if (***Rpt Period Op Time Accumulator Array*** for the Location == -1)

set ***CurrentAppendixEStatus*** = "Invalid Op Data"

elseif (***PriorAppendixEEEventRecord.MinOpDaysPriorQuarter*** == -1)

set ***CurrentAppendixEStatus*** = "Missing Op Data"

else if (***PriorAppendixEEEventRecord.MinOpDaysPriorQuarter*** + ***Rpt Period Op Days***



*Accumulator Array* for the Location > 30)

Set *CurrentAppendixEStatus* = "OOC-Event".

else if (*PriorAppendixEEventRecord*.MaxOpDaysPriorQuarter + *Rpt Period Op Days*  
*Accumulator Array* for the Location > 30)

Set *CurrentAppendixEStatus* = "Undetermined-Event".

else

Set *CurrentAppendixEStatus* = "IC".

else

Set *CurrentAppendixEStatus* = "IC".

else

if (*AppEFuelCode* is not equal to "MIX")

Locate the earliest record in *AppendixETestRecordsByLocationForQAStatus* for the location where the SystemID is equal to the *AppENOXESystemID* and the TestResultCode is not equal to "INVALID" and the EndDate/Hour is on or after the *CurrentOperatingDate/Hour*

if (*AppendixETestRecordsByLocationForQAStatus* is found)

Set *SubsequentAppendixERecord* = the found record in *AppendixETestRecordsByLocationForQAStatus*.

Locate the earliest record in *AppendixETestRecordsByLocationForQAStatus* for the location where the SystemID is equal to the *AppENOXESystemID* and the TestResultCode is equal to "INVALID" and the EndDate/Hour is on or after the *CurrentOperatingDate/Hour* and the EndDate/Hour is before the *SubsequentAppendixERecord*.EndDate/Hour

if (*AppendixETestRecordsByLocationForQAStatus* is found)

Set *InvalidAppendixERecord* = the found record in  
*AppendixETestRecordsByLocationForQAStatus*.

Locate the earliest record in *OperatingSuppDataRecordsbyLocation* where the FuelCode is equal to *AppEFuelCode* and the OpTypeCode is equal to "OPHOURS"

If *OperatingSuppDataRecordsbyLocation* is found)

Set *FuelOpSuppDataRecord* = the found record in *OperatingSuppDataRecordsbyLocation*  
Set *DateFuelFirstCombusted* = end date of quarter of the *FuelOpSuppDataRecord* .RptPeriodID -  
int((*FuelOpSuppDataRecord* .OpValue - 1)/24) days

if (If *OperatingSuppDataRecordsbyLocation* is found AND *DateFuelFirstCombusted* is more than 180  
calendar days before the *CurrentOperatingDate/Hour*)

Set *CurrentAppendixEStatus* = "OOC-No Prior Test"

else

Locate the record in the *FuelCode* lookup table where the FuelCode is equal to *AppEFuelCode*.

Locate the record in *FuelRecordsByHourLocation* for the hour and location where the FuelCode is equal to the *FuelCode*.UnitFuelCode

if (*FuelRecordsByHourLocation* is not found OR more than one *FuelRecordsByHourLocation* is found)

Set *CurrentAppendixEStatus* = "Invalid Location Fuel"

else if (*FuelRecordsByHourLocation*.IndicatorCode is equal to "S",

if (*SubsequentAppendixERecord*.QANeedsEvaluationFlag = "Y")

Set *CurrentAppendixEStatus* = "Subsequent Test Not Yet Evaluated".

else if (*SubsequentAppendixERecord*.TestResultCode = null)

Set *CurrentAppendixEStatus* = "OOC-Subsequent Test Has Critical Errors".

else

Set *CurrentAppendixEStatus* = "IC"

Set *PriorAppendixERecord* = *SubsequentAppendixERecord*

else

Set *CurrentAppendixEStatus* = "OOC-No Prior Test"

else

Set *CurrentAppendixEStatus* = "OOC-No Prior Test"

Locate the earliest record in *AppendixETestRecordsByLocationForQAStatus* for the location where the SystemID is equal to the *AppENOXESystemID* and the TestResultCode is equal to "INVALID" and the EndDate/Hour is on or after the *CurrentOperatingDate/Hour*

if (*AppendixETestRecordsByLocationForQAStatus* is found)

Set *InvalidAppendixERecord* = the found record in *AppendixETestRecordsByLocationForQAStatus*.

else

Set *CurrentAppendixEStatus* = "OOC-No Prior Test"

if (*CurrentAppendixEStatus* begins with "OOC")

if (*InvalidAppendixERecord* is not null)

Set *CurrentAppendixEStatus* = *CurrentAppendixEStatus* & "\*".

if (*CurrentAppendixEStatus* does not begin with "IC")

Return result *CurrentAppendixEStatus*.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
Invalid Location Fuel	The Appendix E test status for MonitoringSystemID [ID] could not be determined, because you did not report a single, valid unit fuel record for FuelCode [unitfuel] that was active during the current hour.	Critical Error Level 1
Invalid Monitor System	The Appendix E test status for MonitoringSystemID [ID] could not be determined, because the Monitor System record for the NOXE system has a critical error.	Critical Error Level 1
Invalid Op Data	The Appendix E test status for MonitoringSystemID [ID] could not be determined, because the OperatingTime in at least one Hourly Operating Data records was missing or invalid.	Critical Error Level 1
Missing Fuel Op Data	The Appendix E test status for MonitoringSystemID [ID] could not be determined, because the Op Supp Data record for OPHOURS for FuelCode [fuel] is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
Missing Op Data	The Appendix E test status for MonitoringSystemID [ID] could not be determined, because the Op Supp Data record for OPDAYS is missing for [MISSINGOPDATAINFO] (and possibly other previous reporting periods). If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
OOE-Event	You reported a QA Certification Event record for QACertEventCode [code] QACertEventDate [eventdate] for MonitoringSystemID [ID], but you did not perform a subsequent Appendix E test within the specified timeframe.	Critical Error Level 1
OOE-Event*	You reported a QA Certification Event record for QACertEventCode [code] QACertEventDate [eventdate] for MonitoringSystemID [ID], but you did not perform a subsequent Appendix E test within the specified timeframe. An invalid Appendix E test was ignored.	Critical Error Level 1
OOE-Expired	The prior Appendix E test TestNumber [testnum] for MonitoringSystemID [ID] has expired.	Critical Error Level 1
OOE-Expired*	The prior Appendix E test TestNumber [testnum] for MonitoringSystemID [ID] has expired. An invalid prior Appendix E test TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOE-No Prior Test	You did not report a prior Appendix E test for MonitoringSystemID [ID].	Critical Error Level 1
OOE-No Prior Test*	You did not report a prior Appendix E test for MonitoringSystemID [ID]. An invalid prior Appendix E test Test Number [invtestnum] was ignored.	Critical Error Level 1
OOE-Prior Test Has Critical Errors	The applicable prior Appendix E test TestNumber [testnum] for MonitoringSystemID [ID] has critical errors.	Critical Error Level 1
OOE-Prior Test Has Critical Errors*	The prior Appendix E test TestNumber [testnum] for MonitoringSystemID [ID] has critical errors. An invalid prior Appendix E test TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOE-Subsequent Test Has Critical Errors	The subsequent recertification Appendix E test TestNumber [subtestnum] for MonitoringSystemID [ID] has critical errors.	Critical Error Level 1
OOE-Subsequent Test Has Critical Errors*	The subsequent recertification Appendix E test TestNumber [subtestnum] for MonitoringSystemID [ID] has critical errors. An invalid Appendix E test TestNumber [invtestnum] was ignored.	Critical Error Level 1
Prior Test Not Yet Evaluated	The Appendix E test status for MonitoringSystemID [ID] could not be determined, because the applicable prior Appendix E test TestNumber [testnum] for the system has not yet been evaluated.	Critical Error Level 1
Subsequent Test Not Yet Evaluated	The Appendix E test status for MonitoringSystemID [ID] could not be determined, because the subsequent certification test TestNumber [subtestnum] for the system has not yet been evaluated.	Critical Error Level 1
Undetermined-Event	The software could not determine if the current hour was within the 30-operating day window required to conduct another Appendix E test following QACertEventCode [code] QACertEventDate [eventdate] for MonitoringSystemID [ID].	Critical Error Level 1

**Usage:**

- |   |                   |  |
|---|-------------------|--|
| 1 | Process/Category: | Emissions Data Evaluation Report --- Hourly Configuration Evaluation               |
|   | Conditions:       | App E Checks Needed Equals true  |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- NOx Emissions Rate Calculation Verification |
|   | Conditions:       | App E Constant Fuel Mix Equals true  |
| 3 | Process/Category: | Emissions Data Evaluation Report ----- Hourly Fuel Flow                            |
|   | Conditions:       | App E Constant Fuel Mix Equals false   |

**Check Code:** ADESTAT-2

**Check Name:** Locate Most Recent Prior Accuracy Test

**Related Former Checks:**

**Applicability:**

**Description:** Determines if there is an applicable prior accuracy test.

**Specifications:**

Set *CurrentAccuracyStatus* = null.

Set *PriorAccuracyRecord* = null.

Set *InvalidAccuracyRecord* = null.

Set *InappropriateTransmitterTransducerTest* to false.

Locate the most recent record in *AccuracyTestRecordsByLocationForQAStatus* for the location where the ComponentID is equal to the *FuelFlowComponentRecordToCheck*.ComponentID and the TestResult is not equal to "INVALID" and the EndDate/Hour is prior to the *CurrentOperatingDate/Hour*

if (*AccuracyTestRecordsByLocationForQAStatus* is found)

Set *PriorAccuracyRecord* = the found record in *AccuracyTestRecordsByLocationForQAStatus* .

if (*PriorAccuracyRecord*.TestTypeCode is equal to "FFACCTT" AND  
*FuelFlowComponentRecordToCheck*.SampleAcquisitionMethod is NOT equal to "ORF", "NOZ", or "VEN")  
Set *InappropriateTransmitterTransducerTest* to true.

Locate the most recent record in *AccuracyTestRecordsByLocationForQAStatus* for the location where the ComponentID is equal to the *FuelFlowComponentRecordToCheck*.ComponentID and the EndDate/Hour is prior to the *CurrentOperatingDate/Hour* and the EndDate/Hour is greater than the *PriorAccuracyRecord*.EndDate/Hour and the TestResult is equal to "INVALID".

if (*AccuracyTestRecordsByLocationForQAStatus* is found)

Set *InvalidAccuracyRecord* = the found record in *AccuracyTestRecordsByLocationForQAStatus* .

if (*PriorAccuracyRecord*.QANeedsEvaluationFlag = "Y")

Set *CurrentAccuracyStatus* = "Accuracy Test Not Yet Evaluated".

else if (*PriorAccuracyRecord*.TestResultCode is null)

Set *CurrentAccuracyStatus* = "OOC-Accuracy Test Has Critical Errors".

else if (*PriorAccuracyRecord*.TestResultCode = "FAILED")

Set *CurrentAccuracyStatus* = "OOC-Accuracy Test Failed".

else if (*PriorAccuracyRecord*.TestResultCode = "ABORTED")

Set *CurrentAccuracyStatus* = "OOC-Accuracy Test Aborted".

else

Set *CurrentAccuracyStatus* = "OOC-No Prior Accuracy Test"

Locate the most recent record in *AccuracyTestRecordsByLocationForQAStatus* for the location where the ComponentID is equal to the *FuelFlowComponentRecordToCheck*.ComponentID and the TestResult is equal to "INVALID" and the EndDate/Hour is prior to the *CurrentOperatingDate/Hour*.

if (*AccuracyTestRecordsByLocationForQAStatus* is found)

Set *InvalidAccuracyRecord* = the found record in *AccuracyTestRecordsByLocationForQAStatus*.

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Fuel Flowmeter QA Status Evaluation
---	-------------------	--

**Check Code:** ADESTAT-3

**Check Name:** Locate Most Recent Prior Accuracy Event

**Related Former Checks:**

**Applicability:**

**Description:** Determines if there is a applicable prior event requiring an Accuracy test.

**Specifications:**

Set *PriorAccuracyEventRecord* = null.

If (*CurrentAccuracyStatus* is null)

Locate the most recent record in *QACertificationEventRecords* WHERE

- a) the ComponentID is equal to the *FuelFlowComponentRecordToCheck*.ComponentID AND
- b) FFACCRRequired is equal to "Y" AND
- c) the QACertEventDate/Hour is prior to the *CurrentOperatingDate/Hour* AND
- d) the QACertEventDate/Hour is after the later of the *PriorAccuracyRecord*.EndDate/Hour and the *PriorAccuracyRecord*.ReinstallationDate/Hour.

if (*QACertificationEventRecords* is found)

Set *PriorAccuracyEventRecord* = the found record in *QACertificationEventRecords*.

Set *CurrentAccuracyStatus* = "OOC-Event".

else

Set *PriorTestExpirationDate* = 5 years (20 calendar quarters) after the end of the quarter of the *PriorAccuracyRecord*.EndDate/Hour.

if (*CurrentOperatingDate/Hour* is AFTER the *PriorTestExpirationDate*)

Set *CurrentAccuracyStatus* = "OOC-Accuracy Test Expired".

else

Set *PriorTestExpirationDate* = 4 quarters after the end of the quarter of the later of the *PriorAccuracyRecord*.EndDate/Hour and the *PriorAccuracyRecord*.ReinstallationDate/Hour.  
Set *PriorAccuracyRecord*.TestExpirationDate = *PriorTestExpirationDate*.

If (*CurrentOperatingDate/Hour* is ON OR BEFORE the *PriorTestExpirationDate*)

Set *CurrentAccuracyStatus* = "IC".

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

## Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Fuel Flowmeter QA Status Evaluation
---	-------------------	--

**Check Code:** ADESTAT-4

**Check Name:** Determine Eligibility for Fuel Flow to Load Testing (Accuracy)

**Related Former Checks:**

**Applicability:**

**Description:** Determines if this component is eligible to extend their accuracy text expiration date using fuel flow to load testing.

**Specifications:**

Set *FF2LAccuracyEligible* = null.

Set *FF2LAccuracyCheckDate* = null.

if (*CurrentAccuracyStatus* is null)

Locate any record in *FF2LTestRecordsByLocationForQAStatus* for the location where the SystemID is equal to the *FuelFlowComponentRecordToCheck*.SystemID and the TestResult is equal to "PASSED", "EXC168H", "INPROG", or "FAILED" and the quarter is prior to the quarter of the *CurrentOperatingDate* and the quarter is subsequent to the quarter of the later of the *PriorAccuracyRecord*.EndDate and the *PriorAccuracyRecord*.ReinstallationDate.

if (*FF2LTestRecordsByLocationForQAStatus* is found)

Set *ValidFuelFlowTestExistsForEachComponent* = true.

Set *CertificationCheckDate* = the later of the *PriorAccuracyRecord*.EndDate and the *PriorAccuracyRecord*.ReinstallationDate.

for each *ComponentRecord* in *FuelFlowComponentRecords*

Locate the latest *AccuracyTestRecord* for the location in *AccuracyTestRecordsByLocationForQAStatus* where:

- 1) ComponentID is equal to the *ComponentRecord*.ComponentID.
- 2) The quarter of the later of the EndDate and the ReinstallationDate is before the quarter of *CurrentOperatingDate*.

if ( *AccuracyTestRecord* was NOT found )

Set *ValidFuelFlowTestExistsForEachComponent* = false.

else if ( *AccuracyTestRecord*.TestResultCode does NOT equal "PASSED" )

Set *ValidFuelFlowTestExistsForEachComponent* = false.

else if ( the later of *AccuracyTestRecord*.EndDate and the *AccuracyTestRecord*.ReinstallationDate is on or after *CurrentFuelFlowRecord*.SystemBeginDate )

Set *ValidFuelFlowTestExistsForEachComponent* = false.

else

Set *CertificationCheckDate* = the later of *CertificationCheckDate* AND *AccuracyTestRecord*.EndDate AND *AccuracyTestRecord*.ReinstallationDate.

if ( *AccuracyTestRecord*.TestTypeCode == "FFACCTT" )

Locate the latest *PeiTestRecord* for the location in *PEITestRecordsByLocationForQAStatus* where:

- 1) ComponentID is equal to the *ComponentRecord*.ComponentID.
- 2) The quarter of the EndDate is before the quarter of *CurrentOperatingDate*.



---

```
if ( PeiTestRecord was NOT found )

    Set ValidFuelFlowTestExistsForEachComponent = false.

else if ( PeiTestRecord.TestResultCode does NOT equal "PASSED" )

    Set ValidFuelFlowTestExistsForEachComponent = false.

else if ( PeiTestRecord.EndDate is on or after CurrentFuelFlowRecord.SystemBeginDate )

    Set ValidFuelFlowTestExistsForEachComponent = false.

else

    Set CertificationCheckDate = the later of CertificationCheckDate AND PeiTestRecord.EndDate.

if ( ValidFuelFlowTestExistsForEachComponent is equal to true ) AND ( CertificationCheckDate is NOT null )

    Set FF2LAccuracyEligible = true.
    Set FF2LAccuracyCheckDate = CertificationCheckDate.

else

    Set FF2LAccuracyEligible = true.
    Set FF2LAccuracyCheckDate = the later of the PriorAccuracyRecord.EndDate and the
    PriorAccuracyRecord.ReinstallationDate.

for each record in FuelFlowComponentRecords

    if (FuelFlowComponentRecords.ComponentID is not equal to
    FuelFlowComponentRecordToCheck.ComponentID)

        Locate the latest record in AccuracyTestRecordsByLocationForQAStatus for the location where
        the ComponentID is equal to the FuelFlowComponentRecords.ComponentID and the TestResult
        is equal to "PASSED" and the quarter of the later of the EndDate and the ReinstallationDate is in
        the same or adjacent quarter of the later of the PriorAccuracyRecord.EndDate and the
        PriorAccuracyRecord.ReinstallationDate.

        if (AccuracyTestRecordsByLocationForQAStatus is not found)

            Set FF2LAccuracyEligible = false, and exit this check.

        else

            Set FF2LAccuracyCheckDate = the later of FF2LAccuracyCheckDate and the
            AccuracyTestRecordsByLocationForQAStatus.EndDate and the
            AccuracyTestRecordsByLocationForQAStatus.ReinstallationDate.

            if (AccuracyTestRecordsByLocationForQAStatus.TestTypeCode is equal to
            "FFACCTT")

                Locate the latest record in PEITestRecordsByLocationForQAStatus for the
                location where the ComponentID is equal to the
                FuelFlowComponentRecords.ComponentID and the TestResult is equal to
                "PASSED" and the quarter is in the same or adjacent quarter of the later of the
                PriorAccuracyRecord.EndDate and the
                PriorAccuracyRecord.ReinstallationDate.
```

if (*PEITestRecordsByLocationForQAStatus* is not found)

Set *FF2LAccuracyEligible* = false, and exit this check.

else

Set *FF2LAccuracyCheckDate* = the later of *FF2LAccuracyCheckDate* and the *PEITestRecordsByLocationForQAStatus*.EndDate.

else if (*PriorAccuracyTestRecord*.TestTypeCode is equal to "FFACCTT")

Locate the latest record in *PEITestRecordsByLocationForQAStatus* for the location where the ComponentID is equal to the *FuelFlowComponentRecords*.ComponentID and the TestResult is equal to "PASSED" and the quarter is in the same or adjacent quarter of the *PriorAccuracyRecord*.EndDate.

if (*PEITestRecordsByLocationForQAStatus* is not found)

Set *FF2LAccuracyEligible* = false, and exit this check.

else

Set *FF2LAccuracyCheckDate* = the later of *FF2LAccuracyCheckDate* and the *PEITestRecordsByLocationForQAStatus*.EndDate.

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Fuel Flowmeter QA Status Evaluation
---	-------------------	--

**Check Code:** ADESTAT-5

**Check Name:** Evaluate Fuel Flow to Load Tests (Accuracy)

**Related Former Checks:**

**Applicability:**

**Description:** Evaluates the Fuel flow to load tests for a flow meter that is eligible to use fuel flow to load tests.

**Specifications:**

Set *FF2LAccuracyBeginYearQuarter* = null.

Set *FF2LAccuracyEndYearQuarter* = null.

Set *FF2LProblemTestNumList* = null.

Set *FF2LProblemQuarterList* = null.

if (*FF2LAccuracyEligible* == true)

Locate any record in *FF2LTestRecordsByLocationForQAStatus* for the location where the SystemID is equal to the *FuelFlowComponentRecordToCheck*.SystemID and the TestResult is equal to "FAILED" and the quarter is prior to the quarter of the *CurrentOperatingDate* and the quarter is subsequent to the quarter of the later of the *PriorAccuracyRecord*.EndDate and the *PriorAccuracyRecord*.ReinstallationDate.

if (*FF2LTestRecordsByLocationForQAStatus* is found)

Set *FF2LProblemTestnumList* = *FF2LTestRecordsByLocationForQAStatus*.TestNumber

Set *CurrentAccuracyStatus* = "OOC-Fuel Flow to Load Test Failed".

exit check.

Locate any record in *FF2LTestRecordsByLocationForQAStatus* for the location where the SystemID is equal to the *FuelFlowComponentRecordToCheck*.SystemID and the TestResult is NULL and the quarter is prior to the quarter of the *CurrentOperatingDate* and the quarter is subsequent to the quarter of the later of the *PriorAccuracyRecord*.EndDate and the *PriorAccuracyRecord*.ReinstallationDate.

if (*FF2LTestRecordsByLocationForQAStatus* is found)

Set *FF2LProblemTestnumList* = *FF2LTestRecordsByLocationForQAStatus*.TestNumber

Set *CurrentAccuracyStatus* = "OOC-Fuel Flow to Load Test Has Critical Errors".

exit check.

Locate any record in *FF2LTestRecordsByLocationForQAStatus* for the location where the SystemID is equal to the *FuelFlowComponentRecordToCheck*.SystemID and the QANeedsEvaluation flag is equal to "Y" and the quarter is prior to the quarter of the *CurrentOperatingDate* and the quarter is subsequent to the quarter of the later of the *PriorAccuracyRecord*.EndDate and the *PriorAccuracyRecord*.ReinstallationDate.

if (*FF2LTestRecordsByLocationForQAStatus* is found)

Set *FF2LProblemTestnumList* = *FF2LTestRecordsByLocationForQAStatus*.TestNumber

Set *CurrentAccuracyStatus* = "Fuel Flow to Load Test Has Not Yet Been Evaluated".

exit check.

Set *FF2LAccuracyBeginYearQuarter* = the quarter after the quarter of the *FF2LAccuracyCheckDate*.

Set *FF2LAccuracyEndYearQuarter* = the quarter is prior to the quarter of the *CurrentOperatingDate*.

Set *PriorAccuracyDateHour* = *FF2LAccuracyCheckDate*.

Set *TestOrSystemQuarter* = the quarter of the later of *PriorAccuracyDate* and *CurrentFuelFlowRecord*.SystemBeginDate .

Set *CurrentOperatingQuarter* = the quarter of the *CurrentOperatingDateHour*.

if ( *CurrentOperatingQuarter* is after the quarter subsequent to the *TestOrSystemQuarter* )

Locate the earliest *FF2LBaselineDataRecord* in ***FF2LBaselineRecordsByLocationForQAStatus*** where:

- 1) SystemID is equal to the ***FuelFlowComponentRecordToCheck***.SystemID.
- 2) EndDateHour is after the *PriorAccuracyDateHour*.
- 3) EndDateHour is before the earlier of the ***CurrentOperatingDateHour***, AND the 5th quarter after the *TestOrSystemQuarter*.

if ( *FF2LBaselineDataRecord* is found )

if ( *FF2LBaselineDataRecord*.CalendarYear/Quarter is before the *CurrentOperatingQuarter* )

Set *MissingQuarterList* = "".  
 Set *BadResultQuarterList* = "".  
 Set *BadResultTestList* = "".

for each *TargetQuarter* from the quarter subsequent to the  
*FF2LBaselineDataRecord*.CalendarYear/Quarter to the quarter before the *CurrentOperatingQuarter*.

Locate a ***LocationReportingFrequency*** record for the test location where:

- 1) ReportingFrequencyCode = "OS",
- 2) BeginQuarter is on or before *TargetQuarter* ,
- 3) EndQuarter is null or is on or after *TargetQuarter* .

If ( NOT found ) OR ( *TargetQuarter* is 2nd or 3rd quarter )

Locate *SystemOperatingSuppDataRecord* in  
***SystemOperatingSuppDataRecordsByLocation*** where:

- 1) SystemId is equal to ***FuelFlowComponentRecordToCheck***.SystemId.
- 2) OpSuppDataTypeCode is equal to "OP".
- 3) Year/Quarter is equal to *TargetQuarter*.

if ( *SystemOperatingSuppDataRecord* is NOT null )

Set *OpHourCount* = *SystemOperatingSuppDataRecord*.Hours.

else

Locate *OperatingSuppDataRecord* in ***OperatingSuppDataRecordsbyLocation***  
 where:

- 1) FuelCode is equal to ***CurrentFuelFlowRecord***.FuelCode.
- 2) OpTypeCode is equal to "OPHOURS".
- 3) Year/Quarter is equal to *TargetQuarter*.

if ( *OperatingSuppDataRecord* is NOT null )

Set *OpHourCount* = *OperatingSuppDataRecord*.OpValue.

else

Locate *OperatingSuppDataRecord* in  
***OperatingSuppDataRecordsbyLocation*** where:

- 1) FuelCode is null.
- 2) OpTypeCode is equal to "OPHOURS".
- 3) Year/Quarter is equal to *TargetQuarter*.

if ( *OperatingSuppDataRecord* is NOT null ) AND ( *OperatingSuppDataRecord.OpValue* is equal to 0 )

Set *OpHourCount* = *OperatingSuppDataRecord.OpValue*.

else

Set *OpHourCount* = null.

Locate a *FF2LTestRecord* in ***FF2LTestRecordsByLocationForQAStatus*** for the location where:

- 1) SystemID is equal to the ***FuelFlowComponentRecordToCheck***.SystemID.
- 2) TestResultCode is equal to "PASSED", "EXC168H" or "FEW168H".
- 3) CalendarYear/Quarter is equal to *TargetQuarter*.

if ( *FF2LTestRecord* is NOT found )

if ( ( *OpHourCount* is null ) OR ( *OpHourCount* is greater than 0 ) ) AND ( *TargetQuarter* is NOT equal to *TestOrSystemQuarter* )  
Append *TargetQuarter* to *MissingQuarterList*.

else

if ( *OpHourCount* is NOT null )

if ( *FF2LTestRecord.TestResultCode* is equal to "PASSED" or "EXC168H" ) AND ( *OpHourCount* is less than 168 )

Append *TargetQuarter* to *BadResultQuarterList*.

Append *FF2LTestRecord.TestNumber* to *BadResultTestList*.

else if ( *FF2LTestRecord.TestResultCode* is equal to "FEW168H" ) AND ( *OpHourCount* is greater than or equal to 168 )

Append *TargetQuarter* to *BadResultQuarterList*.

Append *FF2LTestRecord.TestNumber* to *BadResultTestList*.

if ( *MissingQuarterList* NOT equal to "" )

Set ***FF2LProblemQuarterList*** = *MissingQuarterList*.

Set ***CurrentAccuracyStatus*** = "OOC-Missing Fuel Flow to Load Test".

else if ( *BadResultQuarterList* NOT equal to "" )

Set ***FF2LProblemQuarterList*** = *BadResultQuarterList*.

Set ***FF2LProblemTestNumList*** = *BadResultTestList*.

Set ***CurrentAccuracyStatus*** = "OOC-Invalid Fuel Flow to Load Test Result".

else

if ( *FF2LBaselineDataRecord.CalendarYear/Quarter* is after the *TestOrSystemQuarter* )

Set **FF2LProblemQuarterList** = "".

for each *TargetQuarter* from the quarter subsequent to the *TestOrSystemQuarter* AND through the *FF2LBaselineDataRecord.CalendarYear/Quarter*.

Locate a **LocationReportingFrequency** record for the test location where:

- 1) ReportingFrequencyCode = "OS",
- 2) BeginQuarter is on or before *TargetQuarter* ,
- 3) EndQuarter is null or is on or after *TargetQuarter* .

If ( NOT found ) OR ( *TargetQuarter* is 2nd or 3rd quarter )

Locate a record in **FF2LTestRecordsByLocationForQAStatus** for the location where:

- 1) SystemID is equal to the **FuelFlowComponentRecordToCheck.SystemID**.
- 2) TestResultCode is equal to "INPROG".
- 3) CalendarYear/Quarter is equal to *TargetQuarter*.

if ( **FF2LTestRecordsByLocationForQAStatus** is NOT found )

Locate *SystemOperatingSuppDataRecord* in **SystemOperatingSuppDataRecordsByLocation** where:

- 1) SystemId is equal to **FuelFlowComponentRecordToCheck.SystemId**.
- 2) OpSuppDataTypeCode is equal to "OP".
- 3) Year/Quarter is equal to *TargetQuarter* .

if ( *SystemOperatingSuppDataRecord* is NOT null )

Set *OpHourCount* =  
*SystemOperatingSuppDataRecord.Hours*.

else

Locate *OperatingSuppDataRecord* in **OperatingSuppDataRecordsbyLocation** where:

- 1) FuelCode is equal to **CurrentFuelFlowRecord.FuelCode**.
- 2) OpTypeCode is equal to "OPHOURS".
- 3) Year/Quarter is equal to *TargetQuarter* .

if ( *OperatingSuppDataRecord* is NOT null )

Set *OpHourCount* =  
*OperatingSuppDataRecord.OpValue*.

else

Locate *OperatingSuppDataRecord* in **OperatingSuppDataRecordsbyLocation** where:

- 1) FuelCode is null.

---

2) OpTypeCode is equal to "OPHOURS".  
3) Year/Quarter is equal to *TargetQuarter*.

if ( *OperatingSuppDataRecord* is NOT null )  
AND ( *OperatingSuppDataRecord*.OpValue is equal to 0 )

Set *OpHourCount* =  
*OperatingSuppDataRecord*.OpValue.

else

Set *OpHourCount* = null.

if ( ( *OpHourCount* is null ) AND ( *TargetQuarter* is on or after the quarter of *CurrentFuelFlowRecord*.SystemBeginDate )  
OR ( ( *OpHourCount* is NOT null ) AND ( *OpHourCount* is greater than 0 ) )  
Append *TargetQuarter* to **FF2LProblemQuarterList**.

if ( **FF2LProblemQuarterList** is NOT equal to "" )

Set *CurrentAccuracyStatus* = "OOC-Inprogress Fuel Flow to Load Test Required".

else

if ( *CurrentOperatingQuarter* is before the 5th quarter after the *TestOrSystemQuarter* )

Set **FF2LProblemQuarterList** = "".

for each *TargetQuarter* from the quarter subsequent to the *TestOrSystemQuarter* AND before the *CurrentOperatingQuarter*.

Locate a **LocationReportingFrequency** record for the test location where:

1) ReportingFrequencyCode = "OS",  
2) BeginQuarter is on or before *TargetQuarter* ,  
3) EndQuarter is null or is on or after *TargetQuarter* .

If ( NOT found ) OR ( *TargetQuarter* is 2nd or 3rd quarter )

Locate a record in **FF2LTestRecordsByLocationForQASatus** for the location where:

1) SystemID is equal to the *FuelFlowComponentRecordToCheck*.SystemID.  
2) TestResultCode is equal to "INPROG".  
3) CalendarYear/Quarter is equal to *TargetQuarter*.

if ( **FF2LTestRecordsByLocationForQASatus** is NOT found )

Locate *SystemOperatingSuppDataRecord* in **SystemOperatingSuppDataRecordsByLocation** where:

1) SystemId is equal to *FuelFlowComponentRecordToCheck*.SystemId.  
2) OpSuppDataTypeCode is equal to "OP".  
3) Year/Quarter is equal to *TargetQuarter* .

if ( *SystemOperatingSuppDataRecord* is NOT null )

Set *OpHourCount* = *SystemOperatingSuppDataRecord*.Hours.

else

Locate *OperatingSuppDataRecord* in  
***OperatingSuppDataRecordsbyLocation*** where:

- 1) FuelCode is equal to ***CurrentFuelFlowRecord***.FuelCode.
- 2) OpTypeCode is equal to "OPHOURS".
- 3) Year/Quarter is equal to *TargetQuarter* .

if ( *OperatingSuppDataRecord* is NOT null )

Set *OpHourCount* = *OperatingSuppDataRecord*.OpValue.

else

Locate *OperatingSuppDataRecord* in  
***OperatingSuppDataRecordsbyLocation*** where:

- 1) FuelCode is null.
- 2) OpTypeCode is equal to "OPHOURS".
- 3) Year/Quarter is equal to *TargetQuarter*.

if ( *OperatingSuppDataRecord* is NOT null ) AND ( *OperatingSuppDataRecord*.OpValue is equal to 0 )

Set *OpHourCount* =  
*OperatingSuppDataRecord*.OpValue.

else

Set *OpHourCount* = null.

if ( ( *OpHourCount* is null ) AND ( *TargetQuarter* is on or after the quarter of ***CurrentFuelFlowRecord***.SystemBeginDate ) ) OR ( ( *OpHourCount* is NOT null ) AND ( *OpHourCount* is greater than 0 ) )

Append *TargetQuarter* to ***FF2LProblemQuarterList***.

if ( ***FF2LProblemQuarterList*** is NOT equal to "" )

Set ***CurrentAccuracyStatus*** = "OOC-Inprogress Fuel Flow to Load Test Required".

else

Set ***CurrentAccuracyStatus*** = "OOC-Baseline Period Expired".

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Fuel Flowmeter QA Status Evaluation
---	-------------------	--



**Check Code:** ADESTAT-6

**Check Name:** Determine Accuracy Test Expiration Date

**Related Former Checks:**

**Applicability:**

**Description:** Determines the expiration date for the prior applicable Accuracy Test.

**Specifications:**

Set *AccuracyMissingOpDataInfo* = null.

if (*CurrentAccuracyStatus* is null)

Set *PriorTestExpirationDate* = *PriorAccuracyRecord*.TestExpirationDate.

for each quarter subsequent to the quarter of the later of the *PriorAccuracyRecord*.EndDate/Hour and the *PriorAccuracyRecord*.ReinstallationDate/Hour and prior to the quarter of the *CurrentOperatingDate/Hour*

Set *OSO Reporter* to false.

Locate a *LocationReportingFrequency* record for the test location where ReportingFrequencyCode = "OS", the BeginQuarter is on or before the quarter being checked, and the EndQuarter is null or is on or after the quarter being checked.

If found,

Set *OSO Reporter* to true.

if (*OSO Reporter* == false or the quarter to check is the 3rd quarter)

if (*FF2LAccuracyEligible* == true and the quarter to check is between the *FF2LAccuracyBeginYearQuarter* and the *FF2LAccuracyEndYearQuarter* (inclusive))

Add 1 quarter to the *PriorTestExpirationDate*.

else

if (*EarliestLocationReportDate* > the last day of the quarter being checked)

Add 1 quarter to the *PriorTestExpirationDate*.

else

Locate *SystemOperatingSuppDataRecord* in *SystemOperatingSuppDataRecordsByLocation* where:

- 1) SystemId is equal to *FuelFlowComponentRecordToCheck*.SystemId.
- 2) OpSuppDataTypeCode is equal to "OP".
- 3) Year is equal to the year being checked.
- 4) Quarter is equal to the quarter being checked.

if ( *SystemOperatingSuppDataRecord* is NOT null )

Set *OpHourCount* = *SystemOperatingSuppDataRecord*.Hours.  
Set *opHourCountLocationSpecific* = false.

else

Locate *OperatingSuppDataRecord* in *OperatingSuppDataRecordsbyLocation* where:

- 1) FuelCode is equal to **CurrentFuelFlowRecord**.FuelCode.
- 2) OpTypeCode is equal to "OPHOURS".
- 3) Year is equal to the year being checked.
- 4) Quarter is equal to the quarter being checked.

if ( *OperatingSuppDataRecord* is NOT null )

Set *OpHourCount* = *OperatingSuppDataRecord*.OpValue.  
Set *opHourCountLocationSpecific* = false.

else

Locate *OperatingSuppDataRecord* in ***OperatingSuppDataRecordsbyLocation***  
where:

- 1) FuelCode is null.
- 2) OpTypeCode is equal to "OPHOURS".
- 3) Year is equal to the year being checked.
- 4) Quarter is equal to the quarter being checked.

if ( *OperatingSuppDataRecord* is NOT null )

Set *OpHourCount* = *OperatingSuppDataRecord*.OpValue.  
Set *opHourCountLocationSpecific* = true.

else

Set *OpHourCount* = null.  
Set *opHourCountLocationSpecific* = null.

if ( *OpHourCount* is null )

Set ***AccuracyMissingOpDataInfo*** = "[YEAR] Q[QTR]" (where [YEAR] is the year of the quarter being checked and [QTR] is the number of the quarter being checked).

else if ( *opHourCountLocationSpecific* equals true )

Add 1 quarter to the *PriorTestExpirationDate*.

else if ( *OpHourCount* <= 168 )

Add 1 quarter to the *PriorTestExpirationDate*.

else

Locate a record in ***TestExtensionExemptionRecords*** for the location where the ComponentID is equal to the ***FuelFlowComponentRecordToCheck***.ComponentID, the reporting period is equal to the quarter to check , AND the ExtensionExemptionCode is equal to "NONQADB".

if ( ***TestExtensionExemptionRecords*** is found)

Add 1 quarter to the *PriorTestExpirationDate*.

Locate the record in ***OperatingSuppDataRecordsbyLocation*** where the OpTypeCode is equal to "OPHOURS" and the reporting period is equal to the quarter to check and the FuelCode is equal to ***CurrentFuelFlowRecord.FuelCode***.

if (***OperatingSuppDataRecordsbyLocation*** is not found)

Locate the record in ***OperatingSuppDataRecordsbyLocation*** where the OpTypeCode is equal to "OPHOURS" and the reporting period is equal to the quarter to check and the FuelCode is null.

if (***OperatingSuppDataRecordsbyLocation*** is not found)

Set ***AccuracyMissingOpDataInfo*** = "[YEAR] Q[QTR]" (where [YEAR] is the year of the quarter being checked and [QTR] is the number of the quarter being checked).

else

Add 1 quarter to the ***PriorTestExpirationDate***.

else if (***OperatingSuppDataRecordsbyLocation.OpValue*** <= 168)

Add 1 quarter to the ***PriorTestExpirationDate***.

else

Locate a record in ***TestExtensionExemptionRecords*** for the location where the ComponentID is equal to the ***FuelFlowComponentRecordToCheck.ComponentID***, the reporting period is equal to the quarter to check , AND the ExtensionExemptionCode is equal to "NONQADB".

if (***TestExtensionExemptionRecords*** is found)

Add 1 quarter to the ***PriorTestExpirationDate***.

else if (***OSO Reporter*** == true and the quarter to check is the 2nd quarter)

if (***FF2LAccuracyEligible*** == true and the quarter to check is between the ***FF2LAccuracyBeginYearQuarter*** and the ***FF2LAccuracyEndYearQuarter*** (inclusive))

Add 1 quarter to the ***PriorTestExpirationDate***.

else

Locate a record in ***TestExtensionExemptionRecords*** for the location where the reporting period is equal to the quarter to check , AND the ExtensionExemptionCode is equal to "NONQAOS" and the FuelCode is equal to the ***CurrentFuelFlowRecord.FuelCode***.

if (***TestExtensionExemptionRecords*** is found)

Add 1 quarter to the ***PriorTestExpirationDate***.

else

Locate a record in ***TestExtensionExemptionRecords*** for the location where the ComponentID is equal to the ***FuelFlowComponentRecordToCheck.ComponentID***, the reporting period is equal to the quarter to check , AND the ExtensionExemptionCode is equal to "NONQADB".

if (*TestExtensionExemptionRecords* is found)

Add 1 quarter to the *PriorTestExpirationDate*.

else if (*OSO Reporter* == true and the quarter to check is the 1st or 4th quarter)

if (*FF2LAccuracyEligible* == true and the 2nd quarter following the quarter being checked is between the *FF2LAccuracyBeginYearQuarter* and the *FF2LAccuracyEndYearQuarter* (inclusive))

Add 1 quarter to the *PriorTestExpirationDate*.

else

Locate a record in *TestExtensionExemptionRecords* for the location where the reporting period is equal to the quarter to check , AND the ExtensionExemptionCode is equal to "NONQAOS" and the FuelCode is equal to the *CurrentFuelFlowRecord.FuelCode*.

if (*TestExtensionExemptionRecords* is found)

Add 1 quarter to the *PriorTestExpirationDate*.

else

Locate a record in *TestExtensionExemptionRecords* for the location where the ComponentID is equal to the *FuelFlowComponentRecordToCheck.ComponentID*, the reporting period is equal to the quarter to check , AND the ExtensionExemptionCode is equal to "NONQADB".

if (*TestExtensionExemptionRecords* is found)

Add 1 quarter to the *PriorTestExpirationDate*.

if (*CurrentOperatingDate/Hour* > *PriorTestExpirationDate*)

if (*AccuracyMissingOpDataInfo* is not null)

Set *CurrentAccuracyStatus* = "Missing Op Data"

Return result *CurrentAccuracyStatus* .

else if (*FF2LAccuracyEligible* == false)

Set *CurrentAccuracyStatus* = "OOC-Accuracy Test Expired-Fuel Flow To Load Test Ignored".

Return result *CurrentAccuracyStatus* .

else

Set *CurrentAccuracyStatus* = "OOC-Accuracy Test Expired"

else

Set *CurrentAccuracyStatus* = "IC-Extension"

If (*CurrentAccuracyStatus* does not begin with "IC" and is not null)

if (*CurrentAccuracyStatus* starts with "OOC" or "Undetermined" AND *InvalidAccuracyRecord* is not null)

Set *CurrentAccuracyStatus* = *CurrentAccuracyStatus* & "\*\*"

Return result *CurrentAccuracyStatus*.

else if (*InapprorpriateTransmitterTransducerTest* == true)

Return result "Inappropriate Transmitter Transducer Test" // do NOT set current accuracy status

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
Accuracy Test Not Yet Evaluated	The [testtype] status for [key] could not be determined, because the applicable prior [testtype] with TestNumber [testnum] has not yet been evaluated.	Critical Error Level 1
Fuel Flow to Load Test Has Not Yet Been Evaluated	The [testtype] status for [key] could not be determined, because a prior fuel-flow-to-load test for MonitoringSystemID [ID] with TestNumber [ff2testnum] has not yet been evaluated.	Critical Error Level 1
Inappropriate Transmitter Transducer Test	The prior [testtype] for [key] with TestNumber [testnum] is a transmitter/transducer test, but this type of test is inappropriate for the SampleAcquisitionMethodCode for the fuel flowmeter. A transmitter/transducer test can only be performed on a NOZ, VEN, and ORF fuel flowmeter.	Critical Error Level 2
Missing Op Data	The [testtype] status for [key] could not be determined, because the Op Supp Data record for OPHOURS, OSHOURS, or OPDAYS is missing for [MISSINGOPDATAINFO] (and possibly other previous reporting periods). If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
OOO-Accuracy Test Aborted	The applicable prior [testtype] for [key] with TestNumber [testnum] was aborted.	Critical Error Level 1
OOO-Accuracy Test Aborted*	The prior [testtype] for [key] with TestNumber [testnum] was aborted. An invalid prior [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Accuracy Test Expired	The prior [testtype] for [key] with TestNumber [testnum] has expired.	Critical Error Level 1
OOO-Accuracy Test Expired*	The prior [testtype] for [key] with TestNumber [testnum] has expired. An invalid prior [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Accuracy Test Expired-Fuel Flow To Load Test Ignored	The prior [testtype] for [key] with TestNumber [testnum] has expired. A prior fuel-flow-to-load test for MonitoringSystemID [ID] was ignored.	Critical Error Level 1
OOO-Accuracy Test Expired-Fuel Flow To Load Test Ignored*	The prior [testtype] for [key] with TestNumber [testnum] has expired. A prior fuel-flow-to-load test for MonitoringSystemID [ID] was ignored. An invalid prior [testtype] with TestNumber [invtestnum] was also ignored.	Critical Error Level 1
OOO-Accuracy Test Failed	The applicable prior [testtype] for [key] with TestNumber [testnum] failed.	Critical Error Level 1
OOO-Accuracy Test Failed*	The prior [testtype] for [key] with TestNumber [testnum] failed. An invalid prior [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Accuracy Test Has Critical Errors	The applicable prior [testtype] for [key] with TestNumber [testnum] has critical errors.	Critical Error Level 1
OOO-Accuracy Test Has Critical Errors*	The prior [testtype] for [key] with TestNumber [testnum] has critical errors. An invalid prior [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Baseline Period Expired	The [testtype] status for [key] could not be determined because a fuel-flow-to-load baseline for MonitoringSystemID [ID] was not reported, and the baseline deadline has expired.	Critical Error Level 1
OOO-Baseline Period Expired*	The [testtype] status for [key] could not be determined because a fuel-flow-to-load baseline for MonitoringSystemID [ID] was not reported, and the baseline deadline has expired. An invalid prior [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Event	You reported a QA Certification Event record for QACertEventCode [code] QACertEventDate [eventdate] for [key], but you did not perform a subsequent [testtype].	Critical Error Level 1
OOO-Event*	You reported a QA Certification Event record for QACertEventCode [code] QACertEventDate [eventdate] for [key], but you did not perform a subsequent [testtype]. An invalid [testtype] was ignored.	Critical Error Level 1
OOO-Fuel Flow to Load Test Failed	The [testtype] status for [key] could not be determined, because a prior fuel-flow-to-load test for MonitoringSystemID [ID] with TestNumber [ff2testnum] has failed.	Critical Error Level 1

OOO-Fuel Flow to Load Test Failed*	The [testtype] status for [key] could not be determined, because a prior fuel-flow-to-load test for MonitoringSystemID [ID] with TestNumber [ff2ltestnum] has failed. An invalid [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Fuel Flow to Load Test Has Critical Errors	The [testtype] status for [key] could not be determined, because a prior fuel-flow-to-load test for MonitoringSystemID [ID] with TestNumber [ff2ltestnum] has critical errors.	Critical Error Level 1
OOO-Fuel Flow to Load Test Has Critical Errors*	The [testtype] status for [key] could not be determined, because a prior fuel-flow-to-load test for MonitoringSystemID [ID] with TestNumber [ff2ltestnum] has critical errors. An invalid [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Inprogress Fuel Flow to Load Test Required	The [TESTTYPE] status for [KEY] could not be determined because expected "INPROG" Fuel-Flow-To-Load Test(s) for MonitoringSystemID [ID] are missing in quarter(s) [MISSINGFF2L].	Critical Error Level 1
OOO-Inprogress Fuel Flow to Load Test Required*	The [TESTTYPE] status for [KEY] could not be determined because expected "INPROG" Fuel-Flow-To-Load Test(s) for MonitoringSystemID [ID] are missing in quarter(s) [MISSINGFF2L]. An invalid prior [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Invalid Fuel Flow to Load Test	The [testtype] status for [key] could not be determined, because one or more prior fuel-flow-to-load tests, including the test for MonitoringSystemID [ID] with TestNumber [ff2ltestnum], are invalid. These tests may be invalid because (1) the TestResultCode indicates that baseline data collection is ongoing, yet you reported a prior test indicating that baseline data collection was completed; or (2) the TestResultCode indicates that there were fewer than 168 fuel QA operating hours in the quarter, yet your emissions data for that quarter indicates otherwise.	Critical Error Level 1
OOO-Invalid Fuel Flow to Load Test Result	The [TESTTYPE] status for [KEY] could not be determined because of Fuel-Flow-To-Load Test TestResult disagreement with Operating Hour Count for MonitoringSystemID [ID] and TestNumber(s) [FF2LTESTNUM].	Critical Error Level 1
OOO-Invalid Fuel Flow to Load Test Result*	The [TESTTYPE] status for [KEY] could not be determined because of Fuel-Flow-To-Load Test TestResult disagreement with Operating Hour Count for MonitoringSystemID [ID] and TestNumber(s) [FF2LTESTNUM]. An invalid prior [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Invalid Fuel Flow to Load Test*	The [testtype] status for [key] could not be determined, because one or more prior fuel-flow-to-load tests, including the test for MonitoringSystemID [ID] with TestNumber [ff2ltestnum], are invalid. These tests may be invalid because (1) the TestResultCode indicates that baseline data collection is ongoing, yet you reported a prior test indicating that baseline data collection was completed; or (2) the TestResultCode indicates that there were fewer than 168 fuel QA operating hours in the quarter, yet your emissions data for that quarter indicates otherwise. An invalid [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Missing Fuel Flow to Load Test	The [testtype] status for [key] could not be determined, because a prior 'PASSED', 'EXC168H' or 'FEW168H' fuel-flow-to-load test for MonitoringSystemID [ID] was missing for [missingff2l].	Critical Error Level 1
OOO-Missing Fuel Flow to Load Test*	The [testtype] status for [key] could not be determined, because a prior 'PASSED', 'EXC168H' or 'FEW168H' fuel-flow-to-load test for MonitoringSystemID [ID] was missing for [missingff2l]. An invalid prior [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-No Prior Accuracy Test	You did not report a prior [testtype] for [key].	Critical Error Level 1
OOO-No Prior Accuracy Test*	You did not report a valid prior [testtype] for [key]. An invalid [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Fuel Flowmeter QA Status Evaluation

**Check Code:** ADESTAT-7

**Check Name:** Determine if Component Requires a PEI Test

**Related Former Checks:**

**Applicability:**

**Description:** Determines a if an Appendix D fuel flow meter requires a PEI test.

**Specifications:**

Set *PEIRequired* = false.

if (*PriorAccuracyRecord* is not null and *PriorAccuracyRecord*.TestTypeCode is equal to "FFACCTT")  
Set *PEIRequired* = true.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Fuel Flowmeter QA Status Evaluation
---	-------------------	--



**Check Code:** ADESTAT-8

**Check Name:** Locate Most Recent Prior PEI Test

**Related Former Checks:**

**Applicability:**

**Description:** Determines if there is an applicable prior PEI test.

**Specifications:**

Set *CurrentPEIStatus* = null.

Set *PriorPEIRecord* = null.

if (*PEIRequired* == true)

Locate the most recent record in *PEITestRecordsByLocationForQASStatus* for the location where the ComponentID is equal to the *FuelFlowComponentRecordToCheck*.ComponentID and the EndDate/Hour is prior to the *CurrentOperatingDate/Hour*

if (*PEITestRecordsByLocationForQASStatus* is found)

Set *PriorPEIRecord* = the found record in *PEITestRecordsByLocationForQASStatus* .

if (*PriorPEIRecord*.QANeedsEvaluationFlag = "Y")

Set *CurrentPEIStatus* = "PEI Test Not Yet Evaluated".

else if (*PriorPEIRecord*.TestResultCode is null)

Set *CurrentPEIStatus* = "OOC-PEI Test Has Critical Errors".

else if (*PriorPEIRecord*.TestResultCode = "FAILED")

Set *CurrentPEIStatus* = "OOC-PEI Test Failed".

else if (*PriorPEIRecord*.TestResultCode = "ABORTED")

Set *CurrentPEIStatus* = "OOC-PEI Test Aborted".

else

Set *CurrentPEIStatus* = "OOC-No Prior PEI Test".

if (*CurrentPEIStatus* is not null)

Return result *CurrentPEIStatus*.

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
OOC-No Prior PEI Test	You did not report a prior [testtype] for [key].	Critical Error Level 1
OOC-PEI Test Aborted	The applicable prior [testtype] for [key] with TestNumber [testnum] was aborted.	Critical Error Level 1
OOC-PEI Test Failed	The applicable prior [testtype] for [key] with TestNumber [testnum] failed.	Critical Error Level 1
OOC-PEI Test Has Critical Errors	The applicable prior [testtype] for [key] with TestNumber [testnum] has critical errors.	Critical Error Level 1
PEI Test Not Yet Evaluated	The [testtype] status for [key] could not be determined, because the applicable prior [testtype] with TestNumber [testnum] has not yet been evaluated.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Fuel Flowmeter QA Status Evaluation

**Check Code:** ADESTAT-9

**Check Name:** Locate Most Recent Prior PEI Event

**Related Former Checks:**

**Applicability:**

**Description:** Determines if there is a applicable prior event requiring an PEI test.

**Specifications:**

Set *PriorPEIEventRecord* = null.

If (*PEIRequired* == true AND *CurrentPEIStatus* is null)

Locate the most recent record in *QACertificationEventRecords* WHERE

- a) the ComponentID is equal to the *FuelFlowComponentRecordToCheck*.ComponentID AND
- b) PEIRequired is equal to "Y" AND
- c) the QACertEventDate/Hour is prior to the *CurrentOperatingDate/Hour* AND
- d) the QACertEventDate/Hour is after the *PriorPEIRecord*.EndDate/Hour.

if (*QACertificationEventRecords* is found)

Set *PriorPEIEventRecord* = the found record in *QACertificationEventRecords*.

Set *CurrentPEIStatus* = "OOC-Event".

else

Set *PriorTestExpirationDate* = 5 years (20 calendar quarters) after the end of the quarter of the *PriorPEIRecord*.EndDate.

if (*CurrentOperatingDate* is AFTER the *PriorTestExpirationDate*)

Set *CurrentPEIStatus* = "OOC-PEI Test Expired".

else

Set *PriorTestExpirationDate* = 12 quarters after the end of the quarter of the *PriorPEIRecord*.EndDate.  
Set *PriorPEIRecord*.TestExpirationDate = *PriorTestExpirationDate*.

If (*CurrentOperatingDate* is ON OR BEFORE the *PriorTestExpirationDate*)

Set *CurrentPEIStatus* = "IC".

If (*CurrentPEIStatus* starts with "OOC")

Return result *CurrentPEIStatus*.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
OOC-Event	You reported a QA Certification Event record for QACertEventCode [code] QACertEventDate [eventdate] for [key], but you did not perform a subsequent [testtype].	Critical Error Level 1
OOC-PEI Test Expired	The prior [testtype] for [key] with TestNumber [testnum] has expired.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Fuel Flowmeter QA Status Evaluation

**Check Code:** ADESTAT-10

**Check Name:** Determine Eligibility for Fuel Flow to Load Testing (PEI)

**Related Former Checks:**

**Applicability:**

**Description:** Determines if this component is eligible to extend their PEI text expiration date using fuel flow to load testing.

**Specifications:**

Set *FF2LPEIEligible* = null

Set *FF2LPEICheckDate* = null.

if (*PEIRequired* == true AND *CurrentPEIStatus* is null)

Locate any record in *FF2LTestRecordsByLocationForQAStatus* for the location where the SystemID is equal to the *FuelFlowComponentRecordToCheck*.SystemID and the CalculatedTestResult is equal to "PASSED", "FEW168H", "EXC168H", "INPROG", or "FAILED" and the Year/Quarter is prior to the quarter of the *CurrentOperatingDate* and the Year/Quarter is subsequent to the quarter of the *PriorPEIRecord*.EndDate.

if (*FF2LTestRecordsByLocationForQAStatus* is found)

Set *ValidFuelFlowTestExistsForEachComponent* = true.

Set *CertificationCheckDate* = the later of the *PriorAccuracyRecord*.EndDate and the *PriorAccuracyRecord*.ReinstallationDate.

for each *ComponentRecord* in *FuelFlowComponentRecords*

Locate the latest *AccuracyTestRecord* for the location in *AccuracyTestRecordsByLocationForQAStatus* where:

- 1) ComponentID is equal to the *ComponentRecord*.ComponentID.
- 2) The quarter of the later of the EndDate and the ReinstallationDate is before the quarter of *CurrentOperatingDate*.

if ( *AccuracyTestRecord* was NOT found )

Set *ValidFuelFlowTestExistsForEachComponent* = false.

else if ( *AccuracyTestRecord*.TestResultCode does NOT equal "PASSED" )

Set *ValidFuelFlowTestExistsForEachComponent* = false.

else if ( the later of *AccuracyTestRecord*.EndDate and the *AccuracyTestRecord*.ReinstallationDate is on or after *CurrentFuelFlowRecord*.SystemBeginDate )

Set *ValidFuelFlowTestExistsForEachComponent* = false.

else

Set *CertificationCheckDate* = the later of *CertificationCheckDate* AND *AccuracyTestRecord*.EndDate AND *AccuracyTestRecord*.ReinstallationDate.

if ( *AccuracyTestRecord*.TestTypeCode == "FFACCTT" )

Locate the latest *PeiTestRecord* for the location in *PEITestRecordsByLocationForQAStatus* where:

- 1) ComponentID is equal to the *ComponentRecord*.ComponentID.
- 2) The quarter of the EndDate is before the quarter of *CurrentOperatingDate*.

if ( *PeiTestRecord* was NOT found )

Set *ValidFuelFlowTestExistsForEachComponent* = false.

else if ( *PeiTestRecord.TestResultCode* does NOT equal "PASSED" )

Set *ValidFuelFlowTestExistsForEachComponent* = false.

else if ( *PeiTestRecord.EndDate* is on or after ***CurrentFuelFlowRecord.SystemBeginDate*** )

Set *ValidFuelFlowTestExistsForEachComponent* = false.

else

Set *CertificationCheckDate* = the later of *CertificationCheckDate* AND *PeiTestRecord.EndDate*.

if ( *ValidFuelFlowTestExistsForEachComponent* is equal to true ) AND ( *CertificationCheckDate* is NOT null )

Set ***FF2LPEIEligible*** = true.

Set ***FF2LPEICheckDate*** = *CertificationCheckDate*.

else

Set ***FF2LPEIEligible*** = true.

Set ***FF2LPEICheckDate*** = *PriorPEIRecord.EndDate*.

for each record in ***FuelFlowComponentRecords***

Locate the latest record in ***AccuracyTestRecordsByLocationForQAStatus*** for the location where the ComponentID is equal to the ***FuelFlowComponentRecords.ComponentID*** and the TestResult is equal to "PASSED" and the Year/Quarter of the later of the EndDate and Reinstallation Date is in the same or adjacent quarter of the ***PriorPEIRecord.EndDate***.

if ( ***AccuracyTestRecordsByLocationForQAStatus*** is not found)

Set ***FF2LPEIEligible*** = false, and exit check.

else

Set ***FF2LPEICheckDate*** = the later of ***FF2LPEICheckDate*** and the ***AccuracyTestRecordsByLocationForQAStatus.EndDate*** and the ***AccuracyTestRecordsByLocationForQAStatus.ReinstallationDate***.

if ( ***FuelFlowComponentRecords.ComponentID*** is not equal to ***FuelFlowComponentRecordToCheck.ComponentID*** AND ***AccuracyTestRecordsByLocationForQAStatus.TestTypeCode*** is equal to "FFACCTT")

Locate the latest record in ***PEITestRecordsByLocationForQAStatus*** for the location where the ComponentID is equal to the ***FuelFlowComponentRecords.ComponentID*** and the TestResult is equal to "PASSED" and the Year/Quarter is in the same or adjacent quarter of the ***PriorPEIRecord.EndDate***.

if ( ***PEITestRecordsByLocationForQAStatus*** is not found)

Set ***FF2LPEIEligible*** = false, and exit check.

else

Set ***FF2LPEICheckDate*** = the later of ***FF2LPEICheckDate*** and the ***PEITestRecordsByLocationForQAStatus.EndDate***.

**Results:**ResultResponseSeverity

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Fuel Flowmeter QA Status Evaluation

**Check Code:** ADESTAT-11

**Check Name:** Evaluate Fuel Flow to Load Tests (PEI)

**Related Former Checks:**

**Applicability:**

**Description:** Evaluates the Fuel flow to load tests for a flow meter that is eligible to use fuel flow to load tests.

**Specifications:**

Set *FF2LPEIBeginYearQuarter* = null.

Set *FF2LPEIEndYearQuarter* = null.

Set *FF2LProblemTestnumList* = null.

Set *FF2LProblemQuarterList* = null.

if (*FF2LPEIEligible* == true)

Locate any record in *FF2LTestRecordsByLocationForQASstatus* for the location where the SystemID is equal to the *FuelFlowComponentRecordToCheck*.SystemID and the TestResultCode is equal to "FAILED" and the Year/Quarter is prior to the quarter of the *CurrentOperatingDate* and the Year/Quarter is subsequent to the quarter of the *PriorPEIRecord*.EndDate.

if (*FF2LTestRecordsByLocationForQASstatus* is found)

Locate a record in *QACertificationEventRecords* WHERE

- a) the ComponentID is equal to the *FuelFlowComponentRecordToCheck*.ComponentID AND
- b) the QACertEventCode is equal to "410"
- c) the RequiredTestCode is equal to "53"AND
- d) the QACertEventDate/Hour is after the EndDate/Hour and of the located failed *FF2LTestRecordsByLocationForQASstatus* record.
- e) the QACertEventDate/Hour is prior to the *CurrentOperatingDate/Hour*

if (*QACertificationEventRecords* is not found)

Set *FF2LProblemTestnumList* = *FF2LTestRecordsByLocationForQASstatus*.TestNumber

Set *CurrentPEIStatus* = "OOC-Fuel Flow to Load Test Failed".

Return result *CurrentPEIStatus*.

Locate any record in *FF2LTestRecordsByLocationForQASstatus* for the location where the SystemID is equal to the *FuelFlowComponentRecordToCheck*.SystemID and the TestResultCode is NULL and the Year/Quarter is prior to the quarter of the *CurrentOperatingDate* and the Year/Quarter is subsequent to the quarter of the *PriorPEIRecord*.EndDate.

if (*FF2LTestRecordsByLocationForQASstatus* is found)

Set *FF2LProblemTestnumList* = *FF2LTestRecordsByLocationForQASstatus*.TestNumber

Set *CurrentPEIStatus* = "OOC-Fuel Flow to Load Test Has Critical Errors".

Return result *CurrentPEIStatus*.

Locate any record in *FF2LTestRecordsByLocationForQASstatus* for the location where the SystemID is equal to the *FuelFlowComponentRecordToCheck*.SystemID and the QANeedsEvaluation flag is equal to "Y" and the Year/Quarter is prior to the quarter of the *CurrentOperatingDate* and the Year/Quarter is subsequent to the quarter of the *PriorPEIRecord*.EndDate.

if (*FF2LTestRecordsByLocationForQASstatus* is found)

Set *FF2LProblemTestnumList* = *FF2LTestRecordsByLocationForQASstatus*.TestNumber

Set *CurrentPEIStatus* = "Fuel Flow to Load Test Has Not Yet Been Evaluated".

Return result *CurrentPEIStatus*.

Set **FF2LPEIBeginYearQuarter** to the quarter after the quarter of the **FF2LPEICheckDate**.  
 Set **FF2LPEIEndYearQuarter** = the quarter is prior to the quarter of the **CurrentOperatingDate**.

Set **CurrentOperatingQuarter** = the quarter of the **CurrentOperatingDateHour**.

if ( **CurrentOperatingQuarter** is after the quarter subsequent to the **PriorPEIRecord.EndDateHour** )

Locate the earliest **FF2LBaselineDataRecord** in **FF2LBaselineRecordsByLocationForQASStatus** where:

- 1) SystemID is equal to the **FuelFlowComponentRecordToCheck.SystemID**.
- 2) EndDateHour is after the **PriorPEIRecord.EndDateHour**.
- 3) EndDateHour is before the earlier of the **CurrentOperatingDateHour**, AND the 5th quarter after the **PriorPEIRecord.EndDateHour**.

if ( **FF2LBaselineDataRecord** is found )

if ( **FF2LBaselineDataRecord.CalendarYear/Quarter** is before the **CurrentOperatingQuarter** )

Set **MissingQuarterList** = "".  
 Set **BadResultQuarterList** = "".  
 Set **BadResultTestList** = "".

for each **TargetQuarter** from the quarter subsequent to the  
**FF2LBaselineDataRecord.CalendarYear/Quarter** to the quarter before the **CurrentOperatingQuarter**.

Locate a **LocationReportingFrequency** record for the test location where:

- 1) ReportingFrequencyCode = "OS",
- 2) BeginQuarter is on or before **TargetQuarter** ,
- 3) EndQuarter is null or is on or after **TargetQuarter** .

If ( NOT found ) OR ( **TargetQuarter** is 2nd or 3rd quarter )

Locate **SystemOperatingSuppDataRecord** in  
**SystemOperatingSuppDataRecordsByLocation** where:

- 1) SystemId is equal to **FuelFlowComponentRecordToCheck.SystemId**.
- 2) OpSuppDataTypeCode is equal to "OP".
- 3) Year/Quarter is equal to **TargetQuarter** .

if ( **SystemOperatingSuppDataRecord** is NOT null )

Set **OpHourCount** = **SystemOperatingSuppDataRecord.Hours**.

else

Locate **OperatingSuppDataRecord** in **OperatingSuppDataRecordsbyLocation**  
 where:

- 1) FuelCode is equal to **CurrentFuelFlowRecord.FuelCode**.
- 2) OpTypeCode is equal to "OPHOURS".
- 3) Year/Quarter is equal to **TargetQuarter** .

if ( **OperatingSuppDataRecord** is NOT null )



Set *OpHourCount* = *OperatingSuppDataRecord.OpValue*.

else

Locate *OperatingSuppDataRecord* in  
***OperatingSuppDataRecordsbyLocation*** where:

- 1) *FuelCode* is null.
- 2) *OpTypeCode* is equal to "OPHOURS".
- 3) *Year/Quarter* is equal to *TargetQuarter*.

if ( *OperatingSuppDataRecord* is NOT null ) AND ( *OperatingSuppDataRecord.OpValue* is equal to 0 )

Set *OpHourCount* = *OperatingSuppDataRecord.OpValue*.

else

Set *OpHourCount* = null.

Locate a *FF2LTestRecord* in ***FF2LTestRecordsByLocationForQAStatus*** for the location where:

- 1) *SystemID* is equal to the ***FuelFlowComponentRecordToCheck***.*SystemID*.
- 2) *TestResultCode* is equal to "PASSED", "EXC168H" or "FEW168H".
- 3) *CalendarYear/Quarter* is equal to *TargetQuarter*.

if ( *FF2LTestRecord* is NOT found )

if ( ( *OpHourCount* is null ) OR ( *OpHourCount* is greater than 0 ) ) AND ( *TargetQuarter* is NOT equal to quarter of the ***PriorPEIRecord***.*EndDateHour* )  
Append *TargetQuarter* to *MissingQuarterList*.

else

if ( *OpHourCount* is NOT null )

if ( *FF2LTestRecord.TestResultCode* is equal to "PASSED" or "EXC168H" ) AND ( *OpHourCount* is less than 168 )

Append *TargetQuarter* to *BadResultQuarterList*.  
Append *FF2LTestRecord.TestNumber* to *BadResultTestList*.

else if ( *FF2LTestRecord.TestResultCode* is equal to "FEW168H" )  
AND ( *OpHourCount* is greater than or equal to 168 )

Append *TargetQuarter* to *BadResultQuarterList*.  
Append *FF2LTestRecord.TestNumber* to *BadResultTestList*.

if ( *MissingQuarterList* NOT equal to "" )

Set ***FF2LProblemQuarterList*** = *MissingQuarterList*.  
Set ***CurrentPEIStatus*** = "OOC-Missing Fuel Flow to Load Test".

else if ( *BadResultQuarterList* NOT equal to "" )

Set **FF2LProblemQuarterList** = *BadResultQuarterList*.  
Set **FF2LProblemTestnumList** = *BadResultTestList*.  
Set **CurrentPEIStatus** = "OOC-Invalid Fuel Flow to Load Test Result".

else

if ( *FF2LBaselineDataRecord*.CalendarYear/Quarter is after the quarter of the  
**PriorPEIRecord**.EndDateHour )

Set **FF2LProblemQuarterList** = "".

for each *TargetQuarter* from the quarter subsequent to the **PriorPEIRecord**.EndDateHour  
AND through the *FF2LBaselineDataRecord*.CalendarYear/Quarter.

Locate a **LocationReportingFrequency** record for the test location where:

- 1) ReportingFrequencyCode = "OS",
- 2) BeginQuarter is on or before *TargetQuarter* ,
- 3) EndQuarter is null or is on or after *TargetQuarter* .

If ( NOT found ) OR ( *TargetQuarter* is 2nd or 3rd quarter )

Locate a record in **FF2LTestRecordsByLocationForQASstatus** for the  
location where:

- 1) SystemID is equal to the  
**FuelFlowComponentRecordToCheck**.SystemID.
- 2) TestResultCode is equal to "INPROG".
- 3) CalendarYear/Quarter is equal to *TargetQuarter*.

if ( **FF2LTestRecordsByLocationForQASstatus** is NOT found )

Locate *SystemOperatingSuppDataRecord* in  
**SystemOperatingSuppDataRecordsByLocation** where:

- 1) SystemId is equal to  
**FuelFlowComponentRecordToCheck**.SystemId.
- 2) OpSuppDataTypeCode is equal to "OP".
- 3) Year/Quarter is equal to *TargetQuarter* .

if ( *SystemOperatingSuppDataRecord* is NOT null )

Set *OpHourCount* =  
*SystemOperatingSuppDataRecord*.Hours.

else

Locate *OperatingSuppDataRecord* in  
**OperatingSuppDataRecordsbyLocation** where:

- 1) FuelCode is equal to  
**CurrentFuelFlowRecord**.FuelCode.
- 2) OpTypeCode is equal to "OPHOURS".
- 3) Year/Quarter is equal to *TargetQuarter* .

if ( *OperatingSuppDataRecord* is NOT null )

Set *OpHourCount* =  
*OperatingSuppDataRecord*.OpValue.

else

Locate *OperatingSuppDataRecord* in ***OperatingSuppDataRecordsbyLocation*** where:

- 1) FuelCode is null.
- 2) OpTypeCode is equal to "OPHOURS".
- 3) Year/Quarter is equal to *TargetQuarter*.

if ( *OperatingSuppDataRecord* is NOT null )  
AND ( *OperatingSuppDataRecord*.OpValue is equal to 0 )

Set *OpHourCount* =  
*OperatingSuppDataRecord*.OpValue.

else

Set *OpHourCount* = null.

if ( ( *OpHourCount* is null ) AND ( *TargetQuarter* is on or after the quarter of ***CurrentFuelFlowRecord***.SystemBeginDate ) ) OR ( ( *OpHourCount* is NOT null ) AND ( *OpHourCount* is greater than 0 ) )

Append *TargetQuarter* to ***FF2LProblemQuarterList***.

if ( ***FF2LProblemQuarterList*** is NOT equal to "" )

Set ***CurrentPEIStatus*** = "OOC-Inprogress Fuel Flow to Load Test Required".

else

if ( ***CurrentOperatingQuarter*** is before the 5th quarter after the ***PriorPEIRecord***.EndDateHour )

Set ***FF2LProblemQuarterList*** = "".

for each *TargetQuarter* from the quarter subsequent to the ***PriorPEIRecord***.EndDateHour AND before the ***CurrentOperatingQuarter***.

Locate a ***LocationReportingFrequency*** record for the test location where:

- 1) ReportingFrequencyCode = "OS",
- 2) BeginQuarter is on or before *TargetQuarter* ,
- 3) EndQuarter is null or is on or after *TargetQuarter* .

If ( NOT found ) OR ( *TargetQuarter* is 2nd or 3rd quarter )

Locate a record in ***FF2LTestRecordsByLocationForQAStatus*** for the location where:

- 1) SystemID is equal to the ***FuelFlowComponentRecordToCheck***.SystemID.
- 2) TestResultCode is equal to "INPROG".
- 3) CalendarYear/Quarter is equal to *TargetQuarter*.

if ( ***FF2LTestRecordsByLocationForQAStatus*** is NOT found )

Locate *SystemOperatingSuppDataRecord* in  
***SystemOperatingSuppDataRecordsByLocation*** where:

- 1) SystemId is equal to ***FuelFlowComponentRecordToCheck***.SystemId.
- 2) OpSuppDataTypeCode is equal to "OP".
- 3) Year/Quarter is equal to *TargetQuarter* .

if ( *SystemOperatingSuppDataRecord* is NOT null )

Set *OpHourCount* = *SystemOperatingSuppDataRecord*.Hours.

else

Locate *OperatingSuppDataRecord* in  
***OperatingSuppDataRecordsbyLocation*** where:

- 1) FuelCode is equal to ***CurrentFuelFlowRecord***.FuelCode.
- 2) OpTypeCode is equal to "OPHOURS".
- 3) Year/Quarter is equal to *TargetQuarter* .

if ( *OperatingSuppDataRecord* is NOT null )

Set *OpHourCount* = *OperatingSuppDataRecord*.OpValue.

else

Locate *OperatingSuppDataRecord* in  
***OperatingSuppDataRecordsbyLocation*** where:

- 1) FuelCode is null.
- 2) OpTypeCode is equal to "OPHOURS".
- 3) Year/Quarter is equal to *TargetQuarter*.

if ( *OperatingSuppDataRecord* is NOT null ) AND ( *OperatingSuppDataRecord*.OpValue is equal to 0 )

Set *OpHourCount* =  
*OperatingSuppDataRecord*.OpValue.

else

Set *OpHourCount* = null.

if ( ( *OpHourCount* is null ) AND ( *TargetQuarter* is on or after the quarter of ***CurrentFuelFlowRecord***.SystemBeginDate ) ) OR ( ( *OpHourCount* is NOT null ) AND ( *OpHourCount* is greater than 0 ) )

Append *TargetQuarter* to ***FF2LProblemQuarterList***.

if ( ***FF2LProblemQuarterList*** is NOT equal to "" )

Set ***CurrentPEIStatus*** = "OOC-Inprogress Fuel Flow to Load Test Required".

else

Set ***CurrentPEIStatus*** = "OOC-Baseline Period Expired".

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
Fuel Flow to Load Test Has Not Yet Been Evaluated	The [testtype] status for [key] could not be determined, because a prior fuel-flow-to-load test for MonitoringSystemID [ID] with TestNumber [ff2ltestnum] has not yet been evaluated.	Critical Error Level 1
OOB-Baseline Period Expired	The [testtype] status for [key] could not be determined because a fuel-flow-to-load baseline for MonitoringSystemID [ID] was not reported, and the baseline deadline has expired.	Critical Error Level 1
OOB-Fuel Flow to Load Test Failed	The [testtype] status for [key] could not be determined, because a prior fuel-flow-to-load test for MonitoringSystemID [ID] with TestNumber [ff2ltestnum] has failed.	Critical Error Level 1
OOB-Fuel Flow to Load Test Has Critical Errors	The [testtype] status for [key] could not be determined, because a prior fuel-flow-to-load test for MonitoringSystemID [ID] with TestNumber [ff2ltestnum] has critical errors.	Critical Error Level 1
OOB-Inprogress Fuel Flow to Load Test Required	The [TESTTYPE] status for [KEY] could not be determined because expected "INPROG" Fuel-Flow-To-Load Test(s) for MonitoringSystemID [ID] are missing in quarter(s) [MISSINGFF2L].	Critical Error Level 1
OOB-Invalid Fuel Flow to Load Test	The [testtype] status for [key] could not be determined, because one or more prior fuel-flow-to-load tests, including the test for MonitoringSystemID [ID] with TestNumber [ff2ltestnum], are invalid. These tests may be invalid because (1) the TestResultCode indicates that baseline data collection is ongoing, yet you reported a prior test indicating that baseline data collection was completed; or (2) the TestResultCode indicates that there were fewer than 168 fuel QA operating hours in the quarter, yet your emissions data for that quarter indicates otherwise.	Critical Error Level 1
OOB-Invalid Fuel Flow to Load Test Result	The [TESTTYPE] status for [KEY] could not be determined because of Fuel-Flow-To-Load Test TestResult disagreement with Operating Hour Count for MonitoringSystemID [ID] and TestNumber(s) [FF2LTESTNUM].	Critical Error Level 1
OOB-Missing Fuel Flow to Load Test	The [testtype] status for [key] could not be determined, because a prior 'PASSED', 'EXC168H' or 'FEW168H' fuel-flow-to-load test for MonitoringSystemID [ID] was missing for [missingff2l].	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Fuel Flowmeter QA Status Evaluation

**Check Code:** ADESTAT-12

**Check Name:** Determine PEI Test Expiration Date

**Related Former Checks:**

**Applicability:**

**Description:** Determines the expiration date for the prior applicable PEITest.

**Specifications:**

Set *PEIMissingOpDataInfo* = null.

if (*PEIRequired* == true AND *CurrentPEIStatus* is null)

Set *PriorTestExpirationDate* = *PriorPEIRecord*.TestExpirationDate.

for each quarter subsequent to the quarter of the *PriorPEIRecord*.EndDate and prior to the quarter of the *CurrentOperatingDate*

Set *OSO Reporter* to false.

Locate a *LocationReportingFrequency* record for the test location where ReportingFrequencyCode = "OS", the BeginQuarter is on or before the quarter being checked, and the EndQuarter is null or is on or after the quarter being checked.

If found,

Set *OSO Reporter* to true.

if (*OSO Reporter* == false or the quarter to check is the 3rd quarter)

if (*FF2LPEIEligible* == true and the quarter to check is between the *FF2LPEIBeginYearQuarter* and the *FF2LPEIEndYearQuarter* (inclusive))

Add 1 quarter to the *PriorTestExpirationDate*.

else if (*OSO Reporter* == true and the quarter to check is the 2nd quarter)

if (*FF2LPEIEligible* == true and the quarter to check is between the *FF2LPEIBeginYearQuarter* and the *FF2LPEIEndYearQuarter* (inclusive))

Add 3 quarters to the *PriorTestExpirationDate*.

if (*CurrentOperatingDate* > *PriorTestExpirationDate*)

if (*PEIMissingOpDataInfo* is not null)

Set *CurrentPEIStatus* = "Missing Op Data"

else if (*FF2LPEIEligible* == false)

Set *CurrentPEIStatus* = "OOC-PEI Test Expired-Fuel Flow To Load Test Ignored"

else

Set *CurrentPEIStatus* = "OOC-PEI Test Expired"

Return result *CurrentPEIStatus*.

else

Set *CurrentPEIStatus* = "IC-Extension"

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
Missing Op Data	The [testtype] status for [key] could not be determined, because the Op Supp Data record for OPHOURS, OSHOURS, or OPDAYS is missing for [MISSINGOPDATAINFO] (and possibly other previous reporting periods). If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
OOO-PEI Test Expired	The prior [testtype] for [key] with TestNumber [testnum] has expired.	Critical Error Level 1
OOO-PEI Test Expired-Fuel Flow To Load Test Ignored	The prior [testtype] for [key] with TestNumber [testnum] has expired. A prior fuel-flow-to-load test for MonitoringSystemID [ID] was ignored.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Fuel Flowmeter QA Status Evaluation

**Check Code:** ADESTAT-13

**Check Name:** Determine System Appendix D Status

**Related Former Checks:**

**Applicability:**

**Description:** Determines the Appendix D status for the system based on current system status and the current component accuracy and/or PEI status.

**Specifications:**

if (*CurrentAppendixDStatus* == "OOC-Multiple Reasons" OR (*CurrentAppendixDStatus* starts with "OOC" and *CurrentAccuracyStatus* starts with "OOC" and *CurrentAppendixDStatus* <> *CurrentAccuracyStatus*))

Set *CurrentAppendixDStatus* = "OOC-Multiple Reasons"

else if (*CurrentAppendixDStatus* starts with "OOC")

--do nothing

else if (*CurrentAccuracyStatus* starts with "OOC")

Set *CurrentAppendixDStatus* = *CurrentAccuracyStatus*.

else if ((*CurrentAppendixDStatus* is not null and does not start with "IC" or "Undetermined" and *CurrentAppendixDStatus* does not end with "Not Yet Evaluated") and (*CurrentAccuracyStatus* does not start with "IC" or "Undetermined" and *CurrentAccuracyStatus* does not end with "Not Yet Evaluated") and *CurrentAppendixDStatus* <> *CurrentAccuracyStatus*)

Set *CurrentAppendixDStatus* = "Invalid Data".

else if (*CurrentAppendixDStatus* does not start with "IC" or "Undetermined" and *CurrentAppendixDStatus* does not end with "Not Yet Evaluated" AND *CurrentAppendixDStatus* is not null)

-- do nothing

else if (*CurrentAccuracyStatus* does not start with "IC" or "Undetermined" and *CurrentAccuracyStatus* does not end with "Not Yet Evaluated")

Set *CurrentAppendixDStatus* = *CurrentAccuracyStatus*.

else if (*CurrentAppendixDStatus* ends with "Not Yet Evaluated" or *CurrentAccuracyStatus* ends with "Not Yet Evaluated")

Set *CurrentAppendixDStatus* = "Test Not Yet Evaluated"

else if (*CurrentAppendixDStatus* starts with "Undetermined" or *CurrentAccuracyStatus* starts with "Undetermined")

Set *CurrentAppendixDStatus* = "Undetermined"

else if (*CurrentAppendixDStatus* == "IC-Extension" or *CurrentAccuracyStatus* == "IC-Extension")

Set *CurrentAppendixDStatus* = "IC-Extension"

else

Set *CurrentAppendixDStatus* = "IC"

if (*PEIRequired* == true)

if (*CurrentAppendixDStatus* == "OOC-Multiple Reasons" OR (*CurrentAppendixDStatus* starts with "OOC" and *CurrentPEIStatus* starts with "OOC" and *CurrentAppendixDStatus* <> *CurrentPEIStatus*))



Set *CurrentAppendixDStatus* = "OOC-Multiple Reasons"

else if (*CurrentAppendixDStatus* starts with "OOC")

-- do nothing

else if (*CurrentPEIStatus* starts with "OOC")

Set *CurrentAppendixDStatus* = *CurrentPEIStatus*.

else if ((*CurrentAppendixDStatus* is not null and does not start with "IC" or "Undetermined" and *CurrentAppendixDStatus* does not end with "Not Yet Evaluated") and (*CurrentPEIStatus* does not start with "IC" or "Undetermined" and *CurrentPEIStatus* does not end with "Not Yet Evaluated") and *CurrentAppendixDStatus* <> *CurrentPEIStatus*)

Set *CurrentAppendixDStatus* = "Invalid Data".

else if (*CurrentAppendixDStatus* does not start with "IC" or "Undetermined" and *CurrentAppendixDStatus* does not end with "Not Yet Evaluated" AND *CurrentAppendixDStatus* is not null)

-- do nothing

else if (*CurrentPEIStatus* does not start with "IC" or "Undetermined" and *CurrentPEIStatus* does not end with "Not Yet Evaluated")

Set *CurrentAppendixDStatus* = *CurrentPEIStatus*.

else if (*CurrentAppendixDStatus* ends with "Not Yet Evaluated" or *CurrentPEIStatus* ends with "Not Yet Evaluated")

Set *CurrentAppendixDStatus* = "Test Not Yet Evaluated"

else if (*CurrentAppendixDStatus* starts with "Undetermined" or *CurrentPEIStatus* starts with "Undetermined")

Set *CurrentAppendixDStatus* = "Undetermined"

else if (*CurrentAppendixDStatus* == "IC-Extension" or *CurrentPEIStatus* == "IC-Extension")

Set *CurrentAppendixDStatus* = "IC-Extension"

else

Set *CurrentAppendixDStatus* = "IC"

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Fuel Flowmeter QA Status Evaluation
---	-------------------	--

**Check Category:**

**Daily Calibration Status**

**Check Code:** DCSTAT-1

**Check Name:** Locate Most Recent Prior Daily Calibration Test

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Determines if there is an applicable prior Daily Calibration Test

**Specifications:**

Set *PriorDailyCalRecord* = null.  
 Set *PriorDailyCalLastCoveredNonOpHour* = null.  
 Set *PriorDailyCalFirstOpHourAfterLastNonOpHour* = null.  
 Set *InvalidDailyCalRecord* = null.

Locate the most recent record in *MostRecentDailyCalibrationTestObject* for the location where:

- a) ComponentID is equal to the *ApplicableComponentID* AND
- b) ValidFlag is equal to "Y" AND
- c) the SpanScaleCode is equal to the *CurrentAnalyzerRangeUsed*

if ( *MostRecentDailyCalibrationTestObject* is found ) AND  
 ( ( *AnnualReportingRequirement* equals true ) OR ( found *MostRecentDailyCalibrationTestObject*.DailyTestDate occurred on or after April 1st of the *CurrentOperatingDate* year ) )

Set *PriorDailyCalRecord* = the DailyCalibrationRecord for the found *MostRecentDailyCalibrationTestObject*.

if ( *QaStatusPrimaryOrPrimaryBypassSystemId* is null )

Set *PriorDailyCalLastCoveredNonOpHour* = the LastCoveredNonOpHour for the found *MostRecentDailyCalibrationTestObject*.  
 Set *PriorDailyCalFirstOpHourAfterLastNonOpHour* = the FirstOpHourAfterLastCoveredNonOpHour for the found *MostRecentDailyCalibrationTestObject*.

else if ( SystemDictionary for the found *MostRecentDailyCalibrationTestObject* contains *QaStatusPrimaryOrPrimaryBypassSystemId* ) )

Set *PriorDailyCalLastCoveredNonOpHour* = the LastCoveredNonOpHour for the *QaStatusPrimaryOrPrimaryBypassSystemId* entry in SystemDictionary for the found *MostRecentDailyCalibrationTestObject*.  
 Set *PriorDailyCalFirstOpHourAfterLastNonOpHour* = the FirstOpHourAfterLastCoveredNonOpHour for the *QaStatusPrimaryOrPrimaryBypassSystemId* entry in SystemDictionary for the found *MostRecentDailyCalibrationTestObject*.

Locate the most recent record in *MostRecentDailyCalibrationTestObject* for the location where:

- a) the ComponentID is equal to the *ApplicableComponentID* AND
- b) ValidFlag is equal to "N" AND
- c) the SpanScaleCode is equal to the *CurrentAnalyzerRangeUsed*

if ( *MostRecentDailyCalibrationTestObject* is found AND *MostRecentDailyCalibrationTestObject*.EndDate/Hour/Min is greater than the *PriorDailyCalRecord*.EndDate/Hour/Min )

Set *InvalidDailyCalRecord* = the DailyCalibrationRecord for the found *MostRecentDailyCalibrationTestObject*.

else

Locate the most recent record in *MostRecentDailyCalibrationTestObject* for the location where:

- a) the ComponentID is equal to the *ApplicableComponentID* AND
- b) ValidFlag is equal to "N" AND
- c) the SpanScaleCode is equal to the *CurrentAnalyzerRangeUsed*

if ( *MostRecentDailyCalibrationTestObject* is found )

Set *InvalidDailyCalRecord* = the DailyCalibrationRecord for the found *MostRecentDailyCalibrationTestObject*.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Daily Calibration Status Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- FLOW Daily Calibration Status Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- Hg Daily Calibration Status Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- NOX Daily Calibration Status Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOXR Unused P-PB CO2C, NOXC or O2C Daily Calibr
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Daily Calibration Status Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Daily Calibration Status Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- SO2 Daily Calibration Status Evaluation
9	Process/Category:	Emissions Data Evaluation Report ----- Flow Averaging Daily Calibration Status Evaluation

**Check Code:** DCSTAT-2

**Check Name:** Locate Most Recent Prior Event

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Determines if there is an applicable prior event.

**Specifications:**

Set *PriorDailyCalEventRecord* = null.  
 Set *CurrentDailyCalStatus* = null.

Locate the most recent record in *QACertificationEventRecords* where:

- a) the ComponentID is equal to the *ApplicableComponentID* AND
- b) the QACertEventDate/Hour is on or prior to the *CurrentDateHour* AND

AND either

- a) *PriorDailyCalRecord* is null AND the QACertEventDate/Hour is in the *CurrentReportingPeriod* OR
- b) QACertEventDate/Hour is after the *PriorDailyCalRecord.EndDate/Hour*

AND either

- a) *DualRangeStatus* = false OR
- b) *HighRangeComponentID* <> *LowRangeComponentID* OR
- c) QACertEventCode <> 20, 25, 26, 30, or 172 and *CurrentAnalyzerRangeUsed* = "H" OR
- d) QACertEventCode <> 35 or 171 and *CurrentAnalyzerRangeUsed* = "L"

if (*QACertificationEventRecords* is found)

Set *PriorDailyCalEventRecord* = the found record in *QACertificationEventRecords*

If (*PriorDailyCalEventRecord* is null)

if (*PriorDailyCalRecord* is null)

if (the number of clock hours between the *First Day of Operation/First Hour of Operation* and the *CurrentDateHour* is less than 25)

Set *CurrentDailyCalStatus* = "IC-Undetermined".

else if (*QaStatusSystemTypeCode* is equal to "HG" or "HCL", AND the number of clock hours between the *QaStatusComponentBeginDateHour* and the *CurrentDateHour* is less than 25)

Set *CurrentDailyCalStatus* = "IC-Undetermined".

else if (*QaStatusSystemTypeCode* is equal to "HG" or "HCL", AND *MatsDailyCalRequiredDate* is NOT null, AND *CurrentDateHour* is before *MatsDailyCalRequiredDate*)

Set *CurrentDailyCalStatus* = "IC-Undetermined".

else (*QaStatusSystemTypeCode* is equal to "HG" or "HCL", *QaStatusMatsErbDate* is not null, AND the number of clock hours between the *QaStatusMatsErbDate* hour 0 and the *CurrentDateHour* is less than 25)

Set *CurrentDailyCalStatus* = "IC-Undetermined".

else if (*QaStatusSystemTypeCode* is equal to "SO2", *So2cIsOnlyForMats* is true, AND *MatsDailyCalRequiredDate* is

NOT null, AND **CurrentDateHour** is before **MatsDailyCalRequiredDate**)

Set **CurrentDailyCalStatus** = "IC-Undetermined".

else

Locate the latest record in **HourlyOpData** where the Date/Hour is ON OR PRIOR to the 24th clock hour following the **First Day of Operation/First Hour of Operation** and OpTime is equal to zero.

if (**HourlyOpData** is found)

Locate the first record in **HourlyOpData** where the Date/Hour is after the Date/Hour in the **HourlyOpData** record found above and ON OR PRIOR to the **CurrentDateHour** and the OpTime is greater than zero.

if (not found OR the number of clock hours from **HourlyOpData**.Date/Hour to the **CurrentDateHour** is less than 8)

Set **CurrentDailyCalStatus** = "IC-Undetermined".

else

Set **CurrentDailyCalStatus** = "OOC-No Prior Test".

else

Set **CurrentDailyCalStatus** = "OOC-No Prior Test".

else

if (**PriorDailyCalRecord** .TestResultCode = null)

Set **CurrentDailyCalStatus** = "OOC-Test Has Critical Errors".

else if (**PriorDailyCalRecord** .TestResultCode = "FAILED")

Set **CurrentDailyCalStatus** = "OOC-Test Failed".

else if (**PriorDailyCalRecord** .TestResultCode = "ABORTED")

Set **CurrentDailyCalStatus** = "OOC-Test Aborted".

else

Set **CurrentDailyCalStatus** = "OOC-Event".

if (**InvalidDailyCalRecord** is not null and **InvalidDailyCalRecord**.EndDate/Hour is BEFORE the **PriorDailyCalEventRecord**.QACertEventDate/Hour)

Set **InvalidDailyCalRecord** = null.

#### Results:

Result

Response

Severity

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Daily Calibration Status Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- FLOW Daily Calibration Status Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- Hg Daily Calibration Status Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- NOX Daily Calibration Status Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOXR Unused P-PB CO2C, NOXC or O2C Daily Calibr
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Daily Calibration Status Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Daily Calibration Status Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- SO2 Daily Calibration Status Evaluation
9	Process/Category:	Emissions Data Evaluation Report ----- Flow Averaging Daily Calibration Status Evaluation

**Check Code:** DCSTAT-3

**Check Name:** Determine Test Expiration Date for Most Recent Prior Daily Calibration Test

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Determines the expiration dates for the Applicable Prior Daily Calibration test.

**Specifications:**

Set *OnlineDailyCalRecord* to null.

if ( *CurrentDailyCalStatus* is null )

if ( *PriorDailyCalRecord*.OnlineIndicator == 1 ) OR ( *PriorDailyCalRecord*.ComponentTypeCode == "HG" )

if ( the number of clock hours between the *PriorDailyCalRecord*.Date/Hour and the *CurrentDateHour* is less than 26 )

Set *CurrentDailyCalStatus* = "IC".

else

if ( *PriorDailyCalLastCoveredNonOpHour* is NOT null )

if ( *PriorDailyCalFirstOpHourAfterLastNonOpHour* is NOT null ) AND ( the number of clock hours between the *PriorDailyCalFirstOpHourAfterLastNonOpHour* and the *CurrentDateHour* is greater than or equal to 8 )

Set *CurrentDailyCalStatus* = "OOC-Expired".

else

Set *CurrentDailyCalStatus* = "IC-Grace".

else

Set *CurrentDailyCalStatus* = "OOC-Expired".

else

Locate the most recent record in *MostRecentDailyCalibrationTestObject* for the location where:

- a) ComponentID is equal to the *ApplicableComponentID* AND
- b) ValidFlag is equal to "Y" AND
- c) the OnlineIndicator = 1 AND
- d) the SpanScaleCode is equal to the *CurrentAnalyzerRangeUsed*

if ( *MostRecentDailyCalibrationTestObject* is found )

Set *OnlineDailyCalRecord* = the DailyCalibrationRecord for the found *MostRecentDailyCalibrationTestObject*.

if ( *QaStatusPrimaryOrPrimaryBypassSystemId* is null )

Set *OnlineDailyCalOpHourCount* = the OperatingHourCount for the found *MostRecentDailyCalibrationTestObject*.

Set *OnlineDailyCalLastCoveredNonOpHour* = the LastCoveredNonOpHour for the found *MostRecentDailyCalibrationTestObject*.

Set *OnlineDailyCalFirstOpHourAfterLastNonOpHour* = the FirstOpHourAfterLastCoveredNonOpHour for the found *MostRecentDailyCalibrationTestObject*.



else if ( SystemDictionary for the found ***MostRecentDailyCalibrationTestObject*** contains ***QaStatusPrimaryOrPrimaryBypassSystemId*** ) )

Set ***OnlineDailyCalOpHourCount*** = the OperatingHourCount for the ***QaStatusPrimaryOrPrimaryBypassSystemId*** entry in SystemDictionary for the found ***MostRecentDailyCalibrationTestObject***.

Set ***OnlineDailyCalLastCoveredNonOpHour*** = the LastCoveredNonOpHour for the ***QaStatusPrimaryOrPrimaryBypassSystemId*** entry in SystemDictionary for the found ***MostRecentDailyCalibrationTestObject***.

Set ***OnlineDailyCalFirstOpHourAfterLastNonOpHour*** = the FirstOpHourAfterLastCoveredNonOpHour for the ***QaStatusPrimaryOrPrimaryBypassSystemId*** entry in SystemDictionary for the found ***MostRecentDailyCalibrationTestObject***.

else

Set ***OnlineDailyCalOpHourCount*** = null.

Set ***OnlineDailyCalLastCoveredNonOpHour*** = null.

Set ***OnlineDailyCalFirstOpHourAfterLastNonOpHour*** = null.

if ( ***InvalidDailyCalRecord*** is null )

Locate the record in ***MostRecentDailyCalibrationTestObject*** for the location where:

a) the ComponentID is equal to the ***ApplicableComponentID*** AND

b) ValidFlag is equal to "N" AND

c) the OnlineIndicator = 1 AND

d) the SpanScaleCode is equal to the ***CurrentAnalyzerRangeUsed***

if ( ***MostRecentDailyCalibrationTestObject*** is found AND the ***MostRecentDailyCalibrationTestObject***.EndDate/Hour is after the ***OnlineDailyCalRecord***.EndDate/Hour AND is equal to or prior to the ***PriorDailyCalRecord***.Date/Hour )

set ***InvalidDailyCalRecord*** = the DailyCalibrationRecord for the found ***MostRecentDailyCalibrationTestObject***.

if ( ***OnlineDailyCalRecord*** .TestResultCode = null )

Set ***CurrentDailyCalStatus*** = "OOC-Prior Online Test Has Critical Errors".

else if ( ***OnlineDailyCalRecord*** .TestResultCode = "FAILED" )

Set ***CurrentDailyCalStatus*** = "OOC-Prior Online Test Failed".

else if ( ***OnlineDailyCalRecord*** .TestResultCode = "ABORTED" )

Set ***CurrentDailyCalStatus*** = "OOC-Prior Online Test Aborted".

else if ( ***OnlineDailyCalOpHourCount*** is not null AND ***OnlineDailyCalOpHourCount*** is less than or equal to 26 AND the number of clock hours between the ***PriorDailyCalRecord***.Date/Hour and the ***CurrentDateHour*** is less than 26 )

Set ***CurrentDailyCalStatus*** = "IC".

else if ( the number of clock hours between the ***OnlineDailyCalRecord***.Date/Hour and the ***CurrentDateHour*** is less than 26 )

```

        Set CurrentDailyCalStatus = "IC".

    else

        if ( OnlineDailyCalLastCoveredNonOpHour is NOT null )

            if ( OnlineDailyCalFirstOpHourAfterLastNonOpHour is NOT null ) AND ( the number of clock
            hours between the OnlineDailyCalFirstOpHourAfterLastNonOpHour and the CurrentDateHour
            is greater than or equal to 8 )

                Set CurrentDailyCalStatus = "OOC-Expired".

            else

                Set CurrentDailyCalStatus = "IC-Grace".

        else

            Set CurrentDailyCalStatus = "OOC-Expired".

    else

        if ( Rpt Period Op Hour Accumulator Array for the location is less than 26)

            Set CurrentDailyCalStatus = "IC-Undetermined".

        else

            Set CurrentDailyCalStatus = "OOC-Expired".

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Daily Calibration Status Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- FLOW Daily Calibration Status Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- Hg Daily Calibration Status Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- NOX Daily Calibration Status Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOXR Unused P-PB CO2C, NOXC or O2C Daily Calibr
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Daily Calibration Status Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Daily Calibration Status Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- SO2 Daily Calibration Status Evaluation
9	Process/Category:	Emissions Data Evaluation Report ----- Flow Averaging Daily Calibration Status Evaluation

<b>Check Code:</b>	DCSTAT-4
<b>Check Name:</b>	Determine Final Daily Calibration Status
<b>Related Former Checks:</b>	
<b>Applicability:</b>	CEM Check
<b>Description:</b>	Evaluates the determined Daily Calibration Status and changes it if needed based on an ignored test or the status of the alternate range.

**Specifications:**

Set *AlternateDailyCalRecord* = null.

if (*CurrentDailyCalStatus* begins with "OOC")

    if (*InvalidDailyCalRecord* is not null)

        Set *CurrentDailyCalStatus* = *CurrentDailyCalStatus* & "\*".

    Return result *CurrentDailyCalStatus*.

else if (*DualRangeStatus* = true and *CurrentDailyCalStatus* begins with "IC")

    if (*CurrentAnalyzerRangeUsed* = "H")

        Set *AlternateAnalyzerRange* = "L".

        Set *AlternateComponentID* = *LowRangeComponentID*.

    else

        Set *AlternateAnalyzerRange* = "H".

        Set *AlternateComponentID* = *HighRangeComponentID*.

    Locate the most recent record in *DailyCalTestRecordsByLocationForQAStatus* for the location where:

- a) ComponentID is equal to the *AlternateComponentID* AND
- b) ValidFlag = "Y" AND
- c) SpanScaleCode is equal to the *AlternateAnalyzerRange*

    if (*DailyCalTestRecordsByLocationForQAStatus* is found)

        Set *AlternateDailyCalRecord* = the found record in *DailyCalTestRecordsByLocationForQAStatus*.

    if (*AlternateDailyCalRecord* is not null)

        if (*AlternateDailyCalRecord*.TestResultCode = null)

            Set *CurrentDailyCalStatus* = "OOC-Alternate Range Test Has Critical Errors".

        else if (*AlternateDailyCalRecord*.TestResultCode = "FAILED")

            Set *CurrentDailyCalStatus* = "OOC-Alternate Range Test Failed".

        else if (*AlternateDailyCalRecord*.TestResultCode = "ABORTED")

            Set *CurrentDailyCalStatus* = "OOC-Alternate Range Test Aborted".

    else

        Locate the latest record in *DailyCalTestRecordsByLocationForQAStatus* for the location that is in or before the

**CurrentOperatingDateHour** where:

- a) ComponentID is equal to the *AlternateComponentID* AND
- b) the SpanScaleCode is equal to the *AlternateAnalyzerRange*
- c) the TestResultCode is equal to "FAILED" or "ABORTED"

if (*DailyCalTestRecordsByLocationForQAStatus* is found AND (either the *PriorDailyCalRecord* is null or EndDate/Hour/Minute is after the *PriorDailyCalRecord.EndDate/Hour/Minute*))

Set **CurrentDailyCalStatus** = "OOC-No Passing Test After Alternate Range Failed Test".  
(Report this status in the Evaluation Report under the *PriorDailyCalRecord.TestDate/Hour.*)

else if ( the time ranges between ZeroInjectionDate/Hour/Minute and UpscaleInjectionDate/Hour/Minute for the found test and *PriorDailyCalRecord* overlap )

Set **CurrentDailyCalStatus** = "OOC-Passed Alternate Range Test Overlaps Failed Current Range Test".  
(Report this status in the Evaluation Report under the *PriorDailyCalRecord.TestDate/Hour.*)

else

Locate the latest record in *DailyCalTestRecordsByLocationForQAStatus* for the location that is in or before the **CurrentOperatingDateHour** where:

- a) ComponentID is equal to the *ApplicableComponentID* AND
- b) the SpanScaleCode is equal to the *CurrentAnalyzerRangeUsed*
- c) the TestResultCode is equal to "FAILED" or "ABORTED"

if ( *DailyCalTestRecordsByLocationForQAStatus* is found )

if ( EndDate/Hour/Minute is after the *AlternateDailyCalRecord.EndDate/Hour/Minute* )

Set **CurrentDailyCalStatus** = "OOC-No Passing Alternate Range Test After Failed Test".  
(Report this status in the Evaluation Report under the *PriorDailyCalRecord.TestDate/Hour.*)

else if ( the time ranges between ZeroInjectionDate/Hour/Minute and UpscaleInjectionDate/Hour/Minute for the found test and *AlternateDailyCalRecord* overlap )

Set **CurrentDailyCalStatus** = "OOC-Passed Alternate Range Test Overlaps Failed Current Range Test".  
(Report this status in the Evaluation Report under the *PriorDailyCalRecord.TestDate/Hour.*)

if (**CurrentDailyCalStatus** begins with "OOC")

if (*InvalidDailyCalRecord* is not null)

Set **CurrentDailyCalStatus** = **CurrentDailyCalStatus** & "\*".

else

Locate the most recent record in *DailyCalTestRecordsByLocationForQAStatus* for the location where:

- a) ComponentID is equal to the *AlternateComponentID* AND
- b) ValidFlag is equal to "N" AND
- c) the SpanScaleCode is equal to the *AlternateAnalyzerRange*

if (*DailyCalTestRecordsByLocationForQAStatus* is found AND the EndDate/Hour is after the

---

*AlternateDailyCalRecord.EndDate/Hour*)

Set *InvalidDailyCalRecord* = the found record in *DailyCalTestRecordsByLocationForQAStatus*.  
Set *CurrentDailyCalStatus* = *CurrentDailyCalStatus* & "\*".

Return result *CurrentDailyCalStatus* .

elseif (*CurrentDailyCalStatus* does not begin with "IC")

Return result *CurrentDailyCalStatus* .

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
OOO-Alternate Range Test Aborted	The prior daily calibration test for the alternate range [altscale] of [compkey], which was completed on [altdat], was aborted.	Critical Error Level 1
OOO-Alternate Range Test Aborted*	The prior daily calibration test for the alternate range [altscale] of [compkey], which was completed on [altdat], was aborted. An invalid daily calibration test completed on [invdate] was ignored.	Critical Error Level 1
OOO-Alternate Range Test Failed	The prior daily calibration test for the alternate range [altscale] of [compkey], which was completed on [altdat], failed.	Critical Error Level 1
OOO-Alternate Range Test Failed*	The prior daily calibration test for the alternate range [altscale] of [compkey], which was completed on [altdat], failed. An invalid daily calibration test completed on [invdate] was ignored.	Critical Error Level 1
OOO-Alternate Range Test Has Critical Errors	The prior daily calibration test for the alternate range [altscale] of [compkey], which was completed on [altdat], has critical errors.	Critical Error Level 1
OOO-Alternate Range Test Has Critical Errors*	The prior daily calibration test for the alternate range [altscale] of [compkey], which was completed on [altdat], has critical errors. An invalid daily calibration test completed on [invdate] was ignored.	Critical Error Level 1
OOO-Event	You reported a QA Certification Event record for QACertEventCode [code] QACertEventDate [eventdate] for [compkey], but you did not perform a subsequent daily calibration test.	Critical Error Level 1
OOO-Event*	You reported a QA Certification Event record for QACertEventCode [code] QACertEventDate [eventdate] for [compkey], but you did not perform a subsequent daily calibration test. An invalid daily calibration test completed on [invdate] was ignored.	Critical Error Level 1
OOO-Expired	The prior daily calibration test for [compkey] completed on [date] has expired.	Critical Error Level 1
OOO-Expired*	The prior daily calibration test for [compkey] completed on [date] has expired. An invalid daily calibration test completed on [invdate] was ignored.	Critical Error Level 1
OOO-No Passing Alternate Range Test After Failed Test	The prior daily calibration test for [compkey] was completed on [date], however a subsequent passing test on [altscale] has not been completed. When a daily calibration test is failed for a dual-range analyzer, you must complete a passing daily calibration test on both ranges before the monitor is considered to be in-control. An invalid daily calibration test completed on [invdate] was ignored.	Critical Error Level 1
OOO-No Passing Alternate Range Test After Failed Test*	The prior daily calibration test for [compkey] was completed on [date], however a subsequent passing test on [altscale] has not been completed. When a daily calibration test is failed for a dual-range analyzer, you must complete a passing daily calibration test on both ranges before the monitor is considered to be in-control. An invalid daily calibration test completed on [invdate] was ignored.	Critical Error Level 1
OOO-No Passing Test After Alternate Range Failed Test	The prior daily calibration test for [compkey] was completed on [date], which is prior to a failed or aborted test for the alternate range [altscale]. When a daily calibration test is failed for a dual-range analyzer, you must complete a passing daily calibration test on both ranges before the monitor is considered to be in-control.	Critical Error Level 1
OOO-No Passing Test After Alternate Range Failed Test*	The prior daily calibration test for [compkey] was completed on [date], which is prior to a failed or aborted test for the alternate range [altscale]. When a daily calibration test is failed for a dual-range analyzer, you must complete a passing daily calibration test on both ranges before the monitor is considered to be in-control. An invalid daily calibration test completed on [invdate] was ignored.	Critical Error Level 1
OOO-No Prior Test	You did not report a prior daily calibration test for [compkey] during the reporting period. Any daily calibration test that may have been completed in a prior reporting period has expired.	Critical Error Level 1
OOO-No Prior Test*	You did not report a prior daily calibration test for [compkey] during the reporting period. Any daily calibration test that may have been completed in a prior reporting period has expired. An invalid daily calibration test completed on [invdate] was ignored.	Critical Error Level 1
OOO-No Probationary Calibration Test	This check result is obsolete.	No Errors

OOO-No Probationary Calibration Test*	This check result is obsolete.	No Errors
OOO-Passed Alternate Range Test Overlaps Failed Current Range Test	The prior daily calibration test for [compkey] was completed on [date]. However the prior passed alternative range [altscale] test overlaps a previous failed or aborted current range [curscale] test. When a daily calibration test is failed for a dual-range analyzer, you must complete a passing daily calibration test, after the failed test ends, on both ranges before the monitor is considered to be in-control.	Critical Error Level 1
OOO-Passed Alternate Range Test Overlaps Failed Current Range Test*	The prior daily calibration test for [compkey] was completed on [date]. However the prior passed alternative range [altscale] test overlaps a previous failed or aborted current range [curscale] test. When a daily calibration test is failed for a dual-range analyzer, you must complete a passing daily calibration test, after the failed test ends, on both ranges before the monitor is considered to be in-control. An invalid daily calibration test completed on [invdate] was ignored.	Critical Error Level 1
OOO-Passed Prior Test Overlaps Alternate Range Failed Test	The prior daily calibration test for [compkey] was completed on [date] but overlaps with a failed or aborted alternative range [altscale] test. When a daily calibration test is failed for a dual-range analyzer, you must complete a passing daily calibration test, after the failed test ends, on both ranges before the monitor is considered to be in-control.	Critical Error Level 1
OOO-Passed Prior Test Overlaps Alternate Range Failed Test*	The prior daily calibration test for [compkey] was completed on [date] but overlaps with a failed or aborted alternative range [altscale] test. When a daily calibration test is failed for a dual-range analyzer, you must complete a passing daily calibration test, after the failed test ends, on both ranges before the monitor is considered to be in-control. An invalid daily calibration test completed on [invdate] was ignored.	Critical Error Level 1
OOO-Prior Online Test Aborted	The prior online daily calibration test for [compkey] completed on [ondate] was aborted.	Critical Error Level 1
OOO-Prior Online Test Aborted*	The prior online daily calibration test for [compkey] completed on [ondate] was aborted. An invalid daily calibration test completed on [invdate] was ignored.	Critical Error Level 1
OOO-Prior Online Test Expired	The prior online daily calibration test for [compkey] completed on [ondate] has expired.	Critical Error Level 1
OOO-Prior Online Test Expired*	The prior online daily calibration test for [compkey] completed on [ondate] has expired. An invalid daily calibration test completed on [invdate] was ignored.	Critical Error Level 1
OOO-Prior Online Test Failed	The prior online daily calibration test for [compkey] completed on [ondate] failed.	Critical Error Level 1
OOO-Prior Online Test Failed*	The prior online daily calibration test for [compkey] completed on [ondate] failed. An invalid daily calibration test completed on [invdate] was ignored.	Critical Error Level 1
OOO-Prior Online Test Has Critical Errors	The prior online daily calibration test for [compkey] completed on [ondate] has critical errors.	Critical Error Level 1
OOO-Prior Online Test Has Critical Errors*	The prior online daily calibration test for [compkey] completed on [ondate] has critical errors. An invalid daily calibration test completed on [invdate] was ignored.	Critical Error Level 1
OOO-Test Aborted	The prior daily calibration test for [compkey] completed on [date] was aborted.	Critical Error Level 1
OOO-Test Aborted*	The prior daily calibration test for [compkey] completed on [date] was aborted. An invalid daily calibration test completed on [invdate] was ignored.	Critical Error Level 1
OOO-Test Failed	The prior daily calibration test for [compkey] completed on [date] failed.	Critical Error Level 1
OOO-Test Failed*	The prior daily calibration test for [compkey] completed on [date] failed. An invalid daily calibration test completed on [invdate] was ignored.	Critical Error Level 1
OOO-Test Has Critical Errors	The prior daily calibration test for [compkey] completed on [date] has critical errors.	Critical Error Level 1
OOO-Test Has Critical Errors*	The prior daily calibration test for [compkey] completed on [date] has critical errors. An invalid daily calibration test completed on [invdate] was ignored.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Daily Calibration Status Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- FLOW Daily Calibration Status Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- Hg Daily Calibration Status Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- NOX Daily Calibration Status Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOXR Unused P-PB CO2C, NOXC or O2C Daily Calibr
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Daily Calibration Status Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Daily Calibration Status Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- SO2 Daily Calibration Status Evaluation
9	Process/Category:	Emissions Data Evaluation Report ----- Flow Averaging Daily Calibration Status Evaluation



**Check Category:**

**Daily Calibration Test**

**Check Code:** DAYCAL-1

**Check Name:** Daily Calibration Test Component Type Check

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check determines whether the component type reported is appropriate for an Daily Calibration test.

**Specifications:**

For the daily calibration test:

Set **Daily Cal Calc Result** to null.

Set **Daily Cal Fail Date** and **Daily Cal Fail Hour** to null.

If the ComponentID is null,

set **Daily Cal Component Type Valid** to false.

return result A.

Otherwise,

If the ComponentTypeCode of the associated component is equal to "SO2", "NOX", "CO2", "O2", or "FLOW",

set **Daily Cal Component Type Valid** to true.

Else if the ComponentTypeCode of the associated component is equal to "HG" AND Date is on or after 9/9/2020,

set **Daily Cal Component Type Valid** to true.

Else if the ComponentTypeCode of the associated component is equal to "HG" or "HCL",

If (OnlineOfflineIndicator is equal to 1)

set **Daily Cal Component Type Valid** to true.

Else

set **Daily Cal Component Type Valid** to false.

return result C.

Otherwise,

set **Daily Cal Component Type Valid** to false.

return result B.

If component is invalid, do not perform injection-based checks. Set the calculated values to null.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Fatal
B	The ComponentTypeCode in the monitoring plan is [comptype]. This type of component does not require a calibration test. Only component types 'SO2', 'NOX', 'CO2', 'O2', 'HG', or 'FLOW' may have a daily calibration test.	Critical Error Level 1
C	Hg CEMS calibrations performed before September 9, 2020 and all HCl CEMS calibrations must be performed while the unit is online.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Daily Calibration Test
---	-------------------	---

**Check Code:** DAYCAL-2

**Check Name:** Aborted and Incomplete Daily Calibration Test Check

**Related Former Checks:**

**Applicability:** CEM Check

**Description:**

**Specifications:**

For the daily calibration test:

Set *Evaluate Upscale Injection* AND *Evaluate Zero Injection* to false.

If *Daily Cal Component Type Valid* is equal to true,

If the TestResultCode is equal to "ABORTED",  
set *Daily Cal Calc Result* to "ABORTED", and return result A.

If the TestResultCode is equal to "INC",  
set *Daily Cal Calc Result* to "INC".

If ZeroInjectionDate, ZeroInjectionHour, and ZeroMeasuredValue are not null,  
set *Evaluate Zero Injection* to true.

If UpscaleInjectionDate, UpscaleInjectionHour, and UpscaleMeasuredValue are not null,  
set *Evaluate Upscale Injection* to true.

Otherwise,  
set *Evaluate Upscale Injection* AND *Evaluate Zero Injection* to true.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The TestResultCode indicates that the [type] test for [key] was aborted. If the test was aborted for a reason not related to monitor performance, you should not report the test.	Informational Message

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-3

**Check Name:** Online Offline Indicator Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:**

**Specifications:**

For a daily calibration test:

Set **Daily Cal Calc Online Ind** to null.

If ZeroOpTime is equal to 0 OR UpscaleOpTime is equal to 0  
set **Daily Cal Calc Online Ind** to 0

Else If ZeroOpTime is equal to 1 AND UpscaleOpTime is equal to 1  
set **Daily Cal Calc Online Ind** to 1

Else  
set **Daily Cal Calc Online Ind** to the OnlineOfflineIndicator.

If ( OnlineOfflineIndicator is null )  
return result A.

Else If ( ComponentTypeCode is equal to "HG" or "HCL" )

If ( OnlineOfflineIndicator is equal to 1 ) AND ( **Daily Cal Calc Online Ind** is equal to 0 )

If ( ComponentTypeCode is equal to "HG" ) AND ( Date is on or after 9/9/2020 )  
return result B.

Else  
return result E.

Else

If ( **Daily Cal Calc Online Ind** is equal to 0 )

If ( OnlineOfflineIndicator is equal to 1 )  
return result B.

else

Locate the latest **OOO Test Record** for the location where the ComponentID and SpanScaleCode is equal to the ComponentID and SpanScaleCode in the current test and the EndDate/Hour is prior to the Date/Hour of the current test.

If not found,

Set **Ignored Daily Calibration Tests** to true.

If (**Daily Cal Calc Result** <> "INVALID")

set **Daily Cal Calc Result** to "IGNORED"

Otherwise,

Locate an **QA Certification Event Record** for the location where the ComponentID is equal to the ComponentID in the current test AND OOCRequired == "Y" AND the EventDate/Hour is after the EndDate/Hour of the retrieved OOC test AND the EventDate/Hour is on or before the EndDate/Hour of the current test AND EITHER

a) SpanScaleCode in the current test is null OR

- b) SpanScaleCode in the current test == "H" and QACertEventCode <> 20, 25, 26, 30, or 172 OR  
c) SpanScaleCode in the current test == "L" and QACertEventCode <> 35 or 171

If found,  
return result D.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The OnlineOfflineIndicator in the daily calibration test indicates that the test was performed on-line, but OperatingTime in the Hourly Operating Data record is 0.	Critical Error Level 1
C	This check result is obsolete.	No Errors
D	The test was performed while the unit was not operating, but this is not valid, because you reported an QA Certification Event record indicating that you needed to perform an online-offline calibration demonstration allowing you to conduct off-line daily calibration tests. However, you have not reported an online-offline calibration demonstration subsequent to the EventDate and EventHour in the QA Certification Event record.	Critical Error Level 2
E	Hg CEMS calibrations performed before September 9, 2020 and all HCl CEMS calibrations must be performed while the unit is online.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-4

**Check Name:** Test Span Scale Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check determines whether the reported span scale is valid and consistent with the current analyzer range of the component.

**Specifications:**

For a daily calibration test with a valid component:

Set *Daily Cal Span Scale Valid* to true.

If the ComponentTypeCode of the associated component is not equal to "FLOW", not equal to "HG", or not equal to "HCL",

If the SpanScaleCode is null,

set *Daily Cal Span Scale Valid* to false, and return result A.

If the SpanScaleCode is not equal to "H" or "L",

set *Daily Cal Span Scale Valid* to false, and return result B.

If the *EM Test Date Valid* AND *EM Test Hour Valid* are true,

If the SpanScaleCode is equal to "H"

Locate an Analyzer Range record for the component where the AnalyzerRangeCode is equal to "L", the BeginDate and BeginHour is on or before the Date and Hour in the current test, and the EndDate is null or the EndDate and EndHour is on or after the Date and Hour of the current test.

If found,

set *Daily Cal Span Scale Valid* to false, and return result C.

If the SpanScaleCode is equal to "L"

Locate an Analyzer Range record for the component where the AnalyzerRangeCode is equal to "H", the BeginDate and BeginHour is on or before the Date and Hour of the current test, and the EndDate is null or the EndDate and EndHour is on or after the Date and Hour of the current test.

If found,

set *Daily Cal Span Scale Valid* to false, and return result C.

Else, if the ComponentTypeCode of the associated component is equal to "HG" or "HCL",

If the SpanScaleCode is null,

set *Daily Cal Span Scale Valid* to false, and return result A.

Else if the SpanScaleCode is not equal to "H",

set *Daily Cal Span Scale Valid* to false, and return result B.

Otherwise,

If the SpanScaleCode is not null,

set *Daily Cal Span Scale Valid* to false, and return result D.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1
C	The active analyzer range for the component is inconsistent with the span scale [value] reported for the [type] test for [key].	Critical Error Level 1
D	You reported a SpanScaleCode in the [type] test for [key], but this is not appropriate for flow component.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Daily Calibration Test
---	-------------------	---



**Check Code:** DAYCAL-5  
**Check Name:** Determine Span Value  
**Related Former Checks:**  
**Applicability:** CEM Check  
**Description:** This check determines the span value for the test:  
**Specifications:**

For a daily calibration test:

Set *Daily Cal Span Value* to null.

If *EM Test Date Valid*, *EM Test Hour Valid*, and *Daily Cal Span Scale Value* are all true,

Locate the System Component records for the associated component with the earliest Begin Date.

If found,

If the BeginDate in the retrieved record is not null, the BeginHour in the retrieved record is between 0 and 23, and the BeginDate and BeginHour is later than the Date and Hour of the test.

Locate a Span Record for the location where the ComponentTypeCode equal to the ComponentTypeCode of the associated component, the SpanScaleCode is equal to the SpanScaleCode in the test, the Span Value is greater than 0, the BeginDate and BeginHour is on or before the BeginDate and BeginHour of the retrieved record, and the EndDate is null or the EndDate and EndHour is after the BeginDate and BeginHour of the retrieved record.

Otherwise,

Locate a Span Record for the location where the ComponentTypeCode equal to the ComponentTypeCode of the associated component, the SpanScaleCode is equal to the SpanScaleCode in the test, the Span Value is greater than 0, the BeginDate and BeginHour is on or before the Date and Hour of the test, and the EndDate is null or the EndDate and EndHour is after the Date and Hour of the test.

If not found,  
return result A.

If more than one record is found,  
return result B.

If one record is found,  
set *Daily Cal Span Value* to the SpanValue in the retrieved span record.

else  
return result C.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You have not reported a valid monitoring plan span record that was active during the test for [key].	Critical Error Level 1
B	You reported more than one monitoring plan span record that was active during the test for [key].	Critical Error Level 1
C	The component reported for [key] is not part of any monitoring system.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-6

**Check Name:** Daily Calibration Test Upscale Gas Level Code Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check is to make sure that the Upscale Gas Level Code is valid.

**Specifications:**

For the daily calibration test with an upscale injection:

If the UpscaleGasCode is null,  
set ***Daily Cal Upscale Gas Level Valid*** to false, and return result A.

If the UpscaleGasCode is not equal to "MID" or "HIGH",  
set ***Daily Cal Upscale Gas Level Valid*** to false, and return result B.

If the ComponentTypeCode of the associated component is equal to "FLOW", and the UpscaleGasLevelCode is equal to "MID",  
set ***Daily Cal Upscale Gas Level Valid*** to false, and return result C.

Otherwise,  
set ***Daily Cal Upscale Gas Level Valid*** to true.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1
C	You have reported a value of "MID" as the UpscaleGasCode. This value is not appropriate for flow components.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-7

**Check Name:** Reference Values Consistent with Calibration Gas Levels

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check is to identify reference values which are not correct relative to the calibration gas levels indicated.

**Specifications:**

For the daily calibration test with an upscale and zero injection:

If ZeroReferenceValue greater than or equal to 0, UpscaleReferenceValue greater than 0, AND ZeroReferenceValue is greater than or equal to UpscaleReferenceValue,  
set **Daily Cal Calc Result** to "INVALID", and return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The reference value is not consistent with the reported calibration gas levels in the daily calibration test for [key]. The reference values of zero-level gas injection or reference signals must be less than that of the upscale gas injection.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Daily Calibration Test
---	-------------------	---

**Check Code:** DAYCAL-8

**Check Name:** Zero Measured Value Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check is to make sure that the Zero Measured Value is reported.

**Specifications:**

For the daily calibration test with a zero injection:

    If ZeroMeasuredValue is null,  
        return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Daily Calibration Test
---	-------------------	---

**Check Code:** DAYCAL-9

**Check Name:** Zero Reference Value Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check is to make sure that the Zero Reference Value is reported.

**Specifications:**

For the daily calibration test with a zero injection:

If ZeroReferenceValue is null,  
return result A.

If ZeroReferenceValue is less than 0,  
return result B.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-10

**Check Name:** Zero Calibration Error Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check is to make sure that the Zero Calibration Error is reported.

**Specifications:**

For the daily calibration test with a zero injection:

If the ZeroCalibrationError is null,  
return result A.

If the ZeroCalibrationError is less than 0,  
return result B.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-11

**Check Name:** Zero APS Indicator Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:**

**Specifications:**

For the daily calibration test with a zero injection:

If ZeroAPSIndicator is null,  
return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Daily Calibration Test



**Check Code:** DAYCAL-12

**Check Name:** Upscale Measured Value Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check is to make sure that the Upscale Measured Value is reported.

**Specifications:**

For the daily calibration test with an upscale injection:

    If UpscaleMeasuredValue is null,  
        return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Daily Calibration Test
---	-------------------	---

**Check Code:** DAYCAL-13

**Check Name:** Upscale Reference Value Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check is to make sure that the Upscale Reference Value is reported.

**Specifications:**

For the daily calibration test with an upscale injection:

If UpscaleReferenceValue is null,  
return result A.

If UpscaleReferenceValue is less than or equal to 0,  
return result B.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than zero.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-14

**Check Name:** Upscale Calibration Error Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check is to make sure that the Upscale Calibration Error is reported.

**Specifications:**

For the daily calibration test with an upscale injection:

If the UpscaleCalibrationError is null,  
return result A.

If the UpscaleCalibrationError is less than 0,  
return result B.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-15

**Check Name:** Upscale APS Indicator Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:**

**Specifications:**

For the daily calibration test with an upscale injection:

    If UpscaleAPSIndicator is null,  
        return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-16

**Check Name:** Upscale Injection Time Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check determines whether the Injection Date and Hour reported in the Injection Element is valid.

**Specifications:**

For the daily calibration test with an upscale injection:

If the UpscaleInjectionHour is not between 0 and 23, or the UpscaleInjectionMinute is null and *Legacy Data Evaluation* == false, or the UpscaleInjectionMinute is not between 0 and 59,

set *Daily Cal Upscale Injection Time Valid* to false, and return result A.

Otherwise,  
set *Daily Cal Upscale Injection Time Valid* to true.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The [type] date, hour, and/or minute for [key] is invalid.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-17

**Check Name:** Zero Injection Time Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check determines whether the Injection Date and Hour reported in the Injection Element is valid.

**Specifications:**

For the daily calibration test with a zero injection:

If the ZeroInjectionHour is not between 0 and 23, or the ZeroInjectionMinute is null and **Legacy Data Evaluation** == false, or the ZeroInjectionMinute is not between 0 and 59,

set **Daily Cal Injection Times Valid** to false, and return result A.

else if **Legacy Data Evaluation** == false, the UpscaleInjectionDate is not null, the UpscaleInjectionHour is between 0 and 23, the UpscaleInjectionMinute is between 0 and 59, and the UpscaleInjectionDate, UpscaleInjectionHour, and UpscaleInjectionMinute are equal to the ZeroInjectionDate, ZeroInjectionHour, and ZeroInjectionMinute, and the associated ComponentTypeCode is not equal to "FLOW"

set **Daily Cal Injection Times Valid** to false, and return result B.

Otherwise,

set **Daily Cal Injection Times Valid** to **Daily Cal Upscale Injection Time Valid**.

Locate another **Daily Calibration Test Record** for the location where the ComponentID and SpanScale are equal to the ComponentID and SpanScale in the current record, TestResultCode is not equal to "INC", and the EndDate/Hour/Minute is between the UpscaleInjectionDate/Hour/Minute and ZeroInjectionDate/Hour/Minute of the current test.

If found,

return result C.

else

If the absolute value of the difference between the ZeroInjectionDate/Hour and the UpscaleInjectionDate/Hour in the current test is greater than 1,  
return result D.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The [type] date, hour, and/or minute for [key] is invalid.	Critical Error Level 1
B	You reported that the zero injection and upscale injection for [key] were performed at the same time. This is invalid.	Critical Error Level 1
C	This [testtype] was conducted at the same time as another [testtype] for the same component and range.	Critical Error Level 1
D	The zero and upscale injections for [key] were not performed in the same or adjacent clock hours.	Critical Error Level 2

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-18

**Check Name:** Zero Reference Value Consistent with Span

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check determines whether the calibration gas or reference signal is appropriate for span and gas level.

**Validation Tables:**

Test Tolerances (Cross Check Table)

**Specifications:**

For the daily calibration test with a **Daily Cal Span Value** that is not null and a ZeroReferenceValue greater than or equal to 0:

If the ComponentTypeCode of the associated component is not equal to "HG",

Calculate **Zero Reference Percent of Span** = ZeroReferenceValue / **Daily Cal Span Value** \* 100, and round to result to one decimal place.

If **Zero Reference Percent of Span** is greater than 20.0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "GasPercentOfSpan".

If **Zero Reference Percent of Span** is greater than 20.0 + Tolerance in the cross-check record,  
return result A.

Otherwise,  
return result B.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The tag value of at least one Zero level reference signal or calibration gas for [key] is [percent]%, which does not meet the performance specifications of 40 CFR Part 75. The concentration of the zero reference signal or calibration gas must be less than or equal to 20.0% of the span value. The test is invalid.	Critical Error Level 2
B	The tag value of at least one zero level reference signal or calibration gas for [key] is [percent]%, which does not meet the performance specifications of 40 CFR Part 75. The concentration of the zero reference signal or calibration gas must be less than or equal to 20.0% of the span value.	Non-Critical Error

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-19

**Check Name:** Upscale Reference Value Consistent with Span

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check determines whether the calibration gas or reference signal is appropriate for span and gas level.

**Validation Tables:**

Test Tolerances (Cross Check Table)

**Specifications:**

For the daily calibration test with a **Daily Cal Span Value** that is not null and an UpscaleReferenceValue greater than 0:

Calculate **Upscale Reference Percent of Span** =  $\text{UpscaleReferenceValue} / \text{Daily Cal Span Value} * 100$ , and round to result to one decimal place.

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "GasPercentOfSpan".

If UpscaleGasLevelCode is equal to "MID", and the ComponentTypeCode of the associated component is not equal to "FLOW",

If **Upscale Reference Percent of Span** is less than 50.0 or greater than 60.0,

If **Upscale Reference Percent of Span** is less than 50.0 - Tolerance in the cross-check record or **Upscale Reference Percent of Span** greater than 60.0 + Tolerance in the cross-check record,  
return result A.

Otherwise,  
return result B.

If UpscaleGasLevelCode is equal to "HIGH",

If the ComponentTypeCode of the associated component is equal to "FLOW",

If **Upscale Reference Percent of Span** is less than 50.0 or greater than 70.0,

If **Upscale Reference Percent of Span** is less than 50.0 - Tolerance in the cross-check record or **Upscale Reference Percent of Span** greater than 70.0 + Tolerance in the cross-check record,  
return result C.

Otherwise,  
return result D.

Otherwise,

If **Upscale Reference Percent of Span** is greater than 100.0,  
return result E

If **Upscale Reference Percent of Span** is less than 80.0,

If **Upscale Reference Percent of Span** is less than 80.0 - Tolerance in the cross-check record,  
return result E.

Otherwise,  
return result F.



**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The tag value of at least one Mid level reference signal or calibration gas for [key] is [percent]%, which does not meet the applicable performance specifications. The concentration of the mid reference signal or calibration gas must be between 50.0% and 60.0% of the span value. The test is invalid.	Critical Error Level 2
B	The tag value of at least one Mid level reference signal or calibration gas for [key] is [percent]%, which does not meet the applicable performance specifications. The concentration of the 'mid' reference signal or calibration gas must be between 50.0% and 60.0% of the span value.	Non-Critical Error
C	The tag value of at least one High level reference signal for [key] is [percent]%, which does not meet the performance specifications of 40 CFR Part 75. The value of the high reference signal for a flow component must be between 50.0% and 70.0% of the span value. The test is invalid.	Critical Error Level 2
D	The tag value of at least one High level reference signal for [key] is [percent]%, which does not meet the performance specifications of 40 CFR Part 75. The value of the 'high' reference signal for a flow component must be between 50.0% and 70.0% of the span value.	Non-Critical Error
E	The tag value of at least one High level reference calibration gas for [key] is [percent]%, which does not meet the applicable performance specifications. The concentration of the high reference calibration gas must be between 80.0% and 100.0% of the span value. The test is invalid.	Critical Error Level 2
F	The tag value of at least one High level reference calibration gas for [key] is [percent]%, which does not meet the applicable performance specifications. The concentration of the 'high' reference calibration gas must be between 80.0% and 100.0% of the span value.	Non-Critical Error

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-20

**Check Name:** Calculate Zero Gas Injection or Reference Signal Results

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check is to calculate calibration errors.

**Validation Tables:**

Test Tolerances (Cross Check Table)

**Specifications:**

For the daily calibration test with a zero injection:

If (**Daily Cal Span Value** is null, or **ZeroReferenceValue** of the test is null or is less than zero, or **ZeroMeasuredValue** of the test is null)

Set **Daily Cal Calc Result** to "INVALID", **Daily Cal Zero Injection Calc Result** to null, **Daily Cal Zero Injection Calc APS Indicator** to null, and return result A.

Otherwise,

Calculate  $diff = \text{abs}(\text{ZeroMeasuredValue} - \text{ZeroReferenceValue})$

Set **Daily Cal Zero Injection Calc APS Indicator** to 0.

If (ComponentTypeCode of the associated component is equal to "CO2" or "O2")

Round  $diff$  to 1 decimal place.

Set **Daily Cal Zero Injection Calc Result** to  $diff$ .

If (**Daily Cal Calc Result** is not equal to "INVALID" or "IGNORED")

If (**Daily Cal Zero Injection Calc Result** is greater than 1.0)

If (**ZeroCalibrationError** is greater than or equal to 0 and less than or equal to 1.0)

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "DifferencePCT".

If (the absolute value of the difference between  $diff$  and **ZeroCalibrationError** is less than or equal to the Tolerance in the cross-check record)

if (**Daily Cal Calc Result** is not equal to "INC" or "FAILED")

set **Daily Cal Calc Result** to "PASSED".

else

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)

If (**Daily Cal Fail Date** is null)

set **Daily Cal Fail Date** to ZeroInjectionDate.

set **Daily Cal Fail Hour** to ZeroInjection Hour.

else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than ZeroInjectionDate/ZeroInjectionHour)

set **Daily Cal Fail Date** to ZeroInjectionDate.

set **Daily Cal Fail Hour** to ZeroInjection Hour.

else

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)

If (**Daily Cal Fail Date** is null)

set **Daily Cal Fail Date** to ZeroInjectionDate.  
set **Daily Cal Fail Hour** to ZeroInjection Hour.  
else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than  
ZeroInjectionDate/ZeroInjectionHour)  
set **Daily Cal Fail Date** to ZeroInjectionDate.  
set **Daily Cal Fail Hour** to ZeroInjection Hour.

else if (**Daily Cal Calc Result** is not equal to "INC" or "FAILED")  
set **Daily Cal Calc Result** to "PASSED".

If (ComponentTypeCode of the associated component is equal to "SO2" or "NOX")

Calculate **Daily Cal Zero Injection Calc Result** = min(round(diff / **Daily Cal Span Value** \* 100, 1), 9999.9)  
Round **diff** to 1 decimal places.

If (**Daily Cal Zero Injection Calc Result** is greater than 5.0, AND (**Daily Cal Span Value** is less than or equal to 50  
AND **diff** is less than or equal to 5.0) OR (**Daily Cal Span Value** is greater than 50 AND **Daily Cal Span Value** is  
less than or equal to 200 AND **diff** is less than or equal to 10.0)))

set **Daily Cal Zero Injection Calc Result** to **diff**.  
set **Daily Cal Zero Injection Calc APS Indicator** to 1.

If (**Daily Cal Calc Result** is not equal to "INVALID" or "FAILED" or "INC" or "IGNORED")  
set **Daily Cal Calc Result** to "PASSAPS".

Otherwise,

If (**Daily Cal Zero Injection Calc Result** is greater than 5.0)

If (**Daily Cal Calc Result** is not equal to "INVALID" or "IGNORED")

If (ZeroAPSIndicator is NOT equal to 1 and ZeroCalibrationError is greater than or equal  
to 0 and less than or equal to 5.0)

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to  
"7DAY" and the FieldDescription is equal to "CalibrationError".

If (the absolute value of the difference between **Daily Cal Zero Injection Calc  
Result** and ZeroCalibrationError is less than or equal to the Tolerance in the  
cross-check record)

If (**Daily Cal Calc Result** is not equal to "PASSAPS" or "INC" or  
"FAILED")  
set **Daily Cal Calc Result** to "PASSED".

Otherwise,

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)

If (**Daily Cal Fail Date** is null)

set **Daily Cal Fail Date** to ZeroInjectionDate.

set **Daily Cal Fail Hour** to ZeroInjection Hour.

else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than  
ZeroInjectionDate/ZeroInjectionHour)

set **Daily Cal Fail Date** to ZeroInjectionDate.

set **Daily Cal Fail Hour** to ZeroInjection Hour.

Otherwise,

If (ZeroAPSIndicator is equal to 1 and ZeroCalibrationError is greater than or equal to 0, and (**Daily Cal Span Value** is less than or equal to 50 AND ZeroCalibrationError is less than or equal to 5.0) OR (**Daily Cal Span Value** is greater than 50 AND **Daily Cal Span Value** is less than or equal to 200 AND ZeroCalibrationError is less than or equal to 10.0)))

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "DifferencePPM".

If (the absolute value of the difference between *diff* and ZeroCalibrationError is less than or equal to the Tolerance in the cross-check record)

If (**Daily Cal Calc Result** is not equal to "INC" or "FAILED")  
set **Daily Cal Calc Result** to "PASSAPS".

else

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)

If (**Daily Cal Fail Date** is null)

set **Daily Cal Fail Date** to ZeroInjectionDate.

set **Daily Cal Fail Hour** to ZeroInjection Hour.

else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than ZeroInjectionDate/ZeroInjectionHour)

set **Daily Cal Fail Date** to ZeroInjectionDate.

set **Daily Cal Fail Hour** to ZeroInjection Hour.

else

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)

If (**Daily Cal Fail Date** is null)

set **Daily Cal Fail Date** to ZeroInjectionDate.

set **Daily Cal Fail Hour** to ZeroInjection Hour.

else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than ZeroInjectionDate/ZeroInjectionHour)

set **Daily Cal Fail Date** to ZeroInjectionDate.

set **Daily Cal Fail Hour** to ZeroInjection Hour.

Otherwise,

If (**Daily Cal Calc Result** is not equal to "FAILED" or "INC" or "PASSAPS" or "IGNORED")  
set **Daily Cal Calc Result** to "PASSED".

If (ComponentTypeCode of the associated component is equal to "FLOW")

Calculate **Daily Cal Zero Injection Calc Result** = min(round(diff / **Daily Cal Span Value** \* 100, 1), 9999.9).  
Round diff to 2 decimal places.

If (**Daily Cal Zero Injection Calc Result** is greater than 6.0, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and *diff* is less than or equal to 0.02)

set **Daily Cal Zero Injection Calc Result** to *diff*.

set **Daily Cal Zero Injection Calc APS Indicator** to 1.

If (**Daily Cal Calc Result** is not equal to "INVALID" or "FAILED" or "INC" or "IGNORED")  
set **Daily Cal Calc Result** to "PASSAPS".

Otherwise,

If (**Daily Cal Zero Injection Calc Result** is greater than 6.0)

If (**Daily Cal Calc Result** is not equal to "INVALID" or "IGNORED")

If (ZeroAPSIndicator is NOT equal to 1 and ZeroCalibrationError is greater than or equal to 0 and less than or equal to 6.0)

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "CalibrationError".

If (the absolute value of the difference between **Daily Cal Zero Injection Calc Result** and ZeroCalibrationError is less than or equal to the Tolerance in the cross-check record)

If (**Daily Cal Calc Result** is not equal to "PASSAPS" or "INC" or "FAILED")

set **Daily Cal Calc Result** to "PASSED".

Otherwise,

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)

If (**Daily Cal Fail Date** is null)

set **Daily Cal Fail Date** to ZeroInjectionDate.

set **Daily Cal Fail Hour** to ZeroInjection Hour.

else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than ZeroInjectionDate/ZeroInjectionHour)

set **Daily Cal Fail Date** to ZeroInjectionDate.

set **Daily Cal Fail Hour** to ZeroInjection Hour.

Otherwise,

If (ZeroAPSIndicator is equal to 1, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and ZeroCalibrationError is greater than or equal to 0 and less than or equal to 0.02)

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "DifferenceINH2O".

If (the absolute value of the difference between *diff* and ZeroCalibrationError is less than or equal to the Tolerance in the cross-check record)

If (**Daily Cal Calc Result** is not equal to "INC" or "FAILED")  
set **Daily Cal Calc Result** to "PASSAPS".

else

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)

If (**Daily Cal Fail Date** is null)

set **Daily Cal Fail Date** to ZeroInjectionDate.

set **Daily Cal Fail Hour** to ZeroInjection Hour.

else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than ZeroInjectionDate/ZeroInjectionHour)

set **Daily Cal Fail Date** to ZeroInjectionDate.

set **Daily Cal Fail Hour** to ZeroInjection Hour.

else  
    set **Daily Cal Calc Result** to "FAILED".

    If (**Daily Cal Injection Times Valid** == true)  
        If (**Daily Cal Fail Date** is null)  
            set **Daily Cal Fail Date** to ZeroInjectionDate.  
            set **Daily Cal Fail Hour** to ZeroInjection Hour.  
        else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than  
            ZeroInjectionDate/ZeroInjectionHour)  
            set **Daily Cal Fail Date** to ZeroInjectionDate.  
            set **Daily Cal Fail Hour** to ZeroInjection Hour.

    Otherwise,  
        If (**Daily Cal Calc Result** is not equal to "INC" or "FAILED", or "PASSAPS" or "IGNORED")  
            set **Daily Cal Calc Result** to "PASSED".

If (ComponentTypeCode of the associated component is equal to "HG")

    Calculate **Daily Cal Zero Injection Calc Result** = min(round(diff / **Daily Cal Span Value** \* 100, 1), 9999.9)  
    Round **diff** to 1 decimal places.

    If (**Daily Cal Zero Injection Calc Result** is greater than 5.0, AND **diff** is less than or equal to 1.0)

        set **Daily Cal Zero Injection Calc Result** to **diff**.  
        set **Daily Cal Zero Injection Calc APS Indicator** to 1.

    If (**Daily Cal Calc Result** is not equal to "INVALID" or "FAILED" or "INC" or "IGNORED")  
        set **Daily Cal Calc Result** to "PASSAPS".

    Otherwise,

        If (**Daily Cal Zero Injection Calc Result** is greater than 5.0)

            If (**Daily Cal Calc Result** is not equal to "INVALID" or "IGNORED")

                If (ZeroAPSIndicator is NOT equal to 1 and ZeroCalibrationError is greater than or equal  
                    to 0 and less than or equal to 5.0)

                    Locate the Test Tolerance cross-check record where the TestTypeCode is equal to  
                    "7DAY" and the FieldDescription is equal to "CalibrationError".

                If (the absolute value of the difference between **Daily Cal Zero Injection Calc  
Result** and ZeroCalibrationError is less than or equal to the Tolerance in the  
cross-check record)  
                    If (**Daily Cal Calc Result** is not equal to "PASSAPS" or "INC" or  
                    "FAILED")  
                        set **Daily Cal Calc Result** to "PASSED".

            Otherwise,  
                set **Daily Cal Calc Result** to "FAILED".

        If (**Daily Cal Injection Times Valid** == true)  
            If (**Daily Cal Fail Date** is null)  
                set **Daily Cal Fail Date** to ZeroInjectionDate.  
                set **Daily Cal Fail Hour** to ZeroInjection Hour.  
            else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than  
                ZeroInjectionDate/ZeroInjectionHour)  
                set **Daily Cal Fail Date** to ZeroInjectionDate.

set **Daily Cal Fail Hour** to ZeroInjection Hour.

Otherwise,

If (ZeroAPSIndicator is equal to 1 and ZeroCalibrationError is greater than or equal to 0 and less than or equal to 1.0)

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "Difference UGSCM".

If (the absolute value of the difference between *diff* and ZeroCalibrationError is less than or equal to the Tolerance in the cross-check record)

If (**Daily Cal Calc Result** is not equal to "INC" or "FAILED")  
set **Daily Cal Calc Result** to "PASSAPS".

else

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)

If (**Daily Cal Fail Date** is null)

set **Daily Cal Fail Date** to ZeroInjectionDate.

set **Daily Cal Fail Hour** to ZeroInjection Hour.

else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than ZeroInjectionDate/ZeroInjectionHour)

set **Daily Cal Fail Date** to ZeroInjectionDate.

set **Daily Cal Fail Hour** to ZeroInjection Hour.

else

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)

If (**Daily Cal Fail Date** is null)

set **Daily Cal Fail Date** to ZeroInjectionDate.

set **Daily Cal Fail Hour** to ZeroInjection Hour.

else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than ZeroInjectionDate/ZeroInjectionHour)

set **Daily Cal Fail Date** to ZeroInjectionDate.

set **Daily Cal Fail Hour** to ZeroInjection Hour.

Otherwise,

If (**Daily Cal Calc Result** is not equal to "FAILED" or "INC" or "PASSAPS" or "IGNORED")  
set **Daily Cal Calc Result** to "PASSED".

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The software could not evaluate the [test] calculations reported for [key], because of the errors listed above.	Informational Message

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Daily Calibration Test
---	-------------------	---

**Check Code:** DAYCAL-21  
**Check Name:** Calculate Upscale Gas Injection or Reference Signal Results  
**Related Former Checks:**  
**Applicability:** CEM Check  
**Description:** This check is to calculate calibration errors.

**Validation Tables:**

Test Tolerances (Cross Check Table)

**Specifications:**

For the daily calibration test with an upscale injection:

If (**Daily Cal Span Value** is null, or **Daily Cal Upscale Gas Level Valid** is false, or UpscaleReferenceValue of the test is null or is less than or equal to zero, or UpscaleMeasuredValue of the test is null)

Set **Daily Cal Calc Result** to "INVALID", **Daily Cal Upscale Injection Calc Result** to null, **Daily Cal Upscale Injection Calc APS Indicator** to null, and return result A.

Otherwise,

Calculate  $diff = \text{abs}(\text{UpscaleMeasuredValue} - \text{UpscaleReferenceValue})$

Set **Daily Cal Upscale Injection Calc APS Indicator** to 0.

If (ComponentTypeCode of the associated component is equal to "CO2" or "O2")

Round  $diff$  to 1 decimal place.

Set **Daily Cal Upscale Injection Calc Result** to  $diff$ .

If (**Daily Cal Calc Result** is not equal to "INVALID" or "IGNORED")

If (**Daily Cal Upscale Injection Calc Result** is greater than 1.0)

If (UpscaleCalibrationError is greater than or equal to 0 and less than or equal to 1.0)

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "DifferencePCT".

If (the absolute value of the difference between  $diff$  and UpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record)

if (**Daily Cal Calc Result** is not equal to "INC" or "FAILED")

set **Daily Cal Calc Result** to "PASSED".

else

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)

If (**Daily Cal Fail Date** is null)

set **Daily Cal Fail Date** to UpscaleInjectionDate.

set **Daily Cal Fail Hour** to UpscaleInjection Hour.

else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than UpscaleInjectionDate/UpscaleInjectionHour)

set **Daily Cal Fail Date** to UpscaleInjectionDate.

set **Daily Cal Fail Hour** to UpscaleInjection Hour.

else

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)



If (**Daily Cal Fail Date** is null)  
     set **Daily Cal Fail Date** to UpscaleInjectionDate.  
     set **Daily Cal Fail Hour** to UpscaleInjection Hour.  
 else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than  
 UpscaleInjectionDate/UpscaleInjectionHour)  
     set **Daily Cal Fail Date** to UpscaleInjectionDate.  
     set **Daily Cal Fail Hour** to UpscaleInjection Hour.

else if (**Daily Cal Calc Result** is not equal to "INC" or "FAILED" or "IGNORED")  
     set **Daily Cal Calc Result** to "PASSED".

If (ComponentTypeCode of the associated component is equal to "SO2" or "NOX")

Calculate **Daily Cal Upscale Injection Calc Result** = min(round(diff / **Daily Cal Span Value** \* 100, 1), 9999.9)  
 Round **diff** to 1 decimal places.

If (**Daily Cal Upscale Injection Calc Result** is greater than 5.0, AND (**Daily Cal Span Value** is less than or equal to 50 AND **diff** is less than or equal to 5.0) OR (**Daily Cal Span Value** is greater than 50 AND **Daily Cal Span Value** is less than or equal to 200 AND **diff** is less than or equal to 10.0)))

set **Daily Cal Upscale Injection Calc Result** to **diff**.  
 set **Daily Cal Upscale Injection Calc APS Indicator** to 1.

If (**Daily Cal Calc Result** is not equal to "INVALID" or "FAILED" or "INC" or "IGNORED")  
     set **Daily Cal Calc Result** to "PASSAPS".

Otherwise,

If (**Daily Cal Upscale Injection Calc Result** is greater than 5.0)

If (**Daily Cal Calc Result** is not equal to "INVALID" or "IGNORED")

If (UpscaleAPSIndicator is NOT equal to 1 and UpscaleCalibrationError is greater than or equal to 0 and less than or equal to 5.0)

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "CalibrationError".

If (the absolute value of the difference between **Daily Cal Upscale Injection Calc Result** and UpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record)

If (**Daily Cal Calc Result** is not equal to "PASSAPS" or "INC" or "FAILED")  
     set **Daily Cal Calc Result** to "PASSED".

Otherwise,

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)

If (**Daily Cal Fail Date** is null)  
     set **Daily Cal Fail Date** to UpscaleInjectionDate.  
     set **Daily Cal Fail Hour** to UpscaleInjection Hour.  
 else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than  
 UpscaleInjectionDate/UpscaleInjectionHour)  
     set **Daily Cal Fail Date** to UpscaleInjectionDate.  
     set **Daily Cal Fail Hour** to UpscaleInjection Hour.

Otherwise,

If (UpscaleAPSIndicator is equal to 1 and UpscaleCalibrationError is greater than or equal to 0, and (**Daily Cal Span Value** is less than or equal to 50 AND UpscaleCalibrationError is less than or equal to 5.0) OR (**Daily Cal Span Value** is greater than 50 AND **Daily Cal Span Value** is less than or equal to 200 AND UpscaleCalibrationError is less than or equal to 10.0)))

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "DifferencePPM".

If (the absolute value of the difference between *diff* and UpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record)

If (**Daily Cal Calc Result** is not equal to "INC" or "FAILED")  
set **Daily Cal Calc Result** to "PASSAPS".

else

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)

If (**Daily Cal Fail Date** is null)

set **Daily Cal Fail Date** to

UpscaleInjectionDate.

set **Daily Cal Fail Hour** to UpscaleInjection Hour.

else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than

UpscaleInjectionDate/UpscaleInjectionHour)

set **Daily Cal Fail Date** to

UpscaleInjectionDate.

set **Daily Cal Fail Hour** to UpscaleInjection Hour.

else

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)

If (**Daily Cal Fail Date** is null)

set **Daily Cal Fail Date** to UpscaleInjectionDate.

set **Daily Cal Fail Hour** to UpscaleInjection Hour.

else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than UpscaleInjectionDate/UpscaleInjectionHour)

set **Daily Cal Fail Date** to UpscaleInjectionDate.

set **Daily Cal Fail Hour** to UpscaleInjection Hour.

Otherwise,

If (**Daily Cal Calc Result** is not equal to "FAILED" or "INC", or "PASSAPS" or "IGNORED")  
set **Daily Cal Calc Result** to "PASSED".

If (ComponentTypeCode of the associated component is equal to "FLOW")

Calculate **Daily Cal Upscale Injection Calc Result** = min(round(*diff* / **Daily Cal Span Value** \* 100, 1), 9999.9).  
Round *diff* to 2 decimal places.

If (**Daily Cal Upscale Injection Calc Result** is greater than 6.0, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and *diff* is less than or equal to 0.02)

set **Daily Cal Upscale Injection Calc Result** to *diff*.  
set **Daily Cal Upscale Injection Calc APS Indicator** to 1.

If (**Daily Cal Calc Result** is not equal to "INVALID" or "FAILED" or "INC" or "IGNORED")  
set **Daily Cal Calc Result** to "PASSAPS".

Otherwise,

If (**Daily Cal Upscale Injection Calc Result** is greater than 6.0)

If (**Daily Cal Calc Result** is not equal to "INVALID" or "IGNORED")

If (UpscaleAPSIndicator is NOT equal to 1 and UpscaleCalibrationError is greater than or equal to 0 and less than or equal to 6.0)

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "CalibrationError".

If (the absolute value of the difference between **Daily Cal Upscale Injection Calc Result** and UpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record)

If (**Daily Cal Calc Result** is not equal to "PASSAPS" or "INC" or "FAILED")

set **Daily Cal Calc Result** to "PASSED".

Otherwise,

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)

If (**Daily Cal Fail Date** is null)

set **Daily Cal Fail Date** to UpscaleInjectionDate.

set **Daily Cal Fail Hour** to UpscaleInjection Hour.

else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than UpscaleInjectionDate/UpscaleInjectionHour)

set **Daily Cal Fail Date** to UpscaleInjectionDate.

set **Daily Cal Fail Hour** to UpscaleInjection Hour.

Otherwise,

If (UpscaleAPSIndicator is equal to 1, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and UpscaleCalibrationError is greater than or equal to 0 and less than or equal to 0.02)

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "DifferenceINH2O".

If (the absolute value of the difference between *diff* and UpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record)

If (**Daily Cal Calc Result** is not equal to "INC" or "FAILED")

set **Daily Cal Calc Result** to "PASSAPS".

else

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)

If (**Daily Cal Fail Date** is null)

---

```
        set Daily Cal Fail Date to
        UpscaleInjectionDate.
        set Daily Cal Fail Hour to UpscaleInjection
        Hour.
    else if (Daily Cal Fail Date/Daily Cal Fail Hour is
    greater than
    UpscaleInjectionDate/UpscaleInjectionHour)
        set Daily Cal Fail Date to
        UpscaleInjectionDate.
        set Daily Cal Fail Hour to UpscaleInjection
        Hour.

    else
        set Daily Cal Calc Result to "FAILED".

    If (Daily Cal Injection Times Valid == true)
        If (Daily Cal Fail Date is null)
            set Daily Cal Fail Date to UpscaleInjectionDate.
            set Daily Cal Fail Hour to UpscaleInjection Hour.
        else if (Daily Cal Fail Date/Daily Cal Fail Hour is greater than
        UpscaleInjectionDate/UpscaleInjectionHour)
            set Daily Cal Fail Date to UpscaleInjectionDate.
            set Daily Cal Fail Hour to UpscaleInjection Hour.

    Otherwise,
        If (Daily Cal Calc Result is not equal to "INC" or "FAILED", or "PASSAPS" or "IGNORED")
            set Daily Cal Calc Result to "PASSED".

    If (ComponentTypeCode of the associated component is equal to "HG")

        Calculate Daily Cal Upscale Injection Calc Result = min(round(diff / Daily Cal Span Value * 100, 1), 9999.9)
        Round diff to 1 decimal places.

        If (Daily Cal Upscale Injection Calc Result is greater than 5.0, AND diff is less than or equal to 1.0)

            set Daily Cal Upscale Injection Calc Result to diff.
            set Daily Cal Upscale Injection Calc APS Indicator to 1.

            If (Daily Cal Calc Result is not equal to "INVALID" or "FAILED" or "INC" or "IGNORED")
                set Daily Cal Calc Result to "PASSAPS".

        Otherwise,

            If (Daily Cal Upscale Injection Calc Result is greater than 5.0)

                If (Daily Cal Calc Result is not equal to "INVALID" or "IGNORED")

                    If (UpscaleAPSIndicator is NOT equal to 1 and UpscaleCalibrationError is greater than or
                    equal to 0 and less than or equal to 5.0)

                        Locate the Test Tolerance cross-check record where the TestTypeCode is equal to
                        "7DAY" and the FieldDescription is equal to "CalibrationError".

                        If (the absolute value of the difference between Daily Cal Upscale Injection Calc
                        Result and UpscaleCalibrationError is less than or equal to the Tolerance in the
                        cross-check record)
                            If (Daily Cal Calc Result is not equal to "PASSAPS" or "INC" or
                            "FAILED")
```

set **Daily Cal Calc Result** to "PASSED".

Otherwise,

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)

If (**Daily Cal Fail Date** is null)

set **Daily Cal Fail Date** to UpscaleInjectionDate.

set **Daily Cal Fail Hour** to UpscaleInjection Hour.

else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than  
UpscaleInjectionDate/UpscaleInjectionHour)

set **Daily Cal Fail Date** to UpscaleInjectionDate.

set **Daily Cal Fail Hour** to UpscaleInjection Hour.

Otherwise,

If (UpscaleAPSIndicator is equal to 1 and UpscaleCalibrationError is greater than  
or equal to 0 AND UpscaleCalibrationError is less than or equal to 1.0)

Locate the Test Tolerance cross-check record where the TestTypeCode is  
equal to "7DAY" and the FieldDescription is equal to  
"DifferenceUGSCM".

If (the absolute value of the difference between *diff* and  
UpscaleCalibrationError is less than or equal to the Tolerance in the  
cross-check record)

If (**Daily Cal Calc Result** is not equal to "INC" or "FAILED")

set **Daily Cal Calc Result** to "PASSAPS".

else

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)

If (**Daily Cal Fail Date** is null)

set **Daily Cal Fail Date** to

UpscaleInjectionDate.

set **Daily Cal Fail Hour** to UpscaleInjection  
Hour.

else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is  
greater than

UpscaleInjectionDate/UpscaleInjectionHour)

set **Daily Cal Fail Date** to

UpscaleInjectionDate.

set **Daily Cal Fail Hour** to UpscaleInjection  
Hour.

else

set **Daily Cal Calc Result** to "FAILED".

If (**Daily Cal Injection Times Valid** == true)

If (**Daily Cal Fail Date** is null)

set **Daily Cal Fail Date** to UpscaleInjectionDate.

set **Daily Cal Fail Hour** to UpscaleInjection Hour.

else if (**Daily Cal Fail Date/Daily Cal Fail Hour** is greater than  
UpscaleInjectionDate/UpscaleInjectionHour)

set **Daily Cal Fail Date** to UpscaleInjectionDate.

set **Daily Cal Fail Hour** to UpscaleInjection Hour.

Otherwise,  
If (*Daily Cal Calc Result* is not equal to "FAILED" or "INC", or "PASSAPS" or "IGNORED")  
set *Daily Cal Calc Result* to "PASSED".

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The software could not evaluate the [test] calculations reported for [key], because of the errors listed above.	Informational Message

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Daily Calibration Test
---	-------------------	---

**Check Code:** DAYCAL-22**Check Name:** Daily Calibration Test End Time Valid**Related Former Checks:****Applicability:** CEM Check**Description:** This check indicates if the reported test end date, hour, minute is consistent with the injection times.**Specifications:**

For the daily calibration test with upscale and zero injections and a valid date, hour, and minute and injection times:

If Date, Hour, and Minute of the test does not equal the later of the ZeroInjectionDate, Hour, and Minute (if not null) and the UpscaleInjectionDate, Hour, and Minute (if non-null),  
return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported a test Date, Hour, and Minute that is not the same as the Date, Hour, and Minute of the last injection in the daily calibration test for [key].	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Daily Calibration Test
---	-------------------	---

**Check Code:** DAYCAL-23

**Check Name:** Reported Zero Injection Results Consistent with Recalculated Values

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check is to compare reported and recalculated results for each gas injection.

**Validation Tables:**

Test Tolerances (Cross Check Table)

**Specifications:**

For the daily calibration test with a zero injection:

If the ZeroAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "FLOW", and the SampleAcquisitionMethodCode of the associated component is not equal to "DP",  
return result A.

If the ZeroAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "SO2" or "NOX", and the **Daily Cal Span Value** is greater than or equal to 200,  
return result B.

If the ZeroAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "CO2" or "O2",  
return result C.

Otherwise,

If **Daily Cal Zero Injection Calc Result** is not null,

If the ZeroAPSIndicator in the current record is not equal to 1 and the **Daily Cal Zero Injection Calc APS Indicator** is equal to 1,  
return result D.

If the ZeroCalibrationError is greater than or equal to 0,

If the ComponentTypeCode of the associated component is equal to "CO2" or "O2"

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "DifferencePCT".

If the absolute value of the difference between the **Daily Cal Zero Injection Calc Result** and the ZeroCalibrationError is greater than the Tolerance in the cross-check record,  
return result E.

If the **Daily Cal Zero Injection Calc APS Indicator** is equal to 1,

If the ComponentTypeCode of the associated component is equal to "FLOW",

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "DifferenceINH2O".

If the absolute value of the difference between the **Daily Cal Zero Injection Calc Result** and the ZeroCalibrationError is greater than the Tolerance in the cross-check record,  
return result E.

Else, If the ComponentTypeCode of the associated component is equal to "HG",

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "DifferenceUGSCM".



If the absolute value of the difference between the **Daily Cal Zero Injection Calc Result** and the ZeroCalibrationError is greater than the Tolerance in the cross-check record, return result E.

Otherwise,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "DifferencePPM".

If the absolute value of the difference between the **Daily Cal Zero Injection Calc Result** and the ZeroCalibrationError is greater than the Tolerance in the cross-check record, return result E.

else if ZeroAPSIndicator is equal to 0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "CalibrationError".

If the absolute value of the difference between the **Daily Cal Zero Injection Calc Result** and the ZeroCalibrationError is greater than the Tolerance in the cross-check record, return result F.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance criteria for non-differential pressure flow monitors.	Critical Error Level 1
B	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance specification criteria for SO2 and NOX components when the instrument span is greater than or equal to 200.	Critical Error Level 1
C	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance specification criteria for CO2 and O2 components.	Critical Error Level 1
D	You did not report a value of "1" in the [level] APS Indicator for [key], although EPA applied the alternative performance specification to determine that the injection passed the applicable performance specification.	Critical Error Level 1
E	The absolute difference reported as the [level] Calibration Error for [key] is inconsistent with the recalculated absolute difference for the gas injection or reference signal.	Critical Error Level 1
F	The [level] Calibration Error reported for [key] is inconsistent with the recalculated calibration error for the gas injection or reference signal.	Critical Error Level 1

#### Usage:

1      Process/Category:      Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-24

**Check Name:** Reported Upscale Injection Results Consistent with Recalculated Values

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check is to compare reported and recalculated results for each gas injection.

**Validation Tables:**

Test Tolerances (Cross Check Table)

**Specifications:**

For the daily calibration test with an upscale injection:

If the UpscaleAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "FLOW", and the SampleAcquisitionMethodCode of the associated component is not equal to "DP",  
return result A.

If the UpscaleAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "SO2" or "NOX", and the **Daily Cal Span Value** is greater than or equal to 200,  
return result B.

If the UpscaleAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "CO2" or "O2",  
return result C.

Otherwise,

If **Daily Cal Upscale Injection Calc Result** is not null,

If the UpscaleAPSIndicator in the current record is not equal to 1 and the **Daily Cal Upscale Injection Calc APS Indicator** is equal to 1,  
return result D.

If the UpscaleCalibrationError is greater than or equal to 0,

If the ComponentTypeCode of the associated component is equal to "CO2" or "O2"

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "DifferencePCT".

If the absolute value of the difference between the **Daily Cal Upscale Injection Calc Result** and the UpscaleCalibrationError is greater than the Tolerance in the cross-check record,  
return result E.

If the **Daily Cal Upscale Injection Calc APS Indicator** is equal to 1,

If the ComponentTypeCode of the associated component is equal to "FLOW",

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "DifferenceINH2O".

If the absolute value of the difference between the **Daily Cal Upscale Injection Calc Result** and the UpscaleCalibrationError is greater than the Tolerance in the cross-check record,  
return result E.

Else, if the ComponentTypeCode of the associated component is equal to "HG",

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY"

and the FieldDescription is equal to "DifferenceUGSCM".

If the absolute value of the difference between the **Daily Cal Upscale Injection Calc Result** and the UpscaleCalibrationError is greater than the Tolerance in the cross-check record,  
return result E.

Otherwise,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "DifferencePPM".

If the absolute value of the difference between the **Daily Cal Upscale Injection Calc Result** and the UpscaleCalibrationError is greater than the Tolerance in the cross-check record,  
return result E.

else if UpscaleAPSIndicator is equal to 0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "7DAY" and the FieldDescription is equal to "CalibrationError".

If the absolute value of the difference between the **Daily Cal Upscale Injection Calc Result** and the UpscaleCalibrationError is greater than the Tolerance in the cross-check record,  
return result F.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance criteria for non-differential pressure flow monitors.	Critical Error Level 1
B	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance specification criteria for SO2 and NOX components when the instrument span is greater than or equal to 200.	Critical Error Level 1
C	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance specification criteria for CO2 and O2 components.	Critical Error Level 1
D	You did not report a value of "1" in the [level] APS Indicator for [key], although EPA applied the alternative performance specification to determine that the injection passed the applicable performance specification.	Critical Error Level 1
E	The absolute difference reported as the [level] Calibration Error for [key] is inconsistent with the recalculated absolute difference for the gas injection or reference signal.	Critical Error Level 1
F	The [level] Calibration Error reported for [key] is inconsistent with the recalculated calibration error for the gas injection or reference signal.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-25

**Check Name:** Determination of Overall Daily Calibration Test Result

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check is to calculate daily calibration test results.

**Specifications:**

For the daily calibration test:

If **Daily Cal Calc Result** is equal to "INVALID",  
set **Daily Cal Calc Result** to null.

If TestResultCode is null,  
return result A.

If TestResultCode is not equal to "PASSED", "PASSAPS", "FAILED", "INC", or "ABORTED",  
return result B.

If **Daily Cal Calc Result** is equal to "FAILED",

If TestResultCode is equal to "PASSED" or "PASSAPS",  
return result C.

If TestResultCode is equal to "INC",  
return result D.

If **Daily Cal Calc Result** is equal to "PASSED" or "PASSAPS", and the TestResultCode is equal to "FAILED",  
return result E.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1
C	The TestResultCode for [key] indicates a passing test, but the recalculated results indicate a failing test.	Critical Error Level 1
D	The TestResultCode for [key] indicates an incomplete test, but the recalculated results indicate a failing test. A test is considered to have failed if it fails to meet the performance criteria for any injection.	Critical Error Level 1
E	You reported a TestResultCode of "FAILED" for [key], but the results recalculated or determined from the other reported values indicate that the test passed.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-26

**Check Name:** Upscale Gas Type Code Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check determines whether the Upscale Gas Type Code is valid (PGVP).

**Validation Tables:**

Gas Type Code (Lookup Table)

Vw System Parameter (Lookup Table)

**Specifications:**

For the daily calibration test with an upscale injection:

*UpscaleGasTypeValid* = true.

Locate *System Parameter* lookup table record where Sys\_Param\_Name = 'PGVP\_AETB\_RULE\_DATE'.

Set *Daily Cal PGVP Rule Date* to *System Parameter*.Param\_Value1.

If UpscaleGasTypeCode is null,

If the ComponentTypeCode of the associated component is equal to "SO2", "NOX", "CO2", or "O2", and the Date of the test is on or after 9/26/2011,

*UpscaleGasTypeValid* = false.  
return result A.

Otherwise,

If the ComponentTypeCode of the associated component is equal to "FLOW", "HCL", or "HG",

*UpscaleGasTypeValid* = false  
return result B.

else if the UpscaleGasTypeCode is not equal to "GMIS", "PRM", "RGM", or "SRM",

if the UpscaleGasTypeCode is not in the *GasTypeCode lookup table*.

*UpscaleGasTypeValid* = false  
return result C.

else if the UpscaleGasTypeCode == "ZERO" or "ZAM"

*UpscaleGasTypeValid* = false  
return result C

else if the UpscaleGasTypeCode == "APPVD"

return result D

else if the ComponentTypeCode == "SO2", "NOX", "CO2" or "O2",

Locate *Protocol Gas Parameter To Type Cross Reference* records where ProtocolGasParameter is equal to ComponentTypeCode in the current Daily Calibration record, and GasTypeList contains the UpscaleGasTypeCode in the current Daily Calibration record.

If not found,

*UpscaleGasTypeValid* = false  
return result E.

else if ComponentTypeCode == "O2", UpscaleGasTypeCode == "AIR", and the UpscaleGasCode is not equal to "HIGH",

*UpscaleGasTypeValid* = false  
return result F.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a UpscaleGasTypeCode for [key]. This information is required by the Protocol Gas Verification Program reporting rule.	Critical Error Level 1
B	You reported a value in the UpscaleGasTypeCode field for [key]. This value should not be reported for a FLOW, HCl, or HG component.	Critical Error Level 1
C	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1
D	You reported "APPVD" as the [fieldname] for [key]. This code indicates that you received approval from EPA for a new type of Protocol Gas. If you have not received approval from EPA, please contact ECMPS support. If you have already received approval, you should log in to the ECMPS host, so that the ECMPS program can obtain the necessary information to override this error.	Critical Error Level 1
E	You reported an UpscaleGasTypeCode that is not appropriate for a [comptype] component for [key].	Critical Error Level 1
F	You reported an [fieldname] of "AIR" for [key], which indicates the use of purified air material, but this material can only be used for a high-level calibration.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-27

**Check Name:** Cylinder ID Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check determines whether the Cylinder ID is valid.

**Specifications:**

For the daily calibration test with an upscale injection:

If CylinderID is null,

If ***UpscaleGasTypeValid*** is true, and the UpscaleGasTypeCode is not null and not equal to "AIR",  
return result A.

Otherwise,

If the UpscaleGasTypeCode is equal to "AIR",  
return result B.

else if ***UpscaleGasTypeValid*** is true, and the UpscaleGasTypeCd is null,  
return result C.

else if CylinderIdentifier contains characters that are not capital letters, numbers, hyphens, ampersands or periods,  
If ***InvalidCylinderIdList*** does not contain CylinderID,  
Add CylinderID to ***InvalidCylinderIdList***.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You indicated that you used purified air material or zero air material instead of a cylinder gas, but you reported a CylinderIdentifier.	Critical Error Level 1
C	You reported a [fieldname] for [key], but you did not report an UpscaleGasTypeCode.	Non-Critical Error

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-28

**Check Name:** Vendor ID Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check determines whether the Vendor ID is valid.

**Validation Tables:**

Protocol Gas Vendor (Lookup Table)

**Specifications:**

For the daily calibration test with an upscale injection:

If VendorID is null,

If *UpscaleGasTypeValid* is true, and the UpscaleGasTypeCode is not null and not equal to "AIR", "SRM", "NTRM", "GMIS", "RGM", or "PRM",  
return result A.

else if the VendorID is not in the *Protocol Gas Vendor* lookup table,  
return result B.

Otherwise,

If the UpscaleGasTypeCode is equal to "AIR", "SRM", "NTRM", "GMIS", "RGM", or "PRM",  
return result C.

else if the DeactivationDate in the *Protocol Gas Vendor* record is not null and the Date of the current test is on or after the January 1 after DeactivationDate + 8 years,  
return result F.

else if the ActivationDate in the *Protocol Gas Vendor* record is after the Date of the current test,  
return result G.

else if the VendorID is equal to "NONPGVP", and the Date of the test is on or after the *Daily Cal PGVP Rule Date* + 60 days + 8 years,  
return result D.

else if *UpscaleGasTypeValid* is true, and the UpscaleGasTypeCd is null,  
return result E.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported a VendorIdentifier of [value], which is not in the list of Protocol Gas Vendors, for [key]. Please visit the ECMPS Support Website for the list of Protocol Gas Vendors.	Critical Error Level 1
C	You reported a [fieldname] for [key], but this value should only be reported for an EPA Protocol Gas Type. The cylinder gas type of [gastype] indicates the use of a non-EPA Protocol Gas Type.	Critical Error Level 1
D	You reported a VendorIdentifier of "NONPGVP" for [key], indicating the use of a EPA Protocol Gas Type purchased from a vendor not participating in the Protocol Gas Vendor Program (PGVP). You cannot use a gas purchased from a non-participating vendor that was acquired more than 60 days after the PGVP Effective Date.	Critical Error Level 2
E	You reported a [fieldname] for [key], but you did not report an UpscaleGasTypeCode.	Non-Critical Error
F	You have reported a VendorIdentifier for [key] of a vendor who is no longer participating in the Protocol Gas Verification Program.	Critical Error Level 2
G	You have reported a vendor for [key], but this vendor was not active at the time of this test.	Critical Error Level 1



**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Daily Calibration Test
---	-------------------	---

**Check Code:** DAYCAL-29

**Check Name:** Cylinder Expiration Date Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check determines whether the Expiration Date of the cylinder is valid.

**Specifications:**

For the daily calibration test with an upscale injection:

If ExpirationDate is null,

If *UpscaleGasTypeValid* is true, and the UpscaleGasTypeCode is not null and not equal to "AIR",  
return result A.

Otherwise,

If the UpscaleGasTypeCode is equal to "AIR",  
return result B.

else if the ExpirationDate is prior to the Date of the test,  
return result C.

else if the ExpirationDate is more than 8 years after the Date of the test,  
return result D.

else if *UpscaleGasTypeValid* is true, and the UpscaleGasTypeCd is null,  
return result E.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported a [fieldname] for [key], but this value should only be reported for an EPA Protocol Gas Type. The cylinder gas type of [gastype] indicates the use of a non-EPA Protocol Gas Type.	Critical Error Level 1
C	You reported an ExpirationDate for the cylinder that is prior to the date of the test for [key].	Critical Error Level 2
D	You reported an ExpirationDate for the cylinder that is more than eight years after the date of the test for [key]. Gas cylinders expire in less than eight years.	Critical Error Level 2
E	You reported a [fieldname] for [key], but you did not report an UpscaleGasTypeCode.	Non-Critical Error

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Code:** DAYCAL-30

**Check Name:** Upscale Gas Type Code Components Valid

**Related Former Checks:** 2013 Q1 replacement for DAYCAL-26

**Applicability:** CEM Check

**Description:** This check determines whether the Gas Components in the Upscale Gas Type Code are valid (PGVP).

**Validation Tables:**

Vw System Parameter (Lookup Table)

**Specifications:**

For the daily calibration test with an upscale injection:

*UpscaleGasTypeValid* = true.

Locate *System Parameter* lookup table record where Sys\_Param\_Name = 'PGVP\_AETB\_RULE\_DATE'.

Set *Daily Cal PGVP Rule Date* to *System Parameter*.Param\_Value1.

If UpscaleGasTypeCode is null,

If the ComponentTypeCode of the associated component is equal to "SO2", "NOX", "CO2", or "O2", and the Date of the test is on or after 9/26/2011,

*UpscaleGasTypeValid* = false.  
return result A.

Otherwise,

If the ComponentTypeCode of the associated component is equal to "FLOW", "HCL", or "HG",

*UpscaleGasTypeValid* = false  
return result B.

Else

Set *Protocol Gas Invalid Component List* to null.  
Set *Protocol Gas Exclusive Component List* to null.  
Set *Protocol Gas Balance Component List* to null.  
Set *Protocol Gas Duplicate Component List* to null.

Set *Protocol Gas Component List* to null.  
Set *Protocol Gas Approval Requested* = true.  
Set *Protocol Gas Component Count* to 0.  
Set *Balance Component Count* to 0.

For each GasComponentCode in UpscaleGasTypeCode ,

Locate a record in the *GasComponentCodeLookupTable* where GasComponentCode is equal to the GasComponentCode in the UpscaleGasTypeCode .

If not found, or GasComponentCode is equal to "ZERO",  
Add GasComponentCode to *Protocol Gas Invalid Component List*.

Else

If CanCombineIndicator is equal to 0,  
Add GasComponentCode to *Protocol Gas Exclusive Component List*.

If BalanceComponentIndicator is equal to 1,

Add GasComponentCode to **Protocol Gas Balance Component List**.  
Increment *Balance Component Count* by 1.

If the GasComponentCode is equal to "APPVD",  
Set *Protocol Gas Approval Requested* = true.

If GasComponentCode is not in *Protocol Gas Component List*,  
add GasComponentCode to *Protocol Gas Component List*.

Else if GasComponentCode is not in **Protocol Gas Duplicate Component List**,  
add GasComponentCode to **Protocol Gas Duplicate Component List**.

Increment *Protocol Gas Component Count* by 1.

If **Protocol Gas Invalid Component List** is not null,  
*UpscaleGasTypeValid* = false  
return result C.

Else if **Protocol Gas Duplicate Component List** is not null,  
set **Protocol Gas Component List Valid** = false.  
return result L.

Else if **Protocol Gas Exclusive Component List** is not null, and *Protocol Gas Component Count* is greater than 1,  
*UpscaleGasTypeValid* = false  
return result D.

Else if **Protocol Gas Approval Requested** is equal to true,  
return result E.

Else if **Protocol Gas Exclusive Component List** is null, and *Balance Component Count* is equal to 0,  
  
set *UpscaleGasTypeValid* = false.  
return result J.

Else if **Protocol Gas Exclusive Component List** is null, and *Balance Component Count* is greater than 1,  
  
set *UpscaleGasTypeValid* = false.  
return result K.

Else if the UpscaleGasTypeCode is not equal to "GMIS", "NTRM", "PRM", "RGM", or "SRM",

If the ComponentTypeCode is equal to "SO2" or "CO2",

If no GasComponentCode in UpscaleGasTypeCode is equal to ComponentTypeCode,  
*UpscaleGasTypeValid* = false  
return result F.

Else if the ComponentTypeCode is equal to "O2",

If UpscaleGasTypeCode is not equal to "AIR", and no GasComponentCode in  
UpscaleGasTypeCode is equal to "O2",  
*UpscaleGasTypeValid* = false  
return result G.

Else if UpscaleGasTypeCode is equal to "AIR", and the UpscaleGasCode is not equal to "HIGH",  
*UpscaleGasTypeValid* = false  
return result H.

Else if the ComponentTypeCode is equal to "NOX",

If no GasComponentCode in GasTypeCode is equal to "NO", "NO2", or "NOX",  
*UpscaleGasTypeValid* = false  
 return result I.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a UpscaleGasTypeCode for [key]. This information is required by the Protocol Gas Verification Program reporting rule.	Critical Error Level 1
B	You reported a value in the UpscaleGasTypeCode field for [key]. This value should not be reported for a FLOW, HCl, or HG component.	Critical Error Level 1
C	You reported the values ([invalidlist]), in the field [fieldname] for [key], which are not in the list of valid values.	Critical Error Level 1
D	You reported multiple gas components in the field [fieldname] for [key] that include values ([exclusivelist]) that you should report by themselves.	Critical Error Level 1
E	You reported "APPVD" as the [fieldname] for [key]. This code indicates that you received approval from EPA for a new type of Protocol Gas. If you have not received approval from EPA, please contact ECMPS support. If you have already received approval, you should log in to the ECMPS host, so that the ECMPS program can obtain the necessary information to override this error.	Critical Error Level 1
F	You reported an UpscaleGasTypeCode that is not appropriate for a [comptype] component for [key].	Critical Error Level 1
G	You reported an UpscaleGasTypeCode that is not appropriate for a [comptype] component for [key].	Critical Error Level 1
H	You reported an [fieldname] of "AIR" for [key], which indicates the use of purified air material, but this material can only be used for a high-level calibration.	Critical Error Level 1
I	You reported an UpscaleGasTypeCode that is not appropriate for a [comptype] component for [key].	Critical Error Level 1
J	You reported an UpscaleGasTypeCode that does not contain a PGVP balance component. A single balance component is required when reporting other individual gas components.	Critical Error Level 1
K	You reported an UpscaleGasTypeCode that contains multiple PGVP balance components ([balancelist]). A single balance component is required when reporting other individual gas components.	Critical Error Level 1
L	Your reported one or more duplicate gas component records.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Daily Calibration Test

**Check Category:**

**Daily Emissions Data**

**Check Code:** DAILY-1

**Check Name:** Determine Need for Daily CO2 Emissions Record

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Specifications:**

*Current CO2 Mass Daily Record* = null

*Daily Op Time* = null

if (*Daily Op Time Accumulator Array* for the location  $\geq 0$ )

*Daily Op Time* = *Daily Op Time Accumulator Array* for the location

*Daily Op Time Accumulator Array* for the location = 0.

*CO2 Method Count* = Active records in MonitoringMethodData for the location and date where  
ParameterCode begins with "CO2"

*FSA Method Count* = Active records in MonitoringMethodData for the location and date where  
ParameterCode = "CO2M" and MethodCode = "FSA"

if (*FSA Method Count*  $> 0$  AND *CO2 Method Count*  $> 1$ )

return result A

else

if (*FSA Method Count*  $> 0$ )

*Expected Summary Value for CO2 Array* for the location = true

*CO2 Mass Daily Emissions Count* = count of DailyEmissionsData records with ParameterCode = "CO2M" where

*Current Date* = DailyEmissionsData.Date

if (*CO2 Mass Daily Emissions Count*  $> 1$ )

*Rpt Period CO2 Mass Reported Accumulator Array* for the location = -1

*Rpt Period CO2 Mass Calculated Accumulator Array* for the location = -1

return result B

else if (*FSA Method Count*  $\equiv 0$  AND *CO2 Mass Daily Emissions Count*  $> 0$ )

return result C

else if (*FSA Method Count*  $> 0$  AND *CO2 Mass Daily Emissions Count*  $\equiv 0$  AND *Daily Op Time*  $> 0$ )

return result D

else if (*FSA Method Count*  $> 0$  AND *CO2 Mass Daily Emissions Count*  $\equiv 1$ )

*Current CO2 Mass Daily Record* = matching DailyEmissionsData record

If (*Daily Op Time*  $\equiv 0$ )

return result E

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You have reported more than one active method to determine CO2 emissions in your monitoring plan for this date.	Critical Error Level 1
B	You reported more than one Daily Emissions record for [param] for the day.	Critical Error Level 1
C	You reported a Daily Emissions record for CO2M, but you did not report an active CO2M FSA method record in your monitoring plan for the day.	Critical Error Level 1
D	You did not report a Daily Emissions record for CO2M for the day.	Critical Error Level 1
E	You reported a Daily Emissions record for CO2M, but this is not appropriate for a non-operating day.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- CO2 Daily Emissions



**Check Code:** DAILY-2

**Check Name:** Check Total Daily Emissions Value

**Related Former Checks:**

**Applicability:**

**Description:**

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

Set *Calc TDE* to null.

If (*Current CO2 Mass Daily Record* is not null)

If (*Current CO2 Mass Daily Record*.TotalDailyEmissions >= 0 AND *Rpt Period CO2 Mass Reported Accumulator Array* for the location >= 0)

*Rpt Period CO2 Mass Reported Accumulator Array* for the location = *Rpt Period CO2 Mass Reported Accumulator Array* for the location + *Current CO2 Mass Daily Record*.TotalDailyEmissions

if (*Current CO2 Mass Daily Record*.UnadjustedDailyEmissions is not null OR *Calc CO2 Unadj* is not null)

if (*Current CO2 Mass Daily Record*.AdjustedDailyEmissions is null)

*Calc TDE* = *Calc CO2 Unadj*

else if (*Current CO2 Mass Daily Record*.UnadjustedDailyEmissions is not null AND *Current CO2 Mass Daily Record*.AdjustedDailyEmissions is greater than or equal to 0 AND is less than or equal to *Current CO2 Mass Daily Record*.UnadjustedDailyEmissions)

*Calc TDE* = *Current CO2 Mass Daily Record*.AdjustedDailyEmissions

else if (*Current CO2 Mass Daily Record*.AdjustedDailyEmissions is greater than or equal to 0)

*Calc TDE* = *Current CO2 Mass Daily Record*.AdjustedDailyEmissions

If (*Calc TDE* is not null)

If (*Current CO2 Mass Daily Record*.SorbentRelatedMassEmissions is not null)

If (*Current CO2 Mass Daily Record*.SorbentRelatedMassEmissions >= 0)

*Calc TDE* = *Calc TDE* + *Current CO2 Mass Daily Record*.SorbentRelatedMassEmissions

else

Set *Calc TDE* to null.

else if (*Current CO2 Mass Daily Record*.UnadjustedDailyEmissions is null AND *Legacy Data Evaluation* == true AND *Current CO2 Mass Daily Record*.TotalDailyEmissions >= 0)

*Calc TDE* = *Current CO2 Mass Daily Record*.TotalDailyEmissions

If (*Calc TDE* is null)

*Rpt Period CO2 Mass Calculated Accumulator Array* for the location = -1

else

If (*Rpt Period CO2 Mass Calculated Accumulator Array* for the location >= 0)

*Rpt Period CO2 Mass Calculated Accumulator Array* for the location = *Rpt Period CO2 Mass Calculated Accumulator Array* for the location + *Calc TDE*

If (*Current CO2 Mass Daily Record*.TotalDailyEmissions >= 0)

If (*Calc TDE* is not null)

*Tolerance* = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
Parameter = "CO2M DAILY" AND  
UOM = "TON"

if (ABS(*Current CO2 Mass Daily Record*.TotalDailyEmissions - *Calc TDE*) > *Tolerance*)  
return result A

else

return result C

else

*Rpt Period CO2 Mass Reported Accumulator Array* for the location = -1  
return result B

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The [fieldname] reported in the Daily Emissions record for [param] is inconsistent with the recalculated value.	Critical Error Level 1
B	The [fieldname] reported in the Daily Emissions record for [param] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
C	The TotalDailyEmissions in the Daily Emissions record for [param] could not be recalculated due to other errors listed in this report.	Informational Message

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- CO2 Daily Emissions

**Check Code:** DAILY-3

**Check Name:** Check Adjusted Daily Emissions Value

**Related Former Checks:**

**Applicability:**

**Description:**

**Specifications:**

```
if (Current CO2 Mass Daily Record is not null),  
  
    if (Current CO2 Mass Daily Record.AdjustedDailyEmissions is not null),  
  
        If (Current CO2 Mass Daily Record.AdjustedDailyEmissions is less than 0),  
            return result A  
  
        else  
            If (Current CO2 Mass Daily Record.UnadjustedDailyEmissions is greater than or equal to 0 AND is less than  
                Current CO2 Mass Daily Record.AdjustedDailyEmissions),  
                    return result B
```

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The [fieldname] reported in the Daily Emissions record for [param] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
B	The AdjustedDailyEmissions in the Daily Emissions record for [param] is greater than the UnadjustedDailyEmissions. The adjusted value should be less than the unadjusted value.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Daily Emissions
---	-------------------	--

**Check Code:** DAILY-4

**Check Name:** Check Sorbent Related Emissions

**Related Former Checks:**

**Applicability:**

**Description:**

**Specifications:**

if (*Current CO2 Mass Daily Record* is not null),

    if (*Current CO2 Mass Daily Record*.SorbentRelatedMassEmissions is not null AND is less than 0),

        return result A

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The [fieldname] reported in the Daily Emissions record for [param] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Daily Emissions
---	-------------------	--

**Check Code:** DAILY-5

**Check Name:** Validate Presence of Adjusted Daily Emissions

**Related Former Checks:**

**Applicability:**

**Description:**

**Specifications:**

if (*Current CO2 Mass Daily Record*) is not null

    if (*Current CO2 Mass Daily Record*.AdjustedDailyEmissions is not null)

        Locate a Monitor Formula record for the location and hour where the ParameterCode is equal to 'CO2M' and the FormulaCode is equal to "G-2" or "G-3".

        If not found,

            return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported AdjustedDailyEmissions in the Daily Emissions record for CO2M, but you did not report a G-2 or G-3 formula in your monitoring plan.	Critical Error Level 1

Usage:		
1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Daily Emissions

**Check Code:** DAILY-6

**Check Name:** Validate Presence of Sorbent Related Emissions

**Related Former Checks:**

**Applicability:**

**Description:**

**Specifications:**

if (*Current CO2 Mass Daily Record*) is not null

    if (*Current CO2 Mass Daily Record*.SorbentRelatedMassEmissions is not null),

*Missing CO2M Formula* = null

        Locate a *Monitor Formula* record for the location and hour where the ParameterCode is equal to 'CO2M' and the FormulaCode is equal to "G-5" or "G-6".

        If not found,

            Set *Missing CO2M Formula* to "G-5 or G-6"

        Locate a *Monitor Formula* record for the location and hour where the ParameterCode is equal to 'CO2M' and the FormulaCode is equal to "G-8".

        If not found,

            Append "G-8" to *Missing CO2M Formula*.

        If (*Missing CO2M Formula* is not null)

            return result A.

Results:		
Result	Response	Severity
A	You reported SorbentRelatedMassEmissions in the Daily Emissions record for CO2M, but you did not report [code] formula(s) in your monitoring plan.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Daily Emissions
---	-------------------	--

**Check Code:** DAILY-7

**Check Name:** Check Unadjusted Daily Emissions Value

**Related Former Checks:**

**Applicability:**

**Description:**

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

Set *Calc CO2 Unadj* to null.

if (*Current CO2 Mass Daily Record* is not null)

if (*Calc Total Carbon Burned* is greater than 0)

Calculate *Calc CO2 Unadj* = *Calc Total Carbon Burned* \* 44 / 24,000, and round the result to 1 decimal place.

if (*Current CO2 Mass Daily Record*.UnadjustedDailyEmissions is null OR is less than 0)

return result A

else if (*Current CO2 Mass Daily Record*.UnadjustedDailyEmissions >= 0)

*Tolerance* = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where

Parameter = "CO2M DAILY" AND

UOM = "TON"

if (ABS(*Current CO2 Mass Daily Record*.UnadjustedDailyEmissions - *Calc CO2 Unadj*) > *Tolerance*)

return result B

else if (*Current CO2 Mass Daily Record*.UnadjustedDailyEmissions is null)

If (*Legacy Data Evaluation* == false)

return result A.

else if (*Current CO2 Mass Daily Record*.UnadjustedDailyEmissions is less than 0)

return result A

else

Set *Calc CO2 Unadj* to *Current CO2 Mass Daily Record*.UnadjustedDailyEmissions.

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The [fieldname] reported in the Daily Emissions record for [param] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
B	The [fieldname] reported in the Daily Emissions record for [param] is inconsistent with the recalculated value.	Critical Error Level 1

## Usage:

1 Process/Category: Emissions Data Evaluation Report ----- CO2 Daily Emissions

**Check Code:** DAILY-8

**Check Name:** Check Fuel in Daily Fuel Record

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Specifications:**

Locate UnitFuel record for the location and day  
where FuelCd = *Current Daily Fuel Record*.UnitFuelCd

If not found,  
return result A

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report an active Unit Fuel record for FuelCode [fuelcd] in your monitoring plan.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Daily Emissions Fuel
---	-------------------	---



**Check Code:** DAILY-9

**Check Name:** Check Daily Fuel Feed

**Related Former Checks:**

**Applicability:**

**Description:**

**Specifications:**

if (*Current Daily Fuel Record*.DailyFuelFeed is null)  
    return result A.

else if (*Current Daily Fuel Record*.DailyFuelFeed is less than or equal to 0)  
    return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The [fieldname] reported in the Daily Fuel record for [key] is missing or invalid. The value must be greater than 0.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Daily Emissions Fuel
---	-------------------	---

**Check Code:** DAILY-10  
**Check Name:** Check Carbon Content Used

**Related Former Checks:**

**Applicability:**

**Description:**

**Specifications:**

if (*Current Daily Fuel Record*.CarbonContentUsed is null)  
    return result A.

else if (*Current Daily Fuel Record*.CarbonContentUsed is less than or equal to 0 or greater than 100)  
    return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The CarbonContentUsed in the Daily Fuel record for [key] is invalid. The value must be greater than 0 and less than or equal to 100.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Daily Emissions Fuel
---	-------------------	---

**Check Code:** DAILY-11

**Check Name:** Check Fuel Carbon Burned

**Related Former Checks:**

**Applicability:**

**Description:**

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

*Calc Fuel Carbon Burned* = null

if (*Current Daily Fuel Record*.DailyFuelFeed is greater than 0 and *Current Daily Fuel Record*.CarbonContentUsed is greater than 0 and less than or equal to 100)

Calculate *Calc Fuel Carbon Burned* = *Current Daily Fuel Record*.DailyFuelFeed \* *Current Daily Fuel Record*.CarbonContentUsed / 100, and round the result to 1 decimal place.

If *Calc Total Carbon Burned* is greater than or equal to 0,  
Add *Calc Fuel Carbon Burned* to *Calc Total Carbon Burned*.

else

Set *Calc Total Carbon Burned* to -1.

if (*Current Daily Fuel Record*.FuelCarbonBurned is null)  
return result A.

else if (*Current Daily Fuel Record*.FuelCarbonBurned is less than or equal to 0)  
return result A.

else if (*Calc Fuel Carbon Burned* is not null AND *Current Daily Fuel Record*.FuelCarbonBurned <> *Calc Fuel Carbon Burned*)

*Tolerance* = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
Parameter = "CARBON" AND  
UOM = "LB"

if (ABS(*Current Daily Fuel Record*.FuelCarbonBurned - *Calc Fuel Carbon Burned*) > *Tolerance*)  
return result B.

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The [fieldname] reported in the Daily Fuel record for [key] is missing or invalid. The value must be greater than 0.	Critical Error Level 1
B	The [fieldname] in the Daily Fuel record for [key] is inconsistent with the recalculated value.	Critical Error Level 1

## Usage:

1 Process/Category: Emissions Data Evaluation Report ----- CO2 Daily Emissions Fuel

**Check Code:** DAILY-12  
**Check Name:** Intialize Daily Emissions

**Related Former Checks:**

**Applicability:**

**Description:**

**Specifications:**

Set *Calc Total Carbon Burned* to 0.  
*Daily Op Time Accumulator Array* for the location = 0.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report --- CO2 Daily Emissions Initialization
---	-------------------	---

**Check Code:** DAILY-13

**Check Name:** Check Total Carbon Burned

**Related Former Checks:**

**Applicability:**

**Description:**

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

Set *Calculate CO2M TDE* to true.

if (*Current CO2 Mass Daily Record.TotalCarbonBurned* is null)

if (*Calc Total Carbon Burned* is not equal to 0)

return result A.

else if (*Current CO2 Mass Daily Record.TotalCarbonBurned* is less than 0)

return result B.

else

if (*Calc Total Carbon Burned* is greater than 0 AND *Current CO2 Mass Daily Record.TotalCarbonBurned*  $\diamond$  *Calc Total Carbon Burned*)

*Tolerance* = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where

Parameter = "CARBON" AND

UOM = "LB"

if (ABS(*Current CO2 Mass Daily Record.TotalCarbonBurned* - *Calc Total Carbon Burned*) > *Tolerance*)

return result C.

else if (*Calc Total Carbon Burned* == 0)

Set *Calc Total Carbon Burned* to *Current CO2 Mass Daily Record.TotalCarbonBurned*.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report TotalCarbonBurned in the Daily Emission record for CO2M. You must report this value if you report Daily Fuel records.	Critical Error Level 1
B	The [fieldname] reported in the Daily Emissions record for [param] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
C	The [fieldname] reported in the Daily Emissions record for [param] is inconsistent with the recalculated value.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- CO2 Daily Emissions

**Check Category:**

**Daily Interference Status**

**Check Code:** INTSTAT-1

**Check Name:** Determine the Online Daily Interference Check

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check locates the most recent prior daily interference check for the FLOW monitor used during the current hour.

**Specifications:**

Set *OnlineDailyIntCheck* = null  
 Set *OnlineDailyIntRecord* = null  
 Set *OfflineDailyIntRecord* = null.  
 Set *DailyIntStatusResult* = null

Locate *OnlineDailyIntCheck* in *LatestDailyInterferenceCheckObject* for the location where:

- a) ComponentID is equal to the *QaStatusComponentId* AND
- b) Online equals true.

if ( *OnlineDailyIntCheck* is not null )

Set *OnlineDailyIntRecord* = *OnlineDailyIntCheck* .DailyInterferenceCheckRow

If ( *OnlineDailyIntRecord* .TestResultCd = "PASSED" )

If (the number of clock hours between the *OnlineDailyIntRecord* .EndDate/Hour and the *CurrentMHVRecord* .Date/Hour is less than 26)

Set *DailyIntStatusResult* = "IC"

else if ( *OnlineDailyIntRecord* .TestResultCd = "FAILED" )

Set *DailyIntStatusResult* = "OOC-Test Failed"

else if ( *OnlineDailyIntRecord* .TestResultCd = "ABORTED" )

Set *DailyIntStatusResult* = "OOC-Test Aborted"

else

Set *DailyIntStatusResult* = "OOC-Test Has Critical Errors"

If ( *DailyIntStatusResult* is not equal to "IC" )

Locate the latest record in *DailyIntCheckRecordsByLocationForQaStatus* for the location where:

- a) Date/Hour is on or prior to the *Current MHV Record* .Date/Hour
- b) Date/Hour/Min is after the *OnlineDailyIntRecord* .EndDate/Hour/Min
- c) The ComponentID is equal to the *QaStatusComponentId* AND
- d) TestResultCd is equal to "IGNORED"

if ( *DailyIntCheckRecordsByLocationForQaStatus* is found

Set *OfflineDailyIntRecord* = the found record in *DailyIntCheckRecordsByLocationForQaStatus* .

If ( *DailyIntStatusResult* is not null )

Set *DailyIntStatusResult* = *DailyIntStatusResult* & "\*"

**Results:**

Result

Response

Severity

**Usage:**

- |   |                   |  |
|---|-------------------|--|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- Daily Interference Check Status Evaluation          |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- Flow Averaging Daily Interference Status Evaluation |



**Check Code:** INTSTAT-2

**Check Name:** Determine Daily Interference Status for No Prior Check

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check determines the daily interference check status when there is no prior check.

**Specifications:**

If (*DailyIntStatusResult* is null) and (*OnlineDailyIntRecord* is null)

*// Determine whether check in previous quarter is possibly effective for current hour.*

If (the number of clock hours between the *First Day of Operation/First Hour of Operation* and the *CurrentMHVRecord.Date/Hour* is less than 25)

Set *DailyIntStatusResult* = "IC-Undetermined".

else

*// If a non operating hour exists within the first 24 hours after the first operating hour in the quarter, a grace period exists for seven hours after the operating hour subsequent to the non operating hour.*

Locate the latest record in *HourlyOpData* where:

- a) Date/Hour is ON OR PRIOR to the 24th clock hour following the *First Day of Operation/First Hour of Operation*
- b) OpTime is equal to zero.

if (*HourlyOpData* is found)

Locate the first record in *HourlyOpData* where:

- a) Date/Hour is after the Date/Hour in the *HourlyOpData* record found above
- b) Date/Hour is ON OR PRIOR to the *CurrentMHVRecord.Date/Hour*
- c) OpTime is greater than zero.

if (*HourlyOpData* is found) and (the number of clock hours starting at *HourlyOpData.Date/Hour* and up to the hour before *CurrentMHVRecord.Date/Hour* is greater than 7)

Set *DailyIntStatusResult* = "OOC-No Prior Test".

else

Set *DailyIntStatusResult* = "IC-Undetermined".

else

Set *DailyIntStatusResult* = "OOC-No Prior Test".

If (*DailyIntStatusResult* begins with "OOC")

Locate the record in *DailyIntCheckRecordsByLocationForQAStatus* for the location where:

- a) Date/Hour is on or prior to the *Current MHV Record.Date/Hour*
- b) the ComponentID is equal to the *QAStatusComponentId* AND
- c) TestResultCd is equal to "IGNORED"

if (*DailyIntCheckRecordsByLocationForQAStatus* is found)

Set *OfflineDailyIntRecord* = the found record in *DailyIntCheckRecordsByLocationForQAStatus*.

Set *DailyIntStatusResult* = *DailyIntStatusResult* & "\*"

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
Usage:		
1	Process/Category: Emissions Data Evaluation Report -----	Daily Interference Check Status Evaluation
2	Process/Category: Emissions Data Evaluation Report -----	Flow Averaging Daily Interference Status Evaluation

**Check Code:** INTSTAT-3

**Check Name:** Determine Expiration Status for Prior Daily Interference Check

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check determines the daily interference status if the prior check is more than 26 hours prior to current hour.

**Specifications:**

If (*DailyIntStatusResult* is null)

If ( *OnlineDailyIntCheck*.LastCoveredNonOpHour is NOT null )

*// If a non operating hour exists within the first 27 hours after the hour of the online Daily Interference Check, a grace period exists for eight hours starting with the operating hour subsequent to the non operating hour.*

If ( *OnlineDailyIntCheck*.FirstOpHourAfterLastNonOpHour is NOT null ) AND ( the number of clock hours inclusively between the *OnlineDailyIntCheck*.FirstOpHourAfterLastNonOpHour and the *CurrentDateHour* is greater than 8 )

Set *DailyIntStatusResult* = "OOC-Expired".

else

Set *DailyIntStatusResult* = "IC-Grace".

else

Set *DailyIntStatusResult* = "OOC-Expired".

If (*DailyIntStatusResult* begins with "OOC" and *OfflineDailyIntRecord* is not null)

Set *DailyIntStatusResult* = *DailyIntStatusResult* & "\*"

If (*DailyIntStatusResult* does not begin with "IC")

Return *DailyIntStatusResult* .

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
OOO-Expired	The prior daily interference check for [compkey] completed on [date] expired.	Critical Error Level 1
OOO-Expired*	The prior daily interference check for [compkey] completed on [date] expired. A daily interference check completed on [invdate] was ignored because it was completed while the unit was offline.	Critical Error Level 1
OOO-No Prior Test	You did not report a prior daily interference check for [compkey] during the reporting period. Any daily interference check that may have been completed in a prior reporting period has expired.	Critical Error Level 1
OOO-No Prior Test*	You did not report a prior daily interference check for [compkey] during the reporting period. Any daily interference check that may have been completed in a prior reporting period has expired. A daily interference check completed on [invdate] was ignored because it was completed while the unit was offline.	Critical Error Level 1
OOO-Test Aborted	The prior daily interference check for [compkey] completed on [date] was aborted.	Critical Error Level 1
OOO-Test Aborted*	The prior daily interference check for [compkey] completed on [date] was aborted. An daily interference check completed on [invdate] was ignored because it was performed while the unit was offline.	Critical Error Level 1
OOO-Test Failed	The prior daily interference check for [compkey] completed on [date] failed.	Critical Error Level 1
OOO-Test Failed*	The prior daily interference check for [compkey] completed on [date] failed. An daily interference check completed on [invdate] was ignored because it was performed while the unit was offline.	Critical Error Level 1
OOO-Test Has Critical Errors	The prior daily interference check for [compkey] completed on [date] has critical errors.	Critical Error Level 1
OOO-Test Has Critical Errors*	The prior daily interference check for [compkey] completed on [date] has critical errors. An daily interference check completed on [invdate] was ignored because it was performed while the unit was offline.	Critical Error Level 1

**Usage:**

- 1 Process/Category: Emissions Data Evaluation Report ----- Daily Interference Check Status Evaluation
- 2 Process/Category: Emissions Data Evaluation Report ----- Flow Averaging Daily Interference Status Evaluation

**Check Category:**

**Daily Test**

**Check Code:** EMTEST-1  
**Check Name:** Daily Test Date Valid  
**Related Former Checks:**  
**Applicability:** CEM Check  
**Description:**  
**Specifications:**

For the daily emission test:

Set *EM Test Date Valid* to true.

If Date is null,  
set *EM Test Date Valid* to false, and return result A.

If Date is before 01/01/1993 or after the end of the *Current Reporting Period*,  
set *EM Test Date Valid* to false, and return result B.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You reported a [Fieldname] of [Date], which is outside the range of acceptable values for this date for [key].	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Daily Calibration Test
2	Process/Category:	Emissions Data Evaluation Report ----- Miscellaneous Emission File Test

**Check Code:** EMTEST-2

**Check Name:** Daily Test Hour Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:**

**Specifications:**

For the daily emission test:

Set *EM Test Hour Valid* to true.

If Hour is null,

Set *EM Test Hour Valid* to false, and return result A.

If Hour is not between 0 and 23,

Set *EM Test Hour Valid* to false, and return result B.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You reported a [Fieldname] of [Hour], which is outside the range of acceptable values for this hour for [key].	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Daily Calibration Test
2	Process/Category:	Emissions Data Evaluation Report ----- Miscellaneous Emission File Test

**Check Code:** EMTEST-3

**Check Name:** Daily Test Minute Valid

**Related Former Checks:**

**Applicability:** CEM Check

**Description:**

**Specifications:**

For the daily emission test:

Set *EM Test Minute Valid* to true.

If Minute is null,

If (*Legacy Data Evaluation* == false)  
set *EM Test Minute Valid* to false, and return result A.

Otherwise,  
return result B.

If Minute is not between 0 and 59,  
set *EM Test Minute Valid* to false, and return result C.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You did not provide [fieldname] for [key]. This information will be required for ECMPS submissions.	Informational Message
C	You reported a [Fieldname] of [Minute] for [key], which is outside the range of acceptable values.	Critical Error Level 1

**Usage:**

- |   |                   |   |
|---|-------------------|---|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- Daily Calibration Test           |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- Miscellaneous Emission File Test |



**Check Code:** EMTEST-4

**Check Name:** Daily Test System or Component Valid

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Specifications:**

For the daily test:

If both the MonitoringSystemID and ComponentID are not null,  
return result A.

If TestTypeCode is equal to "INTCHK",

If ComponentID is null,  
return result B.

If the ComponentTypeCode of the associated component is not equal to "FLOW",  
return result C.

If TestTypeCode is equal to "PEMSCAL",

If MonitoringSystemID is null,  
return result D.

If the SystemTypeCode of the associated system is not equal to "NOXP",  
return result E.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You have reported both a MonitoringSystemID and a ComponentID for [key]. This is invalid.	Critical Error Level 1
B	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
C	The ComponentTypeCode for [key] is not appropriate for this type of test.	Critical Error Level 1
D	You did not provide a MonitoringSystemID for [key], which is required for this test type.	Critical Error Level 1
E	The SystemTypeCode of the system for [key] is not appropriate for this type of test.	Critical Error Level 1

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Daily Calibration Test
2	Process/Category:	Emissions Data Evaluation Report ----- Miscellaneous Emission File Test

**Check Code:**EMTEST-5

**Check Name:**Daily Test Span Scale Valid

**Related Former Checks:**

**Applicability:**CEM Check

**Description:**This check determines whether the reported span scale is valid and consistent with the current analyzer range of the component.

**Specifications:**

For the daily test:

    If the SpanScaleCode is not null,  
        return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported [fieldname] for [key], which is not appropriate for this test type.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Miscellaneous Emission File Test
---	-------------------	---

**Check Code:** EMTEST-6

**Check Name:** Daily Test Result Code Valid

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Specifications:**

For the daily test:

```
Set EM Test Calc Result to null.

If TestResultCode is null,
    return result A.

else if TestResultCode is not equal to "ABORTED", "PASSED", or "FAILED",
    return result B.

else
    Set EM Test Calc Result to TestResultCode.

if TestTypeCode is equal to "INTCHK" and EM Test Date Valid and EM Test Hour Valid and OpTime is equal to 0,

    Set Ignored Daily Interference Tests to true.
    Set EM Test Calc Result to "IGNORED".
```

**Results:**

Result	Response	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Miscellaneous Emission File Test

**Check Category:**

**EM Weekly System Integrity Test**

Check Code:EMWSI-1

Check Name:Check Hg Converter Indicator of the Component

Related Former Checks:

Applicability:

Description:Ensures that the Hg Convert Indicator of the component associated with the test is set to 1.

Specifications:

If (*CurrentWeeklySystemIntegrityTest* .HgConverterIndicator is NOT equal to 1)

Set *WeeklyTestSummaryValid* to false.  
return result A.

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key] you reported a HgConverterIndicator that is not equal to 1, which indicates that a Weekly System Integrity Test is not necessary.	Critical Error Level 1

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation
---	-------------------	--

**Check Code:** EMWSI-2

**Check Name:** Check Gas Level

**Related Former Checks:**

**Applicability:**

**Description:** Ensure that the Gas Level was reported and with a valid value.

**Specifications:**

For *CurrentWeeklySystemIntegrityTest*

    If (GasLevelCode is null)

        Set *WeeklyTestSummaryValid* to false.  
        return result A.

    Else if (GasLevelCode is NOT in set (HIGH, MID, LOW, ZERO))

        Set *WeeklyTestSummaryValid* to false.  
        return result B.

    Else if (GasLevelCode is NOT in set (HIGH, MID))

        Set *WeeklyTestSummaryValid* to false.  
        return result C.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide a [fieldname], which is required, for [key].	Critical Error Level 1
B	For [key] you reported a [levelcode] that is not in the list of valid [fieldname] for this test type.	Critical Error Level 1
C	For [key], you reported an invalid Gas Level Code of [levelcode], for a [testtype].	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation

**Check Code:** EMWSI-3

**Check Name:** Check Weekly System Integrity Reference Value

**Related Former Checks:**

**Applicability:**

**Description:** Ensure that the Weekly System Integrity Test Reference Value was reported and with a valid value.

**Specifications:**

For *CurrentWeeklySystemIntegrityTest*

Set *InjectionReferenceValueValid* to false.

If (ReferenceValue is null)

Set *WeeklyTestSummaryValid* to false.  
return result A.

Else if (ReferenceValue is NOT rounded to one decimal place)

Set *WeeklyTestSummaryValid* to false.  
return result B.

Else if (ReferenceValue is NOT greater than 0)

If (TestResultCode is NOT equal to "FAILED")

Set *WeeklyTestSummaryValid* to false.  
return result C.

Else

Set *InjectionReferenceValueValid* to true

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide a [fieldname], which is required, for [key].	Critical Error Level 1
B	The [fieldname] value for [key] should be reported to one decimal place.	Critical Error Level 1
C	Your reported CEM Value and/or Reference Value for [key] is less than or equal to zero.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation

**Check Code:** EMWSI-4

**Check Name:** Check Weekly System Integrity Measured Value

**Related Former Checks:**

**Applicability:**

**Description:** Ensure that the Weekly System Integrity Test Measured Value was reported and with a valid value.

**Specifications:**

For *CurrentWeeklySystemIntegrityTest*

Set *InjectionMeasuredValueValid* to false.

If (MeasuredValue is null)

Set *WeeklyTestSummaryValid* to false.  
return result A.

Else if (MeasuredValue is NOT rounded to one decimal place)

Set *WeeklyTestSummaryValid* to false.  
return result B.

Else if (MeasuredValue is NOT greater than 0)

If (TestResultCode is NOT equal to "FAILED")  
  
Set *WeeklyTestSummaryValid* to false.  
return result C.

Else

Set *InjectionMeasuredValueValid* to true

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide a [fieldname], which is required, for [key].	Critical Error Level 1
B	The [fieldname] value for [key] should be reported to one decimal place.	Critical Error Level 1
C	Your reported CEM Value and/or Reference Value for [key] is less than or equal to zero.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation



**Check Code:** EMWSI-5

**Check Name:** Calculate System Integrity Error and Alternate Performance Spec Indicator

**Related Former Checks:**

**Applicability:**

**Description:** Use the Reference and Measured Values to calculate the System Integrity Error and the Alternate Performance Spec. Also updates the calculated Weekly Test Summary Test Result.

**Specifications:**

For *CurrentWeeklySystemIntegrityTest*

Set *CalculatedSystemIntegrityApsIndicator* to null.

Set *CalculatedSystemIntegrityError* to null.

If (*InjectionReferenceValueValid* AND *InjectionMeasuredValueValid*)

Set *PercentError* to  $(100 * \text{ABS}(\text{ReferenceValue} - \text{MeasuredValue}) / \text{ReferenceValue})$ , rounded to 1 decimal place.

If (*PercentError* is less than or equal to 10)

Set *CalculatedSystemIntegrityApsIndicator* to 0.

Set *CalculatedSystemIntegrityError* to *PercentError*.

Set *CalculatedWeeklyTestSummaryResult* to "PASSED".

Else

Set *AbsoluteError* to  $\text{ABS}(\text{ReferenceValue} - \text{MeasuredValue})$ , rounded to 2 decimal places.

If (*AbsoluteError* is less than or equal to 0.8)

Set *CalculatedSystemIntegrityApsIndicator* to 1.

Set *CalculatedSystemIntegrityError* to *AbsoluteError*.

Set *CalculatedWeeklyTestSummaryResult* to "PASSAPS".

Else

Set *CalculatedSystemIntegrityApsIndicator* to 0.

Set *CalculatedSystemIntegrityError* to *PercentError*.

Set *CalculatedWeeklyTestSummaryResult* to "FAILED".

**Results:**

Result

Response

Severity

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation

**Check Code:** EMWSI-6

**Check Name:** Check Weekly System Integrity Alternative Performance Spec

**Related Former Checks:**

**Applicability:**

**Description:** Ensures that the APS indicator is a valid value and matches the calculate APS indicator.

**Specifications:**

For *CurrentWeeklySystemIntegrityTest*

Set *WeeklySystemIntegrityApsIsValid* to false.

If (*InjectionReferenceValueValid* and *InjectionMeasuredValueValid*)

If (ApsIndicator is null)

Set *WeeklyTestSummaryValid* to false.  
return result A.

Else if (ApsIndicator is NOT equal to 0 OR 1)

Set *WeeklyTestSummaryValid* to false.  
return result B.

Else if (ApsIndicator is NOT equal to *CalculatedSystemIntegrityApsIndicator*)

Set *WeeklyTestSummaryValid* to false.  
return result C.

Else

Set *WeeklySystemIntegrityApsIsValid* to true.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide a [fieldname], which is required, for [key].	Critical Error Level 1
B	You did not report an APSIndicator of "0" or "1" for [key].	Critical Error Level 1
C	The APSIndicator reported for [key] is inconsistent with the APSIndicator recalculated from the reported reference and measured values.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation

**Check Code:** EMWSI-7

**Check Name:** Check Weekly System Integrity Error

**Related Former Checks:**

**Applicability:**

**Description:** Ensure that the Weekly System Integrity Error was reported, has a valid value, and matches the calculated value.

**Specifications:**

For *CurrentWeeklySystemIntegrityTest*

Set *WeeklySystemIntegrityErrorIsValid* to false.

If (*InjectionReferenceValueValid* and *InjectionMeasuredValueValid*)

If (SystemIntegrityError is null)

Set *WeeklyTestSummaryValid* to false.  
return result A.

Else if (*WeeklySystemIntegrityApsIsValid*)

If (SystemIntegrityError is NOT rounded to one decimal place)

Set *WeeklyTestSummaryValid* to false.  
return result B.

Else if (SystemIntegrityError is NOT equal to *CalculatedSystemIntegrityError*)

Set *WeeklyTestSummaryValid* to false.  
return result C.

Else

Set *WeeklySystemIntegrityErrorIsValid* to true.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide a [fieldname], which is required, for [key].	Critical Error Level 1
B	The [testtype] status for [key] could not be determined, because the OperatingTime in at least one Hourly Operating Data records was missing or invalid.	Critical Error Level 1
C	The [fieldname] value for [key] is inconsistent with the value of [value], recalculated from the reported [testtype] records.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation

**Check Code:** EMWSI-8

**Check Name:** Check Weekly Test Summary Result Against Calculated Value

**Related Former Checks:**

**Applicability:**

**Description:** Compares the calculated test result to the reported test result.

**Specifications:**

If (*CalculatedWeeklyTestSummaryResult* is NOT null) and (*CurrentWeeklyTestSummary*.TestResultCode is NOT equal to *CalculatedWeeklyTestSummaryResult* )

Set *CalculatedWeeklyTestSummaryResult* to null.

Set *WeeklyTestSummaryValid* to false.

return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key], the [fieldname] is not consistent with the test result recalculated from the reported records.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation
---	-------------------	--

**Check Code:** EMWSI-9

**Check Name:** Update Weekly System Integrity Dictionary Component Entry

**Related Former Checks:**

**Applicability:**

**Description:** Initializes a *WsiTestDictionary* entry for the *CurrentWeeklySystemIntegrityTest* Component Id if it does not already exist.

If the *LastEvaluatedTestRecord* is not null and its *TestDateHour* is before the current hour, assign it as the *MostRecentTestRecord*, and clear the operating date list and last operating date.

Finally always set the *LastEvaluatedTestRecord* to the *CurrentWeeklySystemIntegrityTest*.

**Specifications:**

If (*WsiTestDictionary* does NOT contain a key equal to *CurrentWeeklySystemIntegrityTest.ComponentId*)

Add an entry to *WsiTestDictionary* for *CurrentWeeklySystemIntegrityTest.ComponentId* with the following fields:

- a) *MostRecentTestRecord*
- b) *OperatingDateList* initialized as an empty list.

For the *WsiTestDictionary* entry where the key is equal to *CurrentWeeklySystemIntegrityTest.ComponentId*:

Set *MostRecentTestRecord* to *CurrentWeeklySystemIntegrityTest*.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation
---	-------------------	--

**Check Code:** EMWSI-10

**Check Name:** Update Weekly System Integrity Dictionary Operating Date Information

**Related Former Checks:**

**Applicability:**

**Description:** Updates the OperatingDateList with the current date if it is not in the list and the current hour is an operating hour.

**Specifications:**

If (*CurrentOperatingTime* is greater than 0)

For each entry in *WsiTestDictionary*:

If (MostRecentTestRecord is NOT null) AND ( MostRecentTestRecord .LocationKey is equal to *CurrentMonitorLocationId*)

If (MostRecentTestRecord .TestDateHour is equal to *CurrentDateHour*)

Set OperatingDateList to an empty list.

If (MostRecentTestRecord.TestDate is prior to *CurrentDateHour*) AND (OperatingDateList does NOT contain *CurrentOperatingDate*)

Add *CurrentOperatingDate* to OperatingDateList

**Results:**

Result

Response

Severity

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Weekly System Integrity Test Operating Dates

**Check Code:** EMWSI-11

**Check Name:** Ensure that Weekly System Integrity Test Occurred During an Operating Hour

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check ensures that the Weekly System Integrity test occurred during an operating hour.

**Specifications:**

For *CurrentWeeklySystemIntegrityTest*

    If (*CurrentOperatingTime* is equal to 0)

        Return result A

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	Test [key] was performed while the unit was not operating even though [type] test are only allowed during operating hours.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation
---	-------------------	--

**Check Category:**

**EM Weekly Test Summary**



**Check Code:** EMWTS-1

**Check Name:** Initialize Parameters

**Related Former Checks:**

**Applicability:**

**Description:** Initializes the updatable parameters used in weekly test summary evaluations.

**Specifications:**

Set *WeeklyTestSummaryValid* to true.  
Set *CalculatedWeeklyTestSummaryResult* to null.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation
---	-------------------	--

**Check Code:** EMWTS-2

**Check Name:** Check Weekly Test Type

**Related Former Checks:**

**Applicability:**

**Description:** Ensures that the test type is for a weekly test.

**Specifications:**

For *CurrentWeeklyTestSummary*

    If (TestTypeCode is not equal to "HGSII"),

        Set *WeeklyTestSummaryValid* to false.

        return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported a [testtype] in [key] that is not a valid TestTypeCode for a weekly test.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation

**Check Code:**EMWTS-3

**Check Name:**Check Weekly Test System

**Related Former Checks:**

**Applicability:**

**Description:**Ensures that the system identifier is either reported or not reported when expected, and if it is and should have been reported, that it was reported with the correct system type.

**Specifications:**

For *CurrentWeeklyTestSummary*

If (TestTypeCode is equal to "HGSII"),

If (SystemId is NOT null),

Set *WeeklyTestSummaryValid* to false.

return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported a MonitoringSystemID for [key], which is not valid for a [testtype]. Only a ComponentID is reported for a [testtype].	Critical Error Level 1

**Usage:**

1Process/Category:Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation

**Check Code:**EMWTS-4

**Check Name:**Check Weekly Test Component

**Related Former Checks:**

**Applicability:**

**Description:**Ensures that the system identifier is either reported or not reported when expected, and if it is and should have been reported, that it was reported with the correct system type.

**Specifications:**

For *CurrentWeeklyTestSummary*

If (TestTypeCode is equal to "HGSII")

If (ComponentId is null)

Set *WeeklyTestSummaryValid* to false.  
return result A.

Else if (ComponentTypeCode is NOT equal to "HG")

Set *WeeklyTestSummaryValid* to false.  
return result B.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The ComponentTypeCode for [key] is not appropriate for this type of test.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation
---	-------------------	--

**Check Code:** EMWTS-5

**Check Name:** Check Weekly Test Date

**Related Former Checks:**

**Applicability:**

**Description:** Ensures that an date was reported for the weekly test and that the value reported is valid.

**Specifications:**

For *CurrentWeeklyTestSummary*

Set *TestDateValid* to false.

If (TestDate is null)

Set *WeeklyTestSummaryValid* to false.  
return result A.

Else if (TestDate is before 01/01/1993) OR (TestDate is after *CurrentReportingPeriodEndHour*)

Set *WeeklyTestSummaryValid* to false.  
return result B.

Else

Set *TestDateValid* to true.

Results:		
Result	Response	Severity
A	You did not provide a [fieldname], which is required, for [key].	Critical Error Level 1
B	You reported a [Fieldname] of [Date], which is outside the range of acceptable values for this date for [key].	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation
---	-------------------	--

**Check Code:** EMWTS-6

**Check Name:** Check Weekly Test Hour

**Related Former Checks:**

**Applicability:**

**Description:** Ensures that an hour was reported for the weekly test and that the value reported is valid.

**Specifications:**

For *CurrentWeeklyTestSummary*

Set *TestHourValid* to false.

If (TestHour is null)

Set *WeeklyTestSummaryValid* to false.  
return result A.

Else if (TestHour is NOT between 0 and 23)

Set *WeeklyTestSummaryValid* to false.  
return result B.

Else

Set *TestHourValid* to *TestDateValid*.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported a [Fieldname] of [Hour], which is outside the range of acceptable values for this hour for [key].	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation

**Check Code:** EMWTS-7

**Check Name:** Check Weekly Test Minute

**Related Former Checks:**

**Applicability:**

**Description:** Ensures that a minute was reported for the weekly test and that the value reported is valid.

**Specifications:**

For *CurrentWeeklyTestSummary*

```
Set TestDateTimeValid to false.  
  
If (TestMinute is null)  
  
    Set WeeklyTestSummaryValid to false.  
    return result A.  
  
Else if (TestMinute is NOT between 0 and 59)  
  
    Set WeeklyTestSummaryValid to false.  
    return result B.  
  
Else if (TestHourValid)  
  
    Set TestDateTimeValid to true.
```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide a [fieldname], which is required, for [key].	Critical Error Level 1
B	You reported a [Fieldname] of [Minute] for [key], which is outside the range of acceptable values.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation

**Check Code:** EMWTS-8  
**Check Name:** Check Weekly Test Span Scale

**Related Former Checks:**

**Applicability:**

**Description:** Ensure that the Weekly Test Gas Level was reported and with a valid value.

**Specifications:**

For *CurrentWeeklyTestSummary*

If (SpanScaleCode is null)

Set *WeeklyTestSummaryValid* to false.  
return result A.

Else if (SpanScaleCode is NOT in set (H, M, L))

Set *WeeklyTestSummaryValid* to false.  
return result B.

Else if (TestTypeCode is equal to "HGSII")

If (SpanScaleCode is NOT equal to "H")

Set *WeeklyTestSummaryValid* to false.  
return result C.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide a [fieldname], which is required, for [key].	Critical Error Level 1
B	For [key], you reported a SpanScaleCode that in not an appropriate code for a [testtype].	Critical Error Level 1
C	For [key], you reported a SpanScaleCode that in not an appropriate code for a [testtype].	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation



**Check Code:** EMWTS-9

**Check Name:** Check Weekly Test Result

**Related Former Checks:**

**Applicability:**

**Description:** Ensure that the Weekly Test Result was reported and with a valid value.

**Specifications:**

For *CurrentWeeklyTestSummary*

Set *TestResultValid* = false.

If (TestResultCode is null)

    Set *WeeklyTestSummaryValid* to false.  
    return result A.

Else if (TestResultCode is not in *TestResultCodeList*)

    Set *WeeklyTestSummaryValid* to false.  
    return result B.

Else if (TestTypeCode is equal to "HGSII")

    If (TestResultCode is NOT in set (PASSED, PASSAPS, FAILED))

        Set *WeeklyTestSummaryValid* to false.  
        return result C.

    Else

        Set *TestResultValid* = true.

Else

    Set *TestResultValid* = true.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide a [fieldname], which is required, for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1
C	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Weekly System Integrity Test Evaluation

**Check Category:**

**Emissions Audit Checks**

**Check Code:** EMAUDIT-1

**Check Name:** Link-Kind Use Audit

**Related Former Checks:**

**Applicability:**

**Description:** Returns a result if a Link-Kind monitor was used during the quarter. The result is Informational if the monitor was used for 720 hours or less during the calendar year and Critical 1 if it was used for more than 720 hours during the year.

**Specifications:**

Set *LikeKindHours* to null.

When *ComponentRecordForAudit.ComponentIdentifier* begins with "LK":

Set *LocationPosition* to entry in *LocationPositionLookup* for *ComponentRecordForAudit.MonLocId*.

Set *DictionaryEntry* to entry in *ComponentOperatingSuppDataDictionaryArray* for *LocationPosition* AND *ComponentRecordForAudit.ComponentId* where *OpSuppDataType* equals "OP".

If ( *DictionaryEntry* exists ) AND ( *DictionaryEntry.Hours* is greater than 0 )

Set *LikeKindHours* to *DictionaryEntry.Hours*.

If ( *CurrentReportingPeriodObject.Quarter* is greater than 1 )

Locate *SupplementalRecords* in *ComponentOperatingSuppDataRecordsForMpAndYear* where:

- 1) *ComponentId* equals *ComponentRecordForAudit.ComponentId*.
- 2) *Quarter* is before *CurrentReportingPeriodObject.Quarter*
- 3) *OpSuppDataType* equals "OP".

For each *SupplementalRecord* in *SupplementalRecords*.

Add *SupplementalRecord.Hours* to *LikeKindHours* .

If ( *LikeKindHours* is greater than 720 )

Return result A.

Else

Return result B.

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You have reported hourly data using Like Kind component '[ComponentIdentifier]' for [Hours] hours this year. [Hours] hours exceed the ANNUAL limit of 720 hours.	Critical Error Level 1
B	You have reported hourly data using Like Kind component '[ComponentIdentifier]' for [Hours] hour(s) this year. Please be aware that the use of like kind monitors is limited to less than 720 hours on an annual basis.	Informational Message

## Usage:

1 Process/Category: Emissions Data Evaluation Report --- Component Audit

## **Check Category:**

## **Flow-to-Load Status**

**Check Code:** F2LSTAT-1

**Check Name:** Determine Most Recent Flow-to-Load QA Operating Quarter

**Related Former Checks:**

**Applicability:**

**Description:** This check finds the most recent QA operating quarter for flow-to-load checks.

**Specifications:**

Set *F2LStatusPriorTestRequiredQuarter* = null.

Set *F2LStatusPriorTestRequiredQuarterSetFromSystem* = null.

Set *F2LStatusPriorTestRequiredQuarterMissingOpData* = null.

If *F2LStatusSystemResultDictionary* does not contain lookup value for *CurrentMhvRecord.SystemID*

Locate the most recent record in *RataTestRecordsByLocationForQaStatus* where the SystemID is equal to *CurrentMhvRecord.SystemID*, EndDateHour is before the *CurrentReportingPeriod*, and TestResultCode is not equal to "INVALID"

If found,

For each quarter before *CurrentReportingPeriod* beginning with the quarter immediately before *CurrentReportingPeriod* and going back to later of the quarter of the located *RataTestRecordsByLocationForQaStatus* and the quarter of the *Earliest Location Report Date*

If *AnnualReportingRequirement* equals true, or the quarter being checked is 2 or 3

Locate *SystemOperatingSuppDataRecord* in *SystemOperatingSuppDataRecordsByLocation* where:

- 1) SystemId is equal to *QaStatusSystemId*.
- 2) Year is equal to the year being checked.
- 3) Quarter is equal to the quarter being checked.
- 4) OpSuppDataTypeCode = "OP".

if ( *SystemOperatingSuppDataRecord* is NOT null )

Set *OpHourCount* = *SystemOperatingSuppDataRecord.Hours*.  
Set *OpHourCountSetFromSystem* = true.

else

Locate *OperatingSuppDataRecord* in *OperatingSuppDataRecordsbyLocation* where:

- 1) Year is equal to the year being checked.
- 2) Quarter is equal to the quarter being checked.
- 3) OpTypeCode is equal to "OPHOURS".
- 4) FuelCode is null.

if ( *OperatingSuppDataRecord* is NOT null )

Set *OpHourCount* = *OperatingSuppDataRecord.OpValue*.  
Set *OpHourCountSetFromSystem* = false.

else

Set *OpHourCount* = null.  
Set *OpHourCountSetFromSystem* = null.

If ( *OpHourCount* is NOT null )

If *F2LStatusPriorTestRequiredQuarter* does not equal -1

If ( *OpHourCount* >= 168 )

Locate a record in *F2LCheckRecordsForQaStatus* where SystemID is equal to *CurrentMhvRecord*.SystemID, the quarter is equal to the quarter being checked, and TestResultCode is equal to "EXC168H" or "FEW168H"

If not found

Set *F2LStatusPriorTestRequiredQuarter*.Year = The year value of the quarter being checked.

Set *F2LStatusPriorTestRequiredQuarter*.Quarter = The quarter value of the quarter being checked.

Set *F2LStatusPriorTestRequiredQuarterSetFromSystem* = *OpHourCountSetFromSystem*.

Exit the check.

Else

Set *F2LStatusPriorTestRequiredQuarter* = -1.

Append "[YEAR]Q[QTR]" to *F2LStatusPriorTestRequiredQuarterMissingOpData* (where [YEAR] and [QTR] are the year and number of the quarter being checked.

Else

Set *F2LStatusPriorTestRequiredQuarter* = -1.

Set *F2LStatusPriorTestRequiredQuarterMissingOpData* = "No Prior RATA"

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Flow-to-Load Status Evaluation
---	-------------------	---

**Check Code:** F2LSTAT-2

**Check Name:** Locate Most Recent Flow-to-Load Check Prior to the Current Hour

**Related Former Checks:**

**Applicability:**

**Description:** This check locates the most recent passed or failed flow-to-load (F2L) check for the emission report, insures that quarters between the quarter of the check and the emission report quarter were either not QA operating quarters (less than 168 operating hours) or have an F2L with a result of EXC168H, indicating that the operating hours minus exluded hours is less than 168.

If the check exist but an intervening quarter with more than 168 operating hours (excluding EXC168H) exists, or a check does not exist a parameter indicating the ultimate result is set. If the check does not exist and the a non load based unit is involved (directly or indirectly) or a Flow-to-Load exemption exist, then the result is IC-Exempt. If a RATA exists in the prior quarter then the result is OOC-No Prior Check, and if it does not then IC-No Prior RATA.

**Specifications:**

If *F2LStatusSystemResultDictionary* contains lookup value for *CurrentMhvRecord.SystemID*

Set *F2LStatusResult* = *F2LStatusSystemResultDictionary* lookup value for *CurrentMhvRecord.SystemID*.

Set *CurrentFlowToLoadStatusCheck* = *F2LStatusSystemCheckDictionary* lookup value for *CurrentMhvRecord.SystemID*.

Set *F2LStatusMissingOpDataInfo* = *F2lStatusSystemMissingOpDictionary* lookup value for *CurrentMhvRecord.SystemID*.

Else

Set *F2LStatusResult* = null.

Set *CurrentFlowToLoadStatusCheck* = null.

Set *F2LStatusMissingOpDataInfo* = null.

Locate the most recent record in *F2LCheckRecordsForQaStatus* where SystemID is equal to *CurrentMhvRecord.SystemID*, EndDate < *CurrentReportingPeriodBeginDateHour*, and TestResultCode is equal to "PASSED" or "FAILED"

If not found

Locate a record in *MpLocationNonLoadBasedRecords* where the location is the location in *CurrentMhvRecord*.

If found, and NonLoadBaseInd equals 1

Set *F2LStatusResult* = "IC-Exempt".

Else

Locate a record in *TestExtensionExemptionRecords* where the SystemID is equal to the *CurrentMhvRecord.SystemID*, the ExtensionExemptionCode is equal to "F2LEXP", and the reporting period is the period before the current reporting period.

If found

Set *F2LStatusResult* = "IC-Exempt".

Else

Locate the most recent record in *RataTestRecordsByLocationForQaStatus* where the SystemID is equal to *CurrentMhvRecord.SystemID*, EndDate < *CurrentReportingPeriodBeginDateHour*, and TestResultCode is not equal to "INVALID"

If not found

Set ***F2LStatusResult*** = "IC-No Prior RATA".

Else if ***F2LStatusPriorTestRequiredQuarter*** is equal to -1

Set ***F2LStatusResult*** = "Missing Op Data".

Set ***F2LStatusMissingOpDataInfo*** = ***F2LStatusPriorTestRequiredQuarterMissingOpData***.

Else if ***F2LStatusPriorTestRequiredQuarter*** is null or before the quarter of the located ***RataTestRecordsByLocationForQaStatus*** record

Set ***F2LStatusResult*** = "IC".

Else if the quarter of the located ***RataTestRecordsByLocationForQaStatus*** record is the quarter before ***CurrentReportingPeriod***, the TestReasonCode equals "INITIAL" or "RECERT" and TestResultCode equals "PASSED"

Set ***F2LStatusResult*** = "IC".

Else if ***CurrentMhvRecord***.SystemDesignationCode is equal to "RB" AND ***F2LStatusPriorTestRequiredQuarterSetFromSystem*** is NOT true

Set ***F2LStatusResult*** = "Undetermined-No Prior Check reported for Redundant Backup Monitor".

Else

Set ***F2LStatusResult*** = "OOC-Prior Check Missing".

Else

Set ***CurrentFlowToLoadStatusCheck*** = the located ***F2LCheckRecordsForQaStatus*** record.

If the quarter of ***CurrentFlowToLoadStatusCheck*** is not the quarter before ***CurrentReportingPeriod***

If ***F2LStatusPriorTestRequiredQuarter*** is equal to -1

Set ***F2LStatusResult*** = "Missing Op Data".

Set ***F2LStatusMissingOpDataInfo*** = ***F2LStatusPriorTestRequiredQuarterMissingOpData***.

Else if ***F2LStatusPriorTestRequiredQuarter*** is not null, and is after the quarter of ***CurrentFlowToLoadStatusCheck***

if ***CurrentMhvRecord***.SystemDesignationCode is equal to "RB" AND ***F2LStatusPriorTestRequiredQuarterSetFromSystem*** is NOT true

Set ***F2LStatusResult*** = "Undetermined-No Prior Check reported for Redundant Backup Monitor".

Else

Set ***F2LStatusResult*** = "OOC-Prior Check Missing".

Else if ***CurrentFlowToLoadStatusCheck***.TestResultCode = "PASSED"

Set ***F2LStatusResult*** = "IC".

Else

If ***CurrentFlowToLoadStatusCheck***.TestResultCode = "PASSED"



Set *F2LStatusResult* = "IC".

- Set *F2LStatusSystemResultDictionary* lookup value for *CurrentMhvRecord*.SystemID = *F2LStatusResult*.
- Set *F2LStatusSystemCheckDictionary* lookup value for *CurrentMhvRecord*.SystemID = *CurrentFlowToLoadStatusCheck*.
- Set *F2LStatusSystemMissingOpDictionary* lookup value for *CurrentMhvRecord*.SystemID = *F2LStatusMissingOpDataInfo*.

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Flow-to-Load Status Evaluation
---	-------------------	---

**Check Code:** F2LSTAT-3

**Check Name:** Locate Intervening RATA

**Related Former Checks:**

**Applicability:**

**Description:** This check locates RATA that occurred after the quarter of the (failed) most recent prior flow-to-load check and prior to the current hour.

**Specifications:**

Set *F2LStatusInterveningRata* = null.

If *F2LStatusResult* is null

Locate the most recent record in *RataTestRecordsByLocationForQaStatus* where the SystemID is equal to *CurrentMhvRecord*.SystemID, EndDateHour is after *CurrentFlowToLoadStatusCheck*.EndDateHour and before *CurrentMhvRecord*.BeginDate/BeginHour, and TestResultCode is not equal to "INVALID"

If found,

Set *F2LStatusResult* = "IC-Subsequent RATA Performed".

Set *F2LStatusInterveningRata* = The located record in *RataTestRecordsByLocationForQaStatus*.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Flow-to-Load Status Evaluation
---	-------------------	---

**Check Code:** F2LSTAT-4

**Check Name:** Locate Most Recent QA Cert Event

**Related Former Checks:**

**Applicability:**

**Description:** This check locates Abbreviated Flow-to-Load that occurred after the quarter of the (failed) most recent prior Flow-to-Load check and prior to the current hour.

**Validation Tables:**

[Test Type to Required Test Code] (Cross Check Table)

**Specifications:**

Set *F2LStatusQaCertEvent* = null.

Set *F2L Status Event Requires RATA* = false.

Set *F2L Status Event Requires Abbreviated Check* = false.

If *F2LStatusResult* is null

Locate the most recent record in *F2lQaCertificationEventRecords* where the SystemID is equal to *CurrentMhvRecord*.SystemID, QaCertEventCode is equal to "312", QaCertEventDateHour is on or after *CurrentFlowToLoadStatusCheck*.EndDateHour, and QaCertEventDateHour is on or before *CurrentMhvRecord*.BeginDate/BeginHour.

If found,

Set *F2LStatusQaCertEvent* = The located record in *F2lQaCertificationEventRecords*.

Locate a record in Cross-Check Table "Test Type to Required Test Code" where TestTypeCode begins with "RATA" and RequireTestCode equals *F2LStatusQaCertEvent*.RequiredTestCode.

If found,

*F2L Status Event Requires RATA* = true.

Locate a record in Cross-Check Table "Test Type to Required Test Code" where TestTypeCode is equal to "AF2LCHK" and RequireTestCode equals *F2LStatusQaCertEvent*.RequiredTestCode.

If found,

*F2L Status Event Requires Abbreviated Check* = true.

If *F2LStatusQaCertEvent*.LastTestCompletedDateHour is on or before *CurrentMhvRecord*.BeginDate/BeginHour

If *F2L Status Event Requires Abbreviated Check* is equal to true,

Set *F2LStatusResult* = "IC-Subsequent Abbreviated Flow-to-Load Check Passed".

If *F2LStatusResult* is null,

If *F2LStatusQaCertEvent* = null, or *F2LStatusQaCertEvent*.ConditionalDataBeginDateHour is after *CurrentMhvRecord*.BeginDate/BeginHour,

Locate records in *RataTestRecordsByLocationForQaStatus* where the SystemID is null or is equal to *CurrentMhvRecord*.SystemID, EndDateHour is after *CurrentFlowToLoadStatusCheck*.EndDateHour and before *CurrentMhvRecord*.BeginDate/BeginHour, and TestResultCode is equal to "INVALID".

If found

Set *F2LStatusResult* = "OOC-Check Failed - Invalid RATA Ignored".

Else

Set *F2LStatusResult* = "OOC-Check Failed".

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Flow-to-Load Status Evaluation
---	-------------------	---

**Check Code:** F2LSTAT-5

**Check Name:** Locate Earliest Valid Required Test

**Related Former Checks:**

**Applicability:**

**Description:** This check locates the earliest RATA test if the most recent event had a Require Test Code of '5' or '6', or the earliest Abbreviated F2L if the Required Test Code is '26'. If the test was found and it failed the F2L status is OOC, but for RATA the OOC status depends on the existence of an intervening invalid RATA.

If the test does not exist or did not fail, the F2L is IC if the number of operating hours is less than or equal to 720 for RATA and 168 for other tests. Otherwise the status is OOC, with the RATA OOC value depending on whether an intervening invalid RATA exists.

**Specifications:**

Set *F2LStatusEarliestValidRequiredTest* = null.

If *F2LStatusResult* is null

If *F2L Status Event Requires RATA* is true,

Locate earliest record in *RataTestRecordsByLocationForQaStatus* where the SystemID is equal to *CurrentMhvRecord*.SystemID, EndDateHour is after *CurrentMhvRecord*.BeginDate/BeginHour, and TestResultCode is not equal to "INVALID".

If found,

Set *F2LStatusEarliestValidRequiredTest* = The located record in *RataTestRecordsByLocationForQaStatus* .

If *F2LStatusEarliestValidRequiredTest* .TestResultCode is equal to "FAILED"

Locate records in *RataTestRecordsByLocationForQaStatus* where the SystemID is equal to *CurrentMhvRecord*.SystemID, EndDateHour is after *F2LStatusQaCertEvent*.QaCertEventDateHour and before *F2LStatusEarliestValidRequiredTest*.EndDateHour, and TestResultCode is equal to "INVALID".

If found

Set *F2LStatusResult* = "OOC-Recertification RATA Failed - Invalid RATA Ignored".

Else

Set *F2LStatusResult* = "OOC-Recertification RATA Failed".

Else if *F2L Status Event Requires Abbreviated Check* is false,

Set *F2LStatusResult* = "OOC-Invalid Cert Event".

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Flow-to-Load Status Evaluation
---	-------------------	---

**Check Code:** F2LSTAT-6

**Check Name:** Determine Event Conditional Status and Final Status

**Related Former Checks:**

**Applicability:**

**Description:** This check determines the status result when a QA Cert Event Conditional Data Period is involved.

Additionally, the check sets the final result for the Flow-to-Load Status checks.

**Specifications:**

If *F2LStatusResult* is null

Set *F2L Status Missing Op Data Info* = null.

If *F2L Status Event Requires RATA* is true,

Set *OperatingHourLimit* = 720

else

Set *OperatingHourLimit* = 168

If (the quarter of the *F2LStatusQaCertEvent.ConditionalBeginDate* is equal to the quarter of the *CurrentMhvRecord.Date/Hour* )

if (*Annual Reporting Requirement* == false AND the quarter being checked == 2)

Set *ConditionalDataHours* = MayAndJuneSystemOperatingCount in *QaCertEventSuppDataDictionaryArray* for the current location and Conditional Data Begin Hour where QaCertEventKey is equal to *F2LStatusQaCertEvent.QaCertEventKey*

else

Set *ConditionalDataHours* = QuarterlySystemOperatingCount in *QaCertEventSuppDataDictionaryArray* for the current location and Conditional Data Begin Hour where QaCertEventKey is equal to *F2LStatusQaCertEvent.QaCertEventKey*

If *ConditionalDataHours* > *OperatingHourLimit* ,

Set *F2LStatusResult* = "OOC-Conditional Period Expired".

else

Set *F2LStatusResult* = "IC-Conditional".

else

if (*F2LStatusQaCertEvent.MinOpHoursPriorQuarter* is null)

Set *F2LStatusQaCertEvent.MinOpHoursPriorQuarter* = 0

Set *F2LStatusQaCertEvent.MaxOpHoursPriorQuarter* = 0

for each quarter beginning with the quarter of the *F2LStatusQaCertEvent.ConditionalBeginDate* and continuing through the quarter BEFORE the *CurrentMhvRecord.Date/Hour* :

if (*EarliestLocationReportDate* <= the last day of the quarter being checked)

if (*Annual Reporting Requirement* == false AND the quarter being checked == 2)

```
        Set LocationOpSuppType = "OSHOURS".
        Set SystemOpSuppType = "OPMJ".
    else
        Set LocationOpSuppType = "OPHOURS".
        Set SystemOpSuppType = "OP".

    Locate SystemOperatingSuppDataRecord in SystemOperatingSuppDataRecordsByLocation
    where:

        1) SystemId is equal to QaStatusSystemId.
        2) Year is equal to the year being checked.
        3) Quarter is equal to the quarter being checked.
        4) OpSuppDataTypeCode = SystemOpSuppType .

    if ( SystemOperatingSuppDataRecord is NOT null )

        Set OpHourCount = SystemOperatingSuppDataRecord.Hours.

    else

        Locate OperatingSuppDataRecord in OperatingSuppDataRecordsbyLocation where:

            1) Year is equal to the year being checked.
            2) Quarter is equal to the quarter being checked.
            3) OpTypeCode is equal to LocationOpSuppType.
            4) FuelCode is null.

        if ( OperatingSuppDataRecord is NOT null )

            Set OpHourCount = OperatingSuppDataRecord.OpValue.

        else

            Set OpHourCount = null.

    if ( OpHourCount is null )

        Set F2LStatusQaCertEvent.MinOpHoursPriorQuarter = -1
        Append "[YEAR] Q[QTR]" to F2L Status Missing Op Data Info (where [YEAR] is the
        year of the quarter being checked and [QTR] is the number of the quarter being checked.)
        exit for.

    else

        If the quarter being checked is the quarter of the
        F2LStatusQaCertEvent.ConditionalBeginDate

            Set SupplementalCount = null.

            If ( F2LStatusQaCertEvent.ConditionalBeginHourSystemSuppDataExists is
            true )

                Set SupplementalCount =
                F2LStatusQaCertEvent.ConditionalBeginSystemOpHourCount.

            If ( supplementalCount is null AND
```

***F2LStatusQaCertEvent.ConditionalBeginHourSuppDataExists*** is true )

Set ***SupplementalCount*** =  
***F2LStatusQaCertEvent.ConditionalBeginOpHourCount***.

If ( ***supplementalCount*** is NOT null )

Set ***F2LStatusQaCertEvent.MinOpHoursPriorQuarter*** =  
***F2LStatusQaCertEvent.MinOpHoursPriorQuarter*** +  
***supplementalCount***.  
Set ***F2LStatusQaCertEvent.MaxOpHoursPriorQuarter*** =  
***F2LStatusQaCertEvent.MaxOpHoursPriorQuarter*** +  
***supplementalCount***.

Else

If ( ***OpHourCount*** MINUS the number of calendar hours in the quarter  
being checked that are PRIOR to the  
***F2LStatusQaCertEvent.ConditionalBeginDate/Hour*** > 0 )

Set ***F2LStatusQaCertEvent.MinOpHoursPriorQuarter*** =  
***OpHourCount*** MINUS the number of calendar hours in the  
quarter being checked that are PRIOR to the  
***F2LStatusQaCertEvent.ConditionalBeginDate/Hour***

If ( ***OpHourCount*** is less than the number of calendar hours in the quarter  
begin checked that are ON OR AFTER the  
***F2LStatusQaCertEvent.ConditionalBeginDate/Hour***)

Set ***F2LStatusQaCertEvent.MaxOpHoursPriorQuarter*** =  
***OpHourCount***.

else

Set ***F2LStatusQaCertEvent.MaxOpHoursPriorQuarter*** = the  
number of calendar hours in the quarter being checked that are  
ON OR AFTER the  
***F2LStatusQaCertEvent.ConditionalBeginDate/Hour***.

else

Set ***F2LStatusQaCertEvent.MinOpHoursPriorQuarter*** =  
***F2LStatusQaCertEvent.MinOpHoursPriorQuarter*** + ***OpHourCount***.  
Set ***F2LStatusQaCertEvent.MaxOpHoursPriorQuarter*** =  
***F2LStatusQaCertEvent.MaxOpHoursPriorQuarter*** + ***OpHourCount***.

Set ***CurrentOpHours*** to Hours in ***SystemOperatingSuppDataDictionaryArray*** for the current location where ***SystemId*** is  
equal to ***QaStatusSystemId***.

If ( ***F2LStatusQaCertEvent.MinOpHoursPriorQuarter*** == -1)

set ***F2LStatusResult*** to "Missing Op Data"

Else if ( ***F2LStatusQaCertEvent.MinOpHoursPriorQuarter*** > ***OperatingHourLimit***)

If ***F2L Status Event Requires RATA*** is true,



Locate records in ***RataTestRecordsByLocationForQaStatus*** where the SystemID is equal to ***CurrentMhvRecord***.SystemID, EndDateHour is on or after ***F2LStatusQaCertEvent***.ConditionalDataBeginDate/ConditionalDataBeginHour and on or before ***CurrentMhvRecord***.BeginDate/BeginHour, and TestResultCode is equal to "INVALID".

If found,

Set ***F2LStatusResult*** = "OOC-Conditional Period Expired-Invalid RATA Ignored".

Else

Set ***F2LStatusResult*** = "OOC-Conditional Period Expired".

Else

Set ***F2LStatusResult*** = "OOC-Conditional Period Expired".

Else if ( *CurrentOpHours* is null )

Set ***F2LStatusResult*** = "Invalid Op Data".

Else if (***F2LStatusQaCertEvent***.MinOpHoursPriorQuarter + *CurrentOpHours* > *OperatingHourLimit* )

If ***F2L Status Event Requires RATA*** is true,

Locate records in ***RataTestRecordsByLocationForQaStatus*** where the SystemID is equal to ***CurrentMhvRecord***.SystemID, EndDateHour is on or after ***F2LStatusQaCertEvent***.ConditionalDataBeginDate/ConditionalDataBeginHour and on or before ***CurrentMhvRecord***.BeginDate/BeginHour, and TestResultCode is equal to "INVALID".

If found,

Set ***F2LStatusResult*** = "OOC-Conditional Period Expired-Invalid RATA Ignored".

Else

Set ***F2LStatusResult*** = "OOC-Conditional Period Expired".

Else

Set ***F2LStatusResult*** = "OOC-Conditional Period Expired".

Else if (***F2LStatusQaCertEvent***.MaxOpHoursPriorQuarter + *CurrentOpHours* > *OperatingHourLimit* )

Set ***F2LStatusResult*** = "Undetermined-Conditional Data".

Else

Set ***F2LStatusResult*** = "IC-Conditional".

If (***FlowToLoadStatusResult*** does not begin with "IC")

Return result ***F2LStatusResult*** .

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
Invalid Op Data	The Flow-to-Load status for [SYSID] could not be determined, because the OperatingTime in at least one Hourly Operating Data records was missing or invalid.	Critical Error Level 1
Missing Op Data	The Flow-to-Load status for [SYSID] could not be determined, because the Op Supp Data record for OPHOURS, OSHOURS, or OPDAYS is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to synchronize these records to your Client Tool by logging on to the EPA host.	Critical Error Level 1
OOO-Check Failed	The prior Flow-to-Load Check for SystemID [SYSID] has failed.	Critical Error Level 1
OOO-Check Failed - Invalid RATA Ignored	The prior Flow-to-Load Check for SystemID [SYSID] has failed, a subsequent invalid RATA with was ignored.	Critical Error Level 1
OOO-Conditional Period Expired	The conditional data period for QACertEventCode [code] QACertEventDate [eventdate] for [SYSID] has expired.	Critical Error Level 1
OOO-Conditional Period Expired-Invalid RATA Ignored	The conditional data period for QACertEventCode [code] QACertEventDate [eventdate] for SystemID [EVENTKEY] has expired.	Critical Error Level 1
OOO-Invalid Cert Event	You reported an invalid QA Certification Event record for QACertEventCode [code] QACertEventDate [eventdate] for [SYSID].	Critical Error Level 1
OOO-Prior Check Missing	One or more Flow-to-Load Checks is missing for prior quarters.	Critical Error Level 1
OOO-Recertification RATA Failed	The subsequent recertification RATA for SystemID [SYSID] with TestNumber [subtestnum] failed.	Critical Error Level 1
OOO-Recertification RATA Failed - Invalid RATA Ignored	The subsequent recertification RATA for SystemID [SYSID] with TestNumber [subtestnum] failed. An invalid RATA was ignored.	Critical Error Level 1
Undetermined-Conditional Data	The software could not determine if the current hour was within the conditional data period for QACertEventCode [code] QACertEventDate [eventdate] for SystemID [eventkey].	Informational Message
Undetermined-No Prior Check reported for Redundant Backup Monitor	The software could not determine if a Flow-to-Load check is required for the Redundant Backup Flow Monitor.	Informational Message

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Flow-to-Load Status Evaluation

**Check Category:**

**Hourly Aggregation**

**Check Code:** HOURAGG-1

**Check Name:** Determine Start Quarter

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Specifications:**

Set *Start Quarter* to null.

Set *SO2 Start Quarter* to null.

Set *NOXR Start Quarter* to null.

Set *CO2 Start Quarter* to null.

Set *Heat Input Start Quarter* to null.

Set *NOX Start Quarter* to null.

Set *Emissions Tolerance Deviators* to null.

If (Quarter of the *Current Reporting Period* is greater than 1)

Locate the earliest *Monitor Method* for location where BeginDate is on or before the last day of the *Current Reporting Period*, and EndDate is null or is on or after Jan 1 of the year of the *Current Reporting Period*.

If found,

If BeginDate is in a year prior to the current reporting period,

If (*Annual Reporting Requirement* == true)

Set *Start Quarter* to 1.

else

Set *Start Quarter* to 2.

else

Set *Start Quarter* to the quarter of the BeginDate.

Locate the earliest *Monitor Method* for location where ParameterCode = "SO2" or "SO2M", BeginDate is on or before the last day of the *Current Reporting Period*, and EndDate is null or is on or after Jan 1 of the year of the *Current Reporting Period*.

If found,

If BeginDate is in a year prior to the current reporting period,

Set *SO2 Start Quarter* to 1.

else

Set *SO2 Start Quarter* to the quarter of the BeginDate.

If (*LME Annual* == true)

Locate the record for the location with the earliest Quarter in *NOXR Summary Required for LME Annual Records* where LmeNoxrSummaryIndicator is equal to 1.

if found,

Set *EarliestMethodBeginDate* to the date from LmeNoxrBegin for the located record in *NOXR Summary Required for LME Annual Records*

else

Set *EarliestMethodBeginDate* to null.

else

if (*Current Monitor Plan Location Record*.LocationName begins with "MS" OR *Multiple Stack Configuration* == false)

Locate the earliest *Monitor Method* for location where ParameterCode = "NOXR", BeginDate is on or before the last day of the *Current Reporting Period*, and EndDate is null or is on or after Jan 1 of the year of the *Current Reporting Period*.

else

Locate the earliest **Monitor Method** for ALL locations in the monitor plan where ParameterCode = "NOXR", BeginDate is on or before the last day of the **Current Reporting Period**, and EndDate is null or is on or after Jan 1 of the year of the **Current Reporting Period**.

if found,

Set *EarliestMethodBeginDate* to the BeginDate for the located record in **Monitor Method**.

else

Set *EarliestMethodBeginDate* to null.

If *EarliestMethodBeginDate* is NOT null,

Locate the earliest **Location Program Record** for location where ProgramCode is equal to "ARP", the Class is not equal to "NA", and UnitMonitorCertBeginDate is on or before the last day of the **Current Reporting Period**, and the EndDate is null or is on or after Jan 1 of the year of the **Current Reporting Period**.

If found,

If the EmissionsRecordingBeginDate is null,

If the later of *EarliestMethodBeginDate* and the UnitMonitorCertBeginDate is in a year prior to the current reporting period,

Set **NOXR Start Quarter** to 1.

else

Set **NOXR Start Quarter** to the quarter of the later of *EarliestMethodBeginDate* and UnitMonitorCertBeginDate .

Otherwise,

If the later of *EarliestMethodBeginDate* and the EmissionsRecordingBeginDate is in a year prior to the current reporting period,

Set **NOXR Start Quarter** to 1.

else

Set **NOXR Start Quarter** to the quarter of the later of *EarliestMethodBeginDate* and EmissionsRecordingBeginDate .

Locate the earliest **Monitor Method** for location where ParameterCode = "CO2" or "CO2M", BeginDate is on or before the last day of the **Current Reporting Period**, and EndDate is null or is on or after Jan 1 of the year of the **Current Reporting Period**.

If found,

If BeginDate is in a year prior to the current reporting period,

Set **CO2 Start Quarter** to 1.

else

Set **CO2 Start Quarter** to the quarter of the BeginDate.

If (the Quarter of the **Current Reporting Period** is greater than 2 OR (*Annual Reporting Requirement* == true AND the Quarter of the **Current Reporting Period** is equal to 2))

Locate the earliest **Monitor Method** for location where ParameterCode = "HI" or "HIT", MethodCode is not equal to "EXP", BeginDate is on or before the last day of the **Current Reporting Period**, and EndDate is null or is on or after Jan 1 of the year of the **Current Reporting Period**.

If found,

If BeginDate is in a year prior to the **Current Reporting Period**,

If *Annual Reporting Requirement* == true

Set **Heat Input Start Quarter** to 1

else

Set **Heat Input Start Quarter** to 2

else if BeginDate is in Quarter 1 of the year of the **Current Reporting Period** AND *Annual Reporting Requirement* ==

false,  
Set *Heat Input Start Quarter* to to 2

else  
Set *Heat Input Start Quarter* to the quarter of the BeginDate.

Locate the earliest *Monitor Method* for location where ParameterCode is equal to "NOX" or "NOXM", BeginDate is on or before the last day of the *Current Reporting Period*, and EndDate is null or is on or after Jan 1 of the year of the *Current Reporting Period*.

If found,  
If BeginDate is in a year prior to the *Current Reporting Period*,  
If *Annual Reporting Requirement* == true  
Set *NOX Start Quarter* to 1  
else  
Set *NOX Start Quarter* to 2

else if BeginDate is in Quarter 1 of the year of the *Current Reporting Period* AND *Annual Reporting Requirement* == false,  
Set *NOX Start Quarter* to to 2

else  
Set *NOX Start Quarter* to the quarter of the BeginDate.

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

Usage:

1	Process/Category:	Emissions Data Evaluation Report Summary Value Evaluation
---	-------------------	---

**Check Code:** HOURAGG-2

**Check Name:** Compare SO2 Mass Accumulator Values

**Related Former Checks:** HOURCV-22

**Applicability:** General Check

**Description:** This check compares the accumulator reported SO2 Mass with the calculated value and generates an error message if the difference is greater than the accepted tolerance.

**Validation Tables:**

[Quarterly Emissions Tolerances] (Cross Check Table)

**Specifications:**

SO2 Mass Quarterly Tolerance = Lookup Tolerance from Cross-Check Table "Quarterly Emissions Tolerances" where  
 Parameter = "SO2M" AND  
 UOM = "TON"

**Current SO2 Summary Value Record** = SummaryValue record at this location where  
 Parameter = "SO2M" AND  
 Reporting Period ID = Current Reporting Period

if (**Rpt Period SO2 Mass Calculated Accumulator Array** for this location == -1 OR **Expected Summary Value SO2 Array** for this location == false)

**Rpt Period SO2 Mass Calculated Value** = null

else

**Rpt Period SO2 Mass Calculated Value** = (**Rpt Period SO2 Mass Calculated Accumulator Array** for this location / 2000, and rounded to one decimal place).

if (**Rpt Period SO2 Mass Reported Accumulator Array** for this location >= 0)

**Rpt Period SO2 Mass Reported Accumulator Array** for this location = (**Rpt Period SO2 Mass Reported Accumulator Array** for this location / 2000, and rounded to one decimal place).

if (**Current SO2 Summary Value Record** is null OR **Current SO2 Summary Value Record**.Current Reporting Period Total is null)

if (**Expected Summary Value SO2 Array** for this location == true)

return result C

else

if (**Expected Summary Value SO2 Array** for this location == false)

if (**Rpt Period Op Hours Accumulator Array** for this Location is not equal to 0 OR **Current SO2 Summary Value Record**.Current Reporting Period Total is not equal to 0)

return result D

else

SO2 Mass Quarterly Reported Value = **Current SO2 Summary Value Record**.Current Reporting Period Total

if (SO2 Mass Quarterly Reported Value < 0)

return result F

else if (SO2 Mass Quarterly Reported Value is not rounded to one decimal place)

return result G

else if (**Rpt Period SO2 Mass Calculated Value** is not null)

If (**Rpt Period SO2 Mass Calculated Value** <> SO2 Mass Quarterly Reported Value)

if (ABS(**Rpt Period SO2 Mass Calculated Value** - SO2 Mass Quarterly Reported Value) > SO2 Mass Quarterly Tolerance)

return Result A

else

append "SO2M" to **Emissions Tolerance Deviators**.

else

return result E

// if no result

if (*Rpt Period SO2 Mass Reported Accumulator Array* for this location  $\geq 0$  AND  $\text{ABS}(\textit{Rpt Period SO2 Mass Reported Accumulator Array}$  for this location - SO2 Mass Quarterly Reported Value) > SO2 Mass Quarterly Tolerance)

*Reported Emissions Value* = *Rpt Period SO2 Mass Reported Accumulator Array* for this location

return result B

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The CurrentReportingPeriodTotal of [sumval] reported in the Summary Value record for SO2M for the reporting period is inconsistent with the recalculated value of [calcval].	Critical Error Level 1
B	The CurrentReportingPeriodTotal of [sumval] reported in the Summary Value record for SO2M is inconsistent with [sum], the sum of the hourly values reported in the DHV records for the reporting period.	Critical Error Level 1
C	The CurrentReportingPeriodTotal in the Summary Value record for SO2M is missing or the record is missing.	Critical Error Level 1
D	You reported a value as the CurrentReportingPeriodTotal in the Summary Value record for SO2M, but there were no Hourly Operating Data records or appropriate SO2 Methods defined in your monitoring plan.	Critical Error Level 1
E	The CurrentReportingPeriodTotal in the Summary Value record for [param] could not be recalculated because of errors listed above.	Critical Error Level 1
F	The CurrentReportingPeriodTotal reported in the Summary Value record for [param] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
G	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report Summary Value Evaluation



**Check Code:** HOURAGG-3

**Check Name:** Compare CO2 Mass Accumulator Values

**Related Former Checks:** HOURCV-23

**Applicability:** General Check

**Description:** This check compares the accumulator reported CO2 Mass with the calculated value and generates an error message if the difference is greater than the accepted tolerance.

**Validation Tables:**

[Quarterly Emissions Tolerances] (Cross Check Table)

**Specifications:**

If **Current Reporting Period Year** is greater than or equal to 2012

CO2 Mass Quarterly Tolerance = Lookup Tolerance from Cross-Check Table "Quarterly Emissions Tolerances" where  
 Parameter = "CO2M" AND  
 UOM = "TON"

else

CO2 Mass Quarterly Tolerance = Lookup Tolerance from Cross-Check Table "Quarterly Emissions Tolerances" where  
 Parameter = "CO2M-OLD" AND  
 UOM = "TON"

**Current CO2 Summary Value Record** = SummaryValue record at this location where  
 Parameter = "CO2M" AND  
 Reporting Period ID = Current Reporting Period

if (**Rpt Period CO2 Mass Calculated Accumulator Array** for this location < 0 OR **Expected Summary Value CO2 Array** for this location == false)

**Rpt Period CO2 Mass Calculated Value** = null

else

**Rpt Period CO2 Mass Calculated Value** = **Rpt Period CO2 Mass Calculated Accumulator Array** for this location, rounded to one decimal place.

if (**Rpt Period CO2 Mass Reported Accumulator Array** for this location >= 0)

**Rpt Period CO2 Mass Reported Accumulator Array** for this location = (**Rpt Period CO2 Mass Reported Accumulator Array** for this location, rounded to one decimal place).

if (**Current CO2 Summary Value Record** is null OR **Current CO2 Summary Value Record**.Current Reporting Period Total is null)

if (**Expected Summary Value CO2 Array** for this location == true)  
 return result C

else

if (**Expected Summary Value CO2 Array** for this location == false)

if (**Rpt Period Op Hours Accumulator Array** for this Location is not equal to 0 OR **Current CO2 Summary Value Record**.Current Reporting Period Total is not equal to 0)  
 return result D

else

CO2 Mass Quarterly Reported Value = **Current CO2 Summary Value Record**.Current Reporting Period Total

if (CO2 Mass Quarterly Reported Value < 0)  
 return result F

else if (CO2 Mass Quarterly Reported Value is not rounded to one decimal place)  
 return result G

else if (**Rpt Period CO2 Mass Calculated Value** is not null)

if (**Rpt Period CO2 Mass Calculated Value** <> CO2 Mass Quarterly Reported Value)

if (ABS(**Rpt Period CO2 Mass Calculated Value** - CO2 Mass Quarterly Reported Value) > CO2 Mass  
 Quarterly Tolerance)  
 return Result A

```

else
    append "CO2M" to Emissions Tolerance Deviators.
else
    if (Rpt Period CO2 Mass Calculated Accumulator Array for this location == -1)
        return result E

// if no result
if (Rpt Period CO2 Mass Reported Accumulator Array for this location >= 0 AND ABS(Rpt Period CO2 Mass Reported Accumulator Array for this location - CO2 Mass Quarterly Reported Value) > CO2 Mass Quarterly Tolerance)
    Reported Emissions Value = Rpt Period CO2 Mass Reported Accumulator Array for this location
    return Result B

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The CurrentReportingPeriodTotal of [sumval] reported in the Summary Value record for CO2M for the reporting period is inconsistent with the recalculated value of [calcval].	Critical Error Level 1
B	The CurrentReportingPeriodTotal of [sumval] reported in the Summary Value record for CO2M is inconsistent with [sum], the sum of the hourly values reported in the DHV records for the reporting period.	Critical Error Level 1
C	The CurrentReportingPeriodTotal in the Summary Value record for CO2M is missing or the record is missing.	Critical Error Level 1
D	You reported a value for the CurrentReportingPeriodTotal in the Summary Value record for [param], but there was no emissions data in your file or an appropriate CO2 Method defined in your monitoring plan.	Critical Error Level 1
E	The CurrentReportingPeriodTotal in the Summary Value record for [param] could not be recalculated because of errors listed above.	Critical Error Level 1
F	The CurrentReportingPeriodTotal reported in the Summary Value record for [param] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
G	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report Summary Value Evaluation

**Check Code:** HOURAGG-4

**Check Name:** Compare HI Accumulator Values

**Related Former Checks:** HOURCV-24

**Applicability:** General Check

**Description:** This check compares the accumulator reported HI with the calculated value and generates an error message if the difference is greater than the accepted tolerance.

**Validation Tables:**

[Quarterly Emissions Tolerances] (Cross Check Table)

**Specifications:**

HI Quarterly Tolerance = Lookup Tolerance from Cross-Check Table "Quarterly Emissions Tolerances" where

Parameter = "HIT" AND

UOM = "MMBTU"

**Current HI Summary Value Record** = SummaryValue record at this location where

Parameter = "HIT" AND

Reporting Period ID = Current Reporting Period

if (**Rpt Period HI Calculated Accumulator Array** for this location == -1 OR **Expected Summary Value HI Array** for this location == false)

**Rpt Period HI Calculated Value** = null

else

**Rpt Period HI Calculated Value** = **Rpt Period HI Calculated Accumulator Array** for this location, rounded to zero decimal places.

if (**Rpt Period HI Reported Accumulator Array** for this location >= 0)

**Rpt Period HI Reported Accumulator Array** for this location = (**Rpt Period HI Reported Accumulator Array** for this location, rounded to zero decimal places).

if (**Current HI Summary Value Record** is null OR **Current HI Summary Value Record**.Current Reporting Period Total is null)

if (**Expected Summary Value HI Array** for this location == true)

return result C

else

if (**Expected Summary Value HI Array** for this location == false)

if (**Rpt Period Op Hours Accumulator Array** for this Location is not equal to 0 OR **Current HI Summary Value Record**.Current Reporting Period Total is not equal to 0)

return result D

else

HI Quarterly Reported Value = **Current HI Summary Value Record**.Current Reporting Period Total

if (HI Quarterly Reported Value < 0)

return result F

else if (HI Quarterly Reported Value is not rounded to zero decimal places)

return result G

else if (**Rpt Period HI Calculated Value** is not null)

if (**Rpt Period HI Calculated Value** <> HI Quarterly Reported Value)

if (ABS(**Rpt Period HI Calculated Value** - HI Quarterly Reported Value) > HI Quarterly Tolerance)

return result A

else

append "HIT" to **Emissions Tolerance Deviators**.

else

return result E

// if no result

if (**Rpt Period HI Reported Accumulator Array** for this location >= 0 AND ABS(**Rpt Period HI Reported Accumulator Array** for this location (rounded to zero decimal places) - HI Quarterly Reported Value) > HI Quarterly Tolerance)

***Reported Emissions Value = Rpt Period HI Reported Accumulator Array*** for this location  
return Result B

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The CurrentReportingPeriodTotal of [sumval] reported in the Summary Value record for HIT for the reporting period is inconsistent with the recalculated value of [calcval].	Critical Error Level 1
B	The CurrentReportingPeriodTotal of [sumval] reported in the Summary Value record for HIT is inconsistent with [sum], the sum of the hourly values reported in the DHV records for the reporting period.	Critical Error Level 1
C	The CurrentReportingPeriodTotal in the Summary Value record for HIT is missing or the record is missing.	Critical Error Level 1
D	You reported a value as the CurrentReportingPeriodTotal in the Summary Value record for HIT, but there were no Hourly Operating Data records or appropriate HI Methods defined in your monitoring plan.	Critical Error Level 1
E	The CurrentReportingPeriodTotal in the Summary Value record for [param] could not be recalculated because of errors listed above.	Critical Error Level 1
F	The CurrentReportingPeriodTotal reported in the Summary Value record for [param] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
G	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report Summary Value Evaluation

**Check Code:** HOURAGG-5

**Check Name:** Compare Op Hours Values

**Related Former Checks:** HOURCV-25

**Applicability:** General Check

**Description:** This check compares the accumulator reported Op Hours with the calculated value and generates an error message if the difference is greater than the accepted tolerance.

**Validation Tables:**

[Quarterly Emissions Tolerances] (Cross Check Table)

**Specifications:**

Op Hours Quarterly Tolerance = Lookup Tolerance from Cross-Check Table "Quarterly Emissions Tolerances" where  
 Parameter = "OPHOURS" AND  
 UOM = "HR"

**Current Op Hours Summary Value Record** = SummaryValue record at this location where  
 Parameter = "OPHOURS" AND  
 Reporting Period ID = Current Reporting Period

if (**Rpt Period Op Hours Accumulator Array** for this location == -1 OR (**LME HI Method** is not null and location is a common pipe))  
     **Rpt Period Op Hours Calculated Value** = null  
     **Rpt Period Op Days Calculated Value** = null

else

**Rpt Period Op Hours Calculated Value** = **Rpt Period Op Hours Accumulator Array** for this location  
     **Rpt Period Op Days Calculated Value** = **Rpt Period Op Days Accumulator Array** for this location

if (**Current Op Hours Summary Value Record** is null OR **Current Op Hours Summary Value Record**.Current Reporting Period Total is null)

    If (**LME HI Method** is null or location is not a common pipe)  
         return result B

else

    Op Hours Quarterly Reported Value = **Current Op Hours Summary Value Record**.Current Reporting Period Total

    if (Op Hours Quarterly Reported Value < 0)  
         return result D

    else if (Op Hours Quarterly Reported Value is not rounded to zero decimal places)  
         return result E

    else if (**Rpt Period Op Hours Calculated Value** is not null)

        if (**Rpt Period Op Hours Calculated Value** <> Op Hours Quarterly Reported Value)  
             if ( ABS(**Rpt Period Op Hours Calculated Value** - Op Hours Quarterly Reported Value) > Op Hours Quarterly Tolerance)  
                 return Result A  
         else  
             append "OPHOURS" to **Emissions Tolerance Deviators**.

else

    return result C

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The CurrentReportingPeriodTotal of [sumval] reported in the Summary Value record for OPHOURS is inconsistent with [calcval], the number of operating hours reported in the Hourly Operating Data records for the reporting period.	Critical Error Level 1
B	The CurrentReportingPeriodTotal in the Summary Value record for OPHOURS is missing or the record is missing.	Critical Error Level 1
C	The CurrentReportingPeriodTotal in the Summary Value record for [param] could not be recalculated because of errors listed above.	Critical Error Level 1
D	The CurrentReportingPeriodTotal reported in the Summary Value record for [param] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
E	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Evaluation
---	-------------------	---

**Check Code:** HOURAGG-6

**Check Name:** Compare Op Time Values

**Related Former Checks:** HOURCV-26

**Applicability:** General Check

**Description:** This check compares the accumulator reported Op Time with the calculated value and generates an error message if the difference is greater than the accepted tolerance.

**Validation Tables:**

[Quarterly Emissions Tolerances] (Cross Check Table)

**Specifications:**

Op Time Quarterly Tolerance = Lookup Tolerance from Cross-Check Table "Quarterly Emissions Tolerances" where  
 Parameter = "OPTIME" AND  
 UOM = "HR"

**Current Op Time Summary Value Record** = SummaryValue record at this location where  
 Parameter = "OPTIME" AND  
 Reporting Period ID = Current Reporting Period

if (**Rpt Period Op Time Accumulator Array** for this location == -1 OR (**LME HI Method** is not null and location is a common pipe))  
     **Rpt Period Op Time Calculated Value** = null  
 else  
     **Rpt Period Op Time Calculated Value** = **Rpt Period Op Time Accumulator Array** for this location

if (**Current Op Time Summary Value Record** is null OR **Current Op Time Summary Value Record**.Current Reporting Period Total is null)  
     If (**LME HI Method** is null or location is not a common pipe)  
         if (**Legacy Data Evaluation** == true)  
             return result B  
         else  
             return result E  
 else  
     Op Time Quarterly Reported Value = **Current Op Time Summary Value Record**.Current Reporting Period Total  
     if (Op Time Quarterly Reported Value >= 0)  
         if (Op Time Quarterly Reported Value is not rounded to two decimal places)  
             return result F  
         else  
             if (**Rpt Period Op Time Calculated Value** is not null)  
                 if (**Rpt Period Op Time Calculated Value** <> Op Time Quarterly Reported Value)  
                     if (ABS(**Rpt Period Op Time Calculated Value** - Op Time Quarterly Reported Value) > Op Time  
                         Quarterly Tolerance)  
                         return A  
                     else  
                         append "OPTIME" to **Emissions Tolerance Deviators**.  
                 else  
                     return result D  
             else  
                 return result C

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The CurrentReportingPeriodTotal of [sumval] reported in the Summary Value record for OPTIME is inconsistent with [calcval], the sum of the hourly values reported in the Hourly Operating Data records for the reporting period.	Critical Error Level 1
B	You did not report a Summary Value record for OPTIME for the reporting period. While this information was not required for legacy EDR data, it is required for ECMPS.	Informational Message
C	The CurrentReportingPeriodTotal reported in the Summary Value record for OPTIME is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
D	The CurrentReportingPeriodTotal in the Summary Value record for [param] could not be recalculated because of errors listed above.	Critical Error Level 1
E	The CurrentReportingPeriodTotal in the Summary Value record for OPTIME is missing or the record is missing.	Critical Error Level 1
F	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Evaluation
---	-------------------	---



**Check Code:** HOURAGG-7

**Check Name:** Compare NOx Rate Accumulator Values

**Related Former Checks:** HOURCV-27

**Applicability:** General Check

**Description:** This check compares the accumulator reported NOx Rate with the calculated value and generates an error message if the difference is greater than the accepted tolerance.

**Validation Tables:**

[Quarterly Emissions Tolerances] (Cross Check Table)

**Specifications:**

If (*Expected Summary Value NOx Rate Array* for this location == true)

    if (*LME Annual* == true)

        if (*Rpt Period HI Calculated Value* is not null and *Rpt Period NOx Mass Calculated Value* is not null)

            If (*Rpt Period NOx Mass Calculated Accumulator Array* for this location = 0)

*Rpt Period NOx Rate Calculated Value* = 0

        else

*Rpt Period NOx Rate Calculated Value* = *Rpt Period NOx Mass Calculated Accumulator Array* for this location / *Rpt Period HI Calculated Value*, and round the result to three decimal places

    else

*Rpt Period NOx Rate Calculated Value* = null

else

    if (*Rpt Period NOx Rate Hours Accumulator Array* for this location > 0 AND *Rpt Period NOx Rate Calculated Accumulator Array* for this location >= 0)

*Rpt Period NOx Rate Calculated Value* = *Rpt Period NOx Rate Calculated Accumulator Array* for this location / *Rpt Period NOx Rate Hours Accumulator Array* for the location, and round the result to three decimal places

*Rpt Period NOx Rate Sum* = *Rpt Period NOx Rate Calculated Accumulator Array* for this location

*Rpt Period NOx Rate Hours* = *Rpt Period NOx Rate Hours Accumulator Array* for this location

    else if (*Rpt Period NOx Rate Hours Accumulator Array* for this location == 0 AND *Rpt Period NOx Rate Calculated Accumulator Array* for this location == 0)

*Rpt Period NOx Rate Calculated Value* = 0

*Rpt Period NOx Rate Sum* = 0

*Rpt Period NOx Rate Hours* = 0

    else

*Rpt Period NOx Rate Calculated Value* = null

*Rpt Period NOx Rate Sum* = null

*Rpt Period NOx Rate Hours* = null

    if (*Rpt Period NOx Rate Hours Accumulator Array* for this location > 0 AND *Rpt Period NOx Rate Reported Accumulator Array* for this location >= 0)

*Rpt Period NOx Rate Reported Accumulator Array* for this location = *Rpt Period NOx Rate Reported Accumulator Array* for this location / *Rpt Period NOx Rate Hours Accumulator Array* for this location, and round the result to three decimal places

    else

*Rpt Period NOx Rate Reported Accumulator Array* for this location = -1

else

*Rpt Period NOx Rate Calculated Value* = null

NOx Rate Quarterly Tolerance = Lookup Tolerance from Cross-Check Table "Quarterly Emissions Tolerances" where  
    Parameter = "NOXR" AND  
    UOM = "LBMMBTU"

*Current NOx Rate Summary Value Record* = SummaryValue record at this location where  
    Parameter = "NOXR" AND  
    Reporting Period ID = Current Reporting Period

---

```
if (Current NOx Rate Summary Value Record is null OR Current NOx Rate Summary Value Record.Current Reporting Period Total is null)
    if (Expected Summary Value NOx Rate Array for this location == true)
        return result C
else
    if (Expected Summary Value NOx Rate Array for this location == false)
        if (Rpt Period NOx Rate Hours Accumulator Array for this Location is not equal to 0 OR Current NOx Rate Summary Value Record.Current Reporting Period Total is not null)
            return result D
        else
            NOx Rate Quarterly Reported Value = Current NOx Rate Summary Value Record.Current Reporting Period Total

            If (NOx Rate Quarterly Reported Value < 0)
                return result F

            else if (Rpt Period NOx Rate Calculated Value is not null)
                if ( ABS(Rpt Period NOx Rate Calculated Value - NOx Rate Quarterly Reported Value) > NOx Rate Quarterly Tolerance)
                    return result A
            else
                return result E

//if no result
if (LME Annual == false)
    if (Current Monitor Plan Location Record.LocationName begins with "MS" OR Multiple Stack Configuration == false)
        if (Rpt Period NOx Rate Reported Accumulator Array for this location >= 0 AND ABS(Rpt Period NOx Rate Reported Accumulator Array for this location - NOx Rate Quarterly Reported Value) > NOx Rate Quarterly Tolerance)
            Reported Emissions Value = Rpt Period NOx Rate Reported Accumulator Array for this location
            return Result B
```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The CurrentReportingPeriodTotal of [sumval] reported in the Summary Value record for NOXR for the reporting period is inconsistent with the recalculated value of [calcval].	Critical Error Level 1
B	The CurrentReportingPeriodTotal of [sumval] reported in the Summary Value record for NOXR is inconsistent with [average], the average of the hourly values reported in the DHV records for the reporting period.	Critical Error Level 1
C	The CurrentReportingPeriodTotal in the Summary Value record for NOXR is missing or the record is missing.	Critical Error Level 1
D	You reported a value as the CurrentReportingPeriodTotal in the Summary Value record for NOXR, but this is not appropriate, either because there were no Hourly Operating Data records in your emissions file, or because this value is not consistent with the unit program records and monitoring methodologies in your monitoring plan.	Critical Error Level 1
E	The CurrentReportingPeriodTotal in the Summary Value record for [param] could not be recalculated because of errors listed above.	Critical Error Level 1
F	The CurrentReportingPeriodTotal reported in the Summary Value record for [param] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Evaluation
---	-------------------	---

**Check Code:** HOURAGG-8

**Check Name:** Compare NOx Mass Accumulator Values

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check compares the accumulator reported NOx Mass with the calculated value and generates an error message if the difference is greater than the accepted tolerance.

**Validation Tables:**

[Quarterly Emissions Tolerances] (Cross Check Table)

**Specifications:**

NOx Mass Quarterly Tolerance = Lookup Tolerance from Cross-Check Table "Quarterly Emissions Tolerances" where  
 Parameter = "NOXM" AND  
 UOM = "TON"

**Current NOx Mass Summary Value Record** = SummaryValue record at this location where  
 Parameter = "NOXM" AND  
 Reporting Period ID = Current Reporting Period

if (**Rpt Period NOx Mass Calculated Accumulator Array** for this location == -1 OR **Expected Summary Value NOx Mass Array** for this location == false)

**Rpt Period NOx Mass Calculated Value** = null

else

**Rpt Period NOx Mass Calculated Value** = **Rpt Period NOx Mass Calculated Accumulator Array** for this location / 2000, and rounded to one decimal place).

if (**Rpt Period NOx Mass Reported Accumulator Array** for this location >= 0)

**Rpt Period NOx Mass Reported Accumulator Array** for this location = **Rpt Period NOx Mass Reported Accumulator Array** for this location / 2000, and rounded to one decimal place).

if (**Current NOx Mass Summary Value Record** is null OR **Current NOx Mass Summary Value Record**.Current Reporting Period Total is null)

if (**Expected Summary Value NOxMass Array** for this location == true)  
 return result C

else

if (**Expected Summary Value NOX Array** for this location == false)

if (**Rpt Period Op Hours Accumulator Array** for this Location is not equal to 0 OR **Current NOx Mass Summary Value Record**.Current Reporting Period Total is not equal to 0)  
 return result D

else

NOx Mass Quarterly Reported Value = **Current NOx Mass Summary Value Record**.Current Reporting Period Total

If (NOx Mass Quarterly Reported Value < 0)  
 return result F

else if (NOx Mass Quarterly Reported Value is not rounded to one decimal place)  
 return result G

else if (**Rpt Period NOx Mass Calculated Value** is not null)

if (**Rpt Period NOx Mass Calculated Value** <> NOx Mass Quarterly Reported Value)

if (ABS(**Rpt Period NOx Mass Calculated Value** - NOx Mass Quarterly Reported Value) > NOx Mass Quarterly Tolerance)  
 return Result A

else

append "NOXM" to **Emissions Tolerance Deviators**.

else

return result E

// if no result

If (*Rpt Period NOx Mass Reported Accumulator Array* for this location  $\geq 0$  AND ABS(*Rpt Period NOx Mass Reported Accumulator Array* for this location - NOx Mass Quarterly Reported Value) > NOx Mass Quarterly Tolerance)  
*Reported Emissions Value* = *Rpt Period NOx Mass Reported Accumulator Array* for this location  
 return Result B

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The CurrentReportingPeriodTotal of [sumval] reported in the Summary Value record for NOXM for the reporting period is inconsistent with the recalculated value of [calcval].	Critical Error Level 1
B	The CurrentReportingPeriodTotal of [sumval] reported in the Summary Value record for NOXM is inconsistent with [sum], the sum of the hourly values reported in the DHV records for the reporting period.	Critical Error Level 1
C	The CurrentReportingPeriodTotal in the Summary Value record for NOXM is missing or the record is missing.	Critical Error Level 1
D	You reported a value as the CurrentReportingPeriodTotal in the Summary Value record for NOXM, but there were no Hourly Operating Data records or appropriate NOX Methods defined in your monitoring plan.	Critical Error Level 1
E	The CurrentReportingPeriodTotal in the Summary Value record for [param] could not be recalculated because of errors listed above.	Critical Error Level 1
F	The CurrentReportingPeriodTotal reported in the Summary Value record for [param] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
G	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1

## Usage:

1 Process/Category: Emissions Data Evaluation Report Summary Value Evaluation

**Check Code:** HOURAGG-10

**Check Name:** Compare CO2 Mass YTD Values

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check compares the reported annual CO2 Mass with the calculated values and generates an error message if the difference is greater than the accepted tolerance.

**Specifications:**

*Annual CO2M Calculated Value* = null

if (*Rpt Period CO2 Mass Calculated Value* is not null OR *Expected Summary Value CO2 Array* for this location == false)

if (*Expected Summary Value CO2 Array* for this location == true)

If (*Emissions Tolerance Deviators* contains "CO2M")

*Annual CO2M Calculated Value* = *Current CO2 Summary Value Record*.Current Reporting Period Total

else

*Annual CO2M Calculated Value* = *Rpt Period CO2 Mass Calculated Value*

else if (Quarter of the *Current Reporting Period* is greater than 1)

*Annual CO2M Calculated Value* = 0

If (Quarter of the *Current Reporting Period* is greater than 1)

If (*CO2 Start Quarter* is not null)

For each quarter in the current year from the *CO2 Start Quarter* to the quarter prior to the quarter of the *Current Reporting Period*:

Locate an Op Supp Data record for the location and quarter where ParameterCode = "CO2M".

If not found,

if (*Expected Summary Value CO2 Array* for this location == true)

set *Annual CO2M Calculated Value* to null

return result A

Otherwise,

add OpValue to *Annual CO2M Calculated Value*.

else

set *Annual CO2M Calculated Value* to null

if (*Current CO2 Summary Value Record* is not null)

If (*Annual CO2M Calculated Value* is null AND *Expected Summary Value CO2 Array* for this location == false)

return result G

else if (*Current CO2 Summary Value Record*.YearToDateTotal is null or is less than 0)

return result B

else if (*Current CO2 Summary Value Record*.YearToDateTotal is not rounded to one decimal place)

return result D

else if (*Annual CO2M Calculated Value* is not null)

if (*Annual CO2M Calculated Value* <> *Current CO2 Summary Value Record*.YearToDateTotal)

return result C

// If no result

If (**Current CO2 Summary Value Record**.OzoneSeasonToDateTotal is not null)

return result E

else

If (**Expected Summary Value CO2 Array** for this location == false AND **Annual CO2M Calculated Value** > 0)

return result F

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The program could not determine year-to-date for [param], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
B	The [fieldname] in the Summary Value record for [param] is missing or invalid.	Critical Error Level 1
C	The YearToDateTotal of [ytdval] in the Summary Value record for [param] is inconsistent with the recalculated value of [ytdcalc].	Critical Error Level 1
D	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1
E	You reported OzoneSeasonToDate in the Summary Value record for [param], but this is not valid for this parameter.	Critical Error Level 1
F	You did not report a Summary Value record to report year-to-date total for [param].	Critical Error Level 1
G	You reported a Summary Value record for [param], but there was no [param] method defined in your monitoring plan that was active during the year.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report Summary Value Evaluation

**Check Code:** HOURAGG-11

**Check Name:** Compare SO2 Mass YTD Values

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check compares the reported annual SO2 Mass with the calculated values and generates an error message if the difference is greater than the accepted tolerance.

**Specifications:**

*Annual SO2M Calculated Value* = null

if (*Rpt Period SO2 Mass Calculated Value* is not null OR *Expected Summary Value SO2 Array* for this location == false)

if (*Expected Summary Value SO2 Array* for this location == true)

    If (*Emissions Tolerance Deviators* contains "SO2M")

*Annual SO2M Calculated Value* = *Current SO2 Summary Value Record*.Current Reporting Period Total

    else

*Annual SO2M Calculated Value* = *Rpt Period SO2 Mass Calculated Value*

else if (Quarter of the *Current Reporting Period* is greater than 1)

*Annual SO2M Calculated Value* = 0

If (Quarter of the *Current Reporting Period* is greater than 1)

    If (*SO2 Start Quarter* is not null)

        For each quarter from the *SO2 Start Quarter* to the quarter prior to the quarter of the *Current Reporting Period*:

            Locate an Op Supp Data record for the location and quarter where ParameterCode = "SO2M".

            If not found,

                if (*Expected Summary Value SO2 Array* for this location == true)

                    set *Annual SO2M Calculated Value* to null

                    return result A

            Otherwise,

                add OpValue to *Annual SO2M Calculated Value*.

    else

        set *Annual SO2M Calculated Value* to null

if (*Current SO2 Summary Value Record* is not null)

    if (*Annual SO2M Calculated Value* is null AND *Expected Summary Value SO2 Array* for this location == false)

        return result H

    else if (*Current SO2 Summary Value Record*.YearToDateTotal is null or is less than 0)

        return result B

    else if (*Current SO2 Summary Value Record*.YearToDateTotal is not rounded to one decimal place)

        return result D

    else if (*Annual SO2M Calculated Value* is not null)

        if (*Annual SO2M Calculated Value* <> *Current SO2 Summary Value Record*.YearToDateTotal)

            return result C

    // if no result



if (*Current SO2 Summary Value Record.OzoneSeasonToDateTotal* is not null)

return result F

else if (*LME Annual* is equal to true and *Current SO2 Summary Value Record.YearToDateTotal* is greater than 25)

return result E

else

If (*Expected Summary Value SO2 Array* for this location == false AND *Annual SO2M Calculated Value* > 0)

return result G

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The program could not determine year-to-date for [param], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
B	The [fieldname] in the Summary Value record for [param] is missing or invalid.	Critical Error Level 1
C	The YearToDateTotal of [ytdval] in the Summary Value record for [param] is inconsistent with the recalculated value of [ytdcalc].	Critical Error Level 1
D	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1
E	The [paramname] emissions from this unit exceed the applicable number of tons necessary to qualify as an LME unit. According to Part 75.19(b), you must install the appropriate monitoring systems to measure [paramname] by December 31 of the year following this reporting period.	Informational Message
F	You reported OzoneSeasonToDate in the Summary Value record for [param], but this is not valid for this parameter.	Critical Error Level 1
G	You did not report a Summary Value record to report year-to-date total for [param].	Critical Error Level 1
H	You reported a Summary Value record for [param], but there was no [param] method defined in your monitoring plan that was active during the year.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report Summary Value Evaluation

**Check Code:** HOURAGG-12

**Check Name:** Compare NOx Mass YTD and OS Values

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check compares the reported annual and ozone-season NOx Mass with the calculated values and generates an error message if the difference is greater than the accepted tolerance.

**Validation Tables:**

[Quarterly Emissions Tolerances] (Cross Check Table)

**Specifications:**

*Annual NOXM Calculated Value* = null

*OS NOXM Calculated Quarterly Value* = null

*OS NOXM Calculated Value* = null

*NOXM Summary Invalid Fields* = null

*Imprecise Fields* = null

if (*Rpt Period NOx Mass Calculated Value* is not null OR *Expected Summary Value NOx Mass Array* for this location == false)

if (*Expected Summary Value NOx Mass Array* for this location == true)

If (*Annual Reporting Requirement* == true)

If (*Emissions Tolerance Deviators* contains "NOXM")

*Annual NOXM Calculated Value* = *Current NOX Mass Summary Value Record*.Current Reporting  
Period Total

else

*Annual NOXM Calculated Value* = *Rpt Period NOx Mass Calculated Value*

If (*OS Reporting Requirement* == true)

if (Quarter of the *Current Reporting Period* is equal to 2 or 3)

*OS NOXM Calculated Quarterly Value* = *OS NOXM Calculated Accumulator Array* for this location /  
2000, rounded to one decimal place.

*OS NOXM Calculated Value* = *OS NOXM Calculated Quarterly Value*.

else if (Quarter of the *Current Reporting Period* is equal to 4)

*OS NOXM Calculated Quarterly Value* = 0.

*OS NOXM Calculated Value* = 0.

else

If (*Annual Reporting Requirement* == true AND the Quarter of the *Current Reporting Period* is greater than 1)

*Annual NOXM Calculated Value* = 0

If (*OS Reporting Requirement* == true AND the Quarter of the *Current Reporting Period* is greater than 2)

*OS NOXM Calculated Quarterly Value* = 0.

*OS NOXM Calculated Value* = 0.

If (the Quarter of the *Current Reporting Period* is greater than 2 OR (*Annual Reporting Requirement* == true AND the Quarter of the *Current Reporting Period* is equal to 2))

If (*NOX Start Quarter* is not null)

For each quarter in the current year from the *NOX Start Quarter* to the quarter prior to the quarter of the *Current Reporting Period*:

If this quarter is equal to 2, AND *OS Reporting Requirement* == true, AND *OS Active Program Earliest*

**UMCBD** occurred in or before quarter 2 of the **Current Reporting Period** year,  
Locate an Op Supp Data record for the location and quarter where ParameterCode = "NOXMOS".

If not found,

if (**Expected Summary Value NOx Mass Array** for this location == true)  
set **Annual NOXM Calculated Value** to null.  
set **OS NOXM Calculated Value** to null  
return result A

otherwise,

Locate an Op Supp Data record for the location and quarter where  
ParameterCode = "NOXM".

If found,

set **Annual NOXM Calculated Value** to null.  
set **OS NOXM Calculated Value** to null  
return result A

Otherwise,

add OpValue to **OS NOXM Calculated Value**.

If this quarter is not equal to 2 OR **Annual Reporting Requirement** == true,

Locate an Op Supp Data record for the location and quarter where ParameterCode = "NOXM".

If not found,

if (**Expected Summary Value NOx Mass Array** for this location == true)  
set **Annual NOXM Calculated Value** to null.  
set **OS NOXM Calculated Value** to null  
return result B

Otherwise,

if **Annual Reporting Requirement** == true  
add OpValue to **Annual NOXM Calculated Value**.

if this quarter is equal to 3 AND **OS Reporting Requirement** == true

set **Update Value** to OpValue.

if **OS Active Program Earliest UMCBD** occurred in quarter 3 of the year of the  
**Current Reporting Period** and after July 1,

Locate an Op Supp Data record for the location and quarter 3 where  
ParameterCode = "NOXMOS".

if found,

set **Update Value** to OpValue.

add **Update Value** to **OS NOXM Calculated Value**.

else

set **Annual NOXM Calculated Value** to null  
set **OS NOXM Calculated Value** to null

if (**Current NOX Mass Summary Value Record** is not null)

If (**OS NOXM Calculated Value** is null AND **Annual NOXM Calculated Value** is null AND **Expected Summary Value NOx Mass Array** for this location == false)  
return result K

Otherwise,

---

```

If (Current NOX Mass Summary Value Record.YearToDateTotal is null and Annual Reporting Requirement ==
true) OR (Current NOX Mass Summary Value Record.YearToDateTotal is less than 0,
    append "YearToDateTotal" to NOXM Summary Invalid Fields

If (Current NOX Mass Summary Value Record.OzoneSeasonToDateTotal is null and OS Reporting Requirement
== true AND Quarter of the Current Reporting Period is equal to 2 or 3 or 4), OR Current NOX Mass Summary
Value Record.OzoneSeasonToDateTotal is less than 0,
    append "OzoneSeasonToDateTotal" to NOXM Summary Invalid Fields

If (Current NOX Mass Summary Value Record.YearToDateTotal is not rounded to one decimal place)
    append "YearToDateTotal" to Imprecise Fields

If (Current NOX Mass Summary Value Record.OzoneSeasonToDateTotal is not rounded to one decimal place)
    append "OzoneSeasonToDateTotal" to Imprecise Fields

If (NOXM Summary Invalid Fields is not null)
    return result C

else if (Imprecise Fields is not null)
    Set NOXM Summary Invalid Fields to Imprecise Fields
    return result E

else if (Annual NOXM Calculated Value is not null OR OS NOXM Calculated Value is not null)

    Tolerance = Lookup Tolerance from Cross-Check Table "Quarterly Emissions Tolerances" where
        Parameter = "NOXM" AND
        UOM = "TON"

    if (Annual NOXM Calculated Value is not null AND Annual NOXM Calculated Value <> Current NOX
Mass Summary Value Record.YearToDateTotal)
        append "YearToDateTotal" to NOXM Summary Invalid Fields

    if (OS NOXM Calculated Value is not null AND OS NOXM Calculated Value <> Current NOX Mass
Summary Value Record.OzoneSeasonToDateTotal)

        if (ABS(OS NOXM Calculated Value - Current NOXM Summary Value
Record.OzoneSeasonToDateTotal) > Tolerance
            append "OzoneSeasonToDateTotal" to NOXM Summary Invalid Fields

    If NOXM Summary Invalid Fields is not null,
        If (NOXM Summary Invalid Fields contains "Year")
            If (NOXM Summary Invalid Fields contains "Ozone")
                return result D
            else
                return result H
        else
            return result I

// if no result

if (OS Reporting Requirement == false and Current NOXM Summary Value Record.OzoneSeasonToDateTotal is
not null)
    return result G

else if (Annual Reporting Requirement == false and Current NOXM Summary Value Record.YearToDateTotal is
not null)
    return result L

```

else if ((*LME Annual* is equal to true and *Current NOXM Summary Value Record.YearToDateTotal* is greater than 100) OR (*LME OS* is equal to true and *Current NOXM Summary Value Record.OzoneSeasonToDateTotal* is greater than 50))  
 return result F

else

If (*Expected Summary Value NOx Mass Array* for this location == false AND (*OS NOXM Calculated Value* > 0 OR *Annual NOXM Calculated Value* > 0))  
 return result J

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The program could not determine ozone-season-to-date totals for [osparam], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
B	The program could not determine year-to-date for [param], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
C	The [fieldname] in the Summary Value record for [param] is missing or invalid.	Critical Error Level 1
D	The YearToDateTotal of [ytdval] in the Summary Value record for [param] is inconsistent with the recalculated value of [ytdcalc], and the OzoneSeasonToDateTotal of [osval] in the Summary Value record for [param] is inconsistent with the recalculated value of [oscalc].	Critical Error Level 1
E	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1
F	The [paramname] emissions from this unit exceed the applicable number of tons necessary to qualify as an LME unit. According to Part 75.19(b), you must install the appropriate monitoring systems to measure [paramname] by December 31 of the year following this reporting period.	Informational Message
G	You reported OzoneSeasonToDate in the Summary Value record for [param], but this is not valid for locations that are not associated with an ozone-season program.	Critical Error Level 1
H	The YearToDateTotal of [ytdval] in the Summary Value record for [param] is inconsistent with the recalculated value of [ytdcalc].	Critical Error Level 1
I	The OzoneSeasonToDateTotal of [osval] in the Summary Value record for [param] is inconsistent with the recalculated value of [oscalc].	Critical Error Level 1
J	You did not report a Summary Value record to report year-to-date total for [param].	Critical Error Level 1
K	You reported a Summary Value record for [param], but there was no [param] method defined in your monitoring plan that was active during the year.	Critical Error Level 1
L	You reported YearToDate in the Summary Value record for [param], but this is not valid for locations that only report during the ozone season.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report Summary Value Evaluation

**Check Code:** HOURAGG-13

**Check Name:** Compare NOx Rate YTD Values

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check compares the reported annual and ozone-season NOx Rate with the calculated values and generates an error message if the difference is greater than the accepted tolerance.

**Validation Tables:**

[Quarterly Emissions Tolerances] (Cross Check Table)

**Specifications:**

*Annual NOXR Calculated Value* = null

If (*LME Annual* == true)

Set *Total NOx Mass* to null.

if (*Expected Summary Value NOx Rate Array* for this location == true)

if (*Rpt Period NOx Mass Calculated Accumulator Array* for this location is greater than or equal to 0 AND *Rpt Period HI Calculated Value* is not null)

Set *Total NOx Mass* to *Rpt Period NOx Mass Calculated Accumulator Array* for this location.

Set *Total HI* to *Rpt Period HI Calculated Value*.

else if (Quarter of the *Current Reporting Period* is greater than 1)

Set *Total NOx Mass* to 0.

Set *Total HI* to 0.

If (Quarter of the *Current Reporting Period* is greater than 1 AND *Total NOx Mass* is not null)

if (*NOXR Start Quarter* is not null)

For each quarter in the current year from the *NOXR Start Quarter* to the quarter prior to the quarter of the *Current Reporting Period*:

Locate an Op Supp Data record for the location and quarter where ParameterCode = "NOXR".

If not found,

if (*Expected Summary Value NOx Rate Array* for this location == true)

set *Total NOx Mass* to null.

return result A

Otherwise,

set *NOX Value* to OpValue.

Locate an Op Supp Data record for the location and quarter where ParameterCode = "HIT".

If not found,

if (*Expected Summary Value NOx Rate Array* for this location == true)

set *Total HI* to null.

return result E

Otherwise,

Add OpValue to *Total HI*.

Calculate *NOX Value* = *NOX Value* \* OpValue, and round the result to 1 decimal place.

Add *NOX Value* to *Total NOx Mass*.

else

Set *Total NOx Mass* to null.

If (*Total NOx Mass* is not null AND *Total HI* is not null)

If (*Total NOx Mass* == 0)

Set ***Annual NOXR Calculated Value*** to 0.

else

Calculate ***Annual NOXR Calculated Value*** = *Total NOx Mass* / *TotalHI*, and round the result to 3 decimal places.

else

Set *TotalOpHours* to null.

if (***Expected Summary Value NOx Rate Array*** for this location == true)

if (***Rpt Period NOx Rate Calculated Value*** is not null)

***Annual NOXR Calculated Value*** = ***Rpt Period NOx Rate Sum***

Set *TotalOpHours* to ***Rpt Period NOx Rate Hours***.

else if ((Quarter of the ***Current Reporting Period*** is greater than 1)

Set *TotalOpHours* to 0.

If (Quarter of the ***Current Reporting Period*** is greater than 1 AND *TotalOpHours* is not null)

if (***NOXR Start Quarter*** is not null)

For each quarter from the ***NOXR Start Quarter*** to the quarter prior to the quarter of the ***Current Reporting Period***:

Locate an Op Supp Data record for the location and quarter where ParameterCode = "NOXRSUM".

If found,

Add OpValue to ***Annual NOXR Calculated Value***.

Locate an Op Supp Data record for the location and quarter where ParameterCode = "NOXRHRS".

If found,

Add OpValue to *TotalOpHours*.

If not found,

set ***Annual NOXR Calculated Value*** to null

return result A

Otherwise,

Locate an Op Supp Data record for the location and quarter where ParameterCode = "NOXR".

If not found,

if (***Expected Summary Value NOx Rate Array*** for this location == true)

set ***Annual NOXR Calculated Value*** to null

return result A

Otherwise,

set ***NOXVal*** to OpValue

Locate an Op Supp Data record for the location and quarter where ParameterCode = "OPHOURS"

and FuelCode is null.

If not found,

if (*Expected Summary Value NOx Rate Array* for this location == true)  
set *Annual NOXR Calculated Value* to null  
return result B

Otherwise,

Add OpValue to *TotalOpHours*.  
Add OpValue \* *NOXVal* to *Annual NOXR Calculated Value*

else

set *Annual NOXR Calculated Value* to null.

If (*Annual NOXR Calculated Value* is not null)

If (*TotalOpHours* == 0)

Set *Annual NOXR Calculated Value* to 0.

else if (*Annual NOXR Calculated Value* > 0)

Calculate *Annual NOXR Calculated Value* = *Annual NOXR Calculated Value* / *TotalOpHours*, and round the result to 3 decimal places.

if (*Current NOXR Summary Value Record* is not null)

If (*Annual NOXR Calculated Value* is null AND *Expected Summary Value NOx Rate Array* for this location == false)

return result H

else if (*Current NOXR Summary Value Record*.YearToDateTotal is null or is less than 0)

return result C

else if (*Annual NOXR Calculated Value* is not null)

if (*Annual NOXR Calculated Value* <> *Current NOXR Summary Value Record*.YearToDateTotal)

Tolerance = Lookup Tolerance from Cross-Check Table "Quarterly Emissions Tolerances" where  
Parameter = "NOXR" AND  
UOM = "LBMMBTU"

if (ABS(*Annual NOXR Calculated Value* - *Current NOXR Summary Value Record*.YearToDateTotal) >  
Tolerance)

return result D

// if no result

if (*Current NOXR Summary Value Record*.OzoneSeasonToDateTotal is not null)

return result F

else

If (*Expected Summary Value NOx Rate Array* for this location == false AND *Annual NOXR Calculated Value* > 0)

return result G



**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The program could not determine year-to-date for [param], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
B	The program could not determine year-to-date for [param], because the Op Supp Data record for OPHOURS is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
C	The [fieldname] in the Summary Value record for [param] is missing or invalid.	Critical Error Level 1
D	The YearToDateTotal of [ytdval] in the Summary Value record for [param] is inconsistent with the recalculated value of [ytdcalc].	Critical Error Level 1
E	The program could not determine year-to-date for [param], because the Op Supp Data record for HIT is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
F	You reported OzoneSeasonToDate in the Summary Value record for [param], but this is not valid for this parameter.	Critical Error Level 1
G	You did not report a Summary Value record to report year-to-date total for [param].	Critical Error Level 1
H	You reported a Summary Value record for NOXR, but this is not appropriate, because this record is not consistent with the unit program records and monitoring methodologies in your monitoring plan. You only report a NOXR Summary Value if the unit belongs to the Acid Rain program.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report Summary Value Evaluation

**Check Code:** HOURAGG-14

**Check Name:** Compare Total Heat Input YTD and OS Values

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check compares the reported annual and ozone-season heat input with the calculated values and generates an error message if the difference is greater than the accepted tolerance.

**Validation Tables:**

[Quarterly Emissions Tolerances] (Cross Check Table)

**Specifications:**

*Annual HIT Calculated Value* = null

*OS HIT Calculated Quarterly Value* = null

*OS HIT Calculated Value* = null

*HI Summary Invalid Fields* = null

*Imprecise Fields* = null

if (*Rpt Period HI Calculated Value* is not null OR *Expected Summary Value HI Array* for this location == false)

if (*Expected Summary Value HI Array* for this location == true)

If (*Annual Reporting Requirement* == true)

If (*Emissions Tolerance Deviators* contains "HIT")

*Annual HI Calculated Value* = *Current HI Summary Value Record*.Current Reporting Period Total

else

*Annual HI Calculated Value* = *Rpt Period HI Calculated Value*

If (*OS Reporting Requirement* == true)

if (the Quarter of the *Current Reporting Period* is equal to 2 or 3)

*OS HIT Calculated Quarterly Value* = *OS HIT Calculated Accumulator Array* for this location, and round the result to zero decimal places.

*OS HIT Calculated Value* = *OS HIT Calculated Quarterly Value*.

else if (Quarter of the *Current Reporting Period* is equal to 4)

*OS HIT Calculated Quarterly Value* = 0.

*OS HIT Calculated Value* = 0.

else

If (*Annual Reporting Requirement* == true AND the Quarter of the *Current Reporting Period* is greater than 1)

*Annual HI Calculated Value* = 0

If (*OS Reporting Requirement* == true AND the Quarter of the *Current Reporting Period* is greater than 2)

*OS HIT Calculated Quarterly Value* = 0.

*OS HIT Calculated Value* = 0.

If (the Quarter of the *Current Reporting Period* is greater than 2 OR (*Annual Reporting Requirement* == true AND the Quarter of the *Current Reporting Period* is equal to 2))

If (*Heat Input Start Quarter* is not null)

For each quarter in the current year from the *Heat Input Start Quarter* to the quarter prior to the quarter of the *Current Reporting Period*:

If this quarter is equal to 2, AND *OS Reporting Requirement* == true, AND *OS Active Program Earliest UMCBD* occurred in or before quarter 2 of the *Current Reporting Period* year,

Locate an Op Supp Data record for the location and quarter where ParameterCode = "HITOS".

If not found,  
    if (*Expected Summary Value HI Array* for this location == true)  
        set *Annual HIT Calculated Value* to null.  
        set *OS HIT Calculated Value* to null  
        return result A

otherwise,  
    Locate an Op Supp Data record for the location and quarter where  
    ParameterCode = "HIT".

    If found,  
        set *Annual HIT Calculated Value* to null.  
        set *OS HIT Calculated Value* to null  
        return result A

Otherwise,  
    add OpValue to *OS HIT Calculated Value*.

If this quarter is not equal to 2 OR *Annual Reporting Requirement* == true,  
    Locate an Op Supp Data record for the location and quarter where ParameterCode = "HIT".

    If not found,  
        if (*Expected Summary Value HI Array* for this location == true)  
            set *Annual HIT Calculated Value* to null.  
            set *OS HIT Calculated Value* to null  
            return result B

    Otherwise,  
        if *Annual Reporting Requirement* == true  
            add OpValue to *Annual HIT Calculated Value*.

    if this quarter is equal to 3 AND *OS Reporting Requirement* == true

        set *Update Value* to OpValue.

        if *OS Active Program Earliest UMCBD* occurred in quarter 3 of the year of the  
        *Current Reporting Period* and after July 1,

            Locate an Op Supp Data record for the location and quarter 3 where  
            ParameterCode = "HITOS".

            if found,  
                set *Update Value* to OpValue.

        add *Update Value* to *OS HIT Calculated Value*.

else  
    set *Annual HIT Calculated Value* to null  
    set *Annual OS HIT Calculated Value* to null

if (*Current HI Summary Value Record* is not null)

    If (*OS HIT Calculated Value* is null AND *Annual HIT Calculated Value* is null AND *Expected Summary Value HI Array*  
    for this location == false and (*LME HI Method* <> "LTFF" or location does not start with "CP") )  
        return result K

Otherwise,

If (***Current HI Summary Value Record.YearToDateTotal*** is null and ***Annual Reporting Requirement*** == true) OR  
 (***Current HI Summary Value Record.YearToDateTotal*** is less than 0,  
 append "YearToDateTotal" to ***HIT Summary Invalid Fields***

If (***Current HI Summary Value Record.OzoneSeasonToDateTotal*** is null and ***OS Reporting Requirement*** == true  
 AND Quarter of the ***Current Reporting Period*** is equal to 2 or 3 or 4), OR ***Current HI Summary Value Record.OzoneSeasonToDateTotal*** is less than 0,  
 append "OzoneSeasonToDateTotal" to ***HIT Summary Invalid Fields***

If (***Current HI Summary Value Record.YearToDateTotal*** is not rounded to zero decimal places)  
 append "YearToDateTotal" to ***Imprecise Fields***

If (***Current HI Summary Value Record.OzoneSeasonToDateTotal*** is not rounded to zero decimal places)  
 If (***Legacy Data Evaluation*** == false OR ***Current HI Summary Value Record.OzoneSeasonToDateTotal***  
 is not rounded to one decimal place)  
 append "OzoneSeasonToDateTotal" to ***Imprecise Fields***

If (***HIT Summary Invalid Fields*** is not null)  
 return result C

else if (***Imprecise Fields*** is not null)  
 set ***HIT Summary Invalid Fields*** to ***Imprecise Fields***  
 return result E

else if (***Annual HIT Calculated Value*** is not null OR ***OS HIT Calculated Value*** is not null)

Tolerance = Lookup Tolerance from Cross-Check Table "Quarterly Emissions Tolerances" where  
 Parameter = "HIT" AND  
 UOM = "MMBTU"

if (***Annual HIT Calculated Value*** is not null AND ***Annual HIT Calculated Value*** <> ***Current HI Summary Value Record.YearToDateTotal***)  
 append "YearToDateTotal" to ***HIT Summary Invalid Fields***

if (***OS HIT Calculated Value*** is not null AND ***OS HIT Calculated Value*** <> ***Current HI Summary Value Record.OzoneSeasonToDateTotal***)

If (***Legacy Data Evaluation*** == false)

if (ABS(***OS HIT Calculated Value - Current HI Summary Value Record.OzoneSeasonToDateTotal***) > Tolerance OR the quarter of the ***Current Reporting Period*** is greater than 2)  
 append "OzoneSeasonToDateTotal" to ***HIT Summary Invalid Fields***

else

if (ABS(***OS HIT Calculated Value - Current HI Summary Value Record.OzoneSeasonToDateTotal*** rounded to the nearest integer) > Tolerance  
 append "OzoneSeasonToDateTotal" to ***HIT Summary Invalid Fields***

If (***HIT Summary Invalid Fields*** is not null)

If (***HIT Summary Invalid Fields*** contains "Year")

If (***HIT Summary Invalid Fields*** contains "Ozone")  
 return result D

else

return result H

else

If (***Legacy Data Evaluation*** == true)

```

        return result F
    else
        return result I

    // if no result

    if (OS Reporting Requirement == false and Current HI Summary Value Record.OzoneSeasonToDateTotal is not
    null)
        return result G

    else if (Annual Reporting Requirement == false and Current HI Summary Value Record.YearToDateTotal is not
    null)
        return result L
else
    If (Expected Summary Value HI Array for this location == false AND (Annual HIT Calculated Value > 0 OR OS HIT
    Calculated Value > 0))
        return result J

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The program could not determine ozone-season-to-date totals for [osparam], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
B	The program could not determine year-to-date for [param], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
C	The [fieldname] in the Summary Value record for [param] is missing or invalid.	Critical Error Level 1
D	The YearToDateTotal of [ytdval] in the Summary Value record for [param] is inconsistent with the recalculated value of [ytdcalc], and the OzoneSeasonToDateTotal of [osval] in the Summary Value record for [param] is inconsistent with the recalculated value of [oscalc].	Critical Error Level 1
E	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1
F	The OzoneSeasonToDateTotal of [osval] in the Summary Value record for [param] is inconsistent with the recalculated value of [oscalc].	Informational Message
G	You reported OzoneSeasonToDate in the Summary Value record for [param], but this is not valid for locations that are not associated with an ozone-season program.	Critical Error Level 1
H	The YearToDateTotal of [ytdval] in the Summary Value record for [param] is inconsistent with the recalculated value of [ytdcalc].	Critical Error Level 1
I	The OzoneSeasonToDateTotal of [osval] in the Summary Value record for [param] is inconsistent with the recalculated value of [oscalc].	Critical Error Level 1
J	You did not report a Summary Value record to report year-to-date total for [param].	Critical Error Level 1
K	You reported a Summary Value record for [param], but there was no [param] method defined in your monitoring plan that was active during the year.	Critical Error Level 1
L	You reported YearToDate in the Summary Value record for [param], but this is not valid for locations that only report during the ozone season.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report Summary Value Evaluation

**Check Code:** HOURAGG-15

**Check Name:** Compare Operating Time YTD and OS Values

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check compares the reported annual and ozone-season operating time with the calculated values and generates an error message if the difference is greater than the accepted tolerance.

**Validation Tables:**

[Quarterly Emissions Tolerances] (Cross Check Table)

**Specifications:**

*Annual OPTIME Calculated Value* = null

*OS OPTIME Calculated Quarterly Value* = null

*OS OPTIME Calculated Value* = null

*OPTIME Summary Invalid Fields* = null

*Imprecise Fields* = null

if (*Rpt Period Op Time Calculated Value* is not null)

    If *Annual Reporting Requirement* == true

        If (*Emissions Tolerance Deviators* contains "OPTIME")

*Annual OPTIME Calculated Value* = *Current Op Time Summary Value Record*.Current Reporting Period Total

        else

*Annual OPTIME Calculated Value* = *Rpt Period Op Time Calculated Value*

    If *OS Reporting Requirement* == true)

        if (the Quarter of the *Current Reporting Period* is equal to 2 or 3)

*OS OPTIME Calculated Quarterly Value* = *OS Op Time Accumulator Array* for this location.

*OS OPTIME Calculated Value* = *OS OPTIME Calculated Quarterly Value*.

        else if (Quarter of the *Current Reporting Period* is equal to 4)

*OS OPTIME Calculated Quarterly Value* = 0.

*OS OPTIME Calculated Value* = 0.

    If (the Quarter of the *Current Reporting Period* is greater than 2 OR (*Annual Reporting Requirement* == true AND the Quarter of the *Current Reporting Period* is equal to 2))

        If (*Start Quarter* is not null)

            For each quarter in the current year from the *Start Quarter* to the quarter prior to the quarter of the *Current Reporting Period*:

                If this quarter is equal to 2, AND *OS Reporting Requirement* == true, AND *OS Active Program Earliest UMCBD* occurred in or before quarter 2 of the *Current Reporting Period* year

                    Locate an Op Supp Data record for the location and quarter where ParameterCode = "OSTIME".

                If not found,

                    set *Annual OPTIME Calculated Value* to null.

                    set *OS OPTIME Calculated Value* to null

                Locate the *Facility* record for the location.

                If the First ECMPS Reporting Period in the retrieved record is not null AND is on or before the 2nd quarter of the current year,

                    return result A.

exit for.

Otherwise,  
add OpValue to **OS OPTIME Calculated Value**.

If this quarter is not equal to 2 OR **Annual Reporting Requirement** == true,  
Locate an Op Supp Data record for the location and quarter where ParameterCode = "OPTIME".

If not found,  
if **Annual Reporting Requirement** == true  
set **Annual OPTIME Calculated Value** to null.

if **OS Reporting Requirement** == true  
set **OS OPTIME Calculated Value** to null.

Locate the **Facility** record for the location.  
If the First ECMPS Reporting Period in the retrieved record is not null AND is on or  
before the **Start Quarter** of the current year,  
return result B.

exit for.

Otherwise,  
if **Annual Reporting Requirement** == true  
add OpValue to **Annual OPTIME Calculated Value**.

if this quarter is equal to 3 AND **OS Reporting Requirement** == true

set **Update Value** to OpValue.

if **OS Active Program Earliest UMCBD** occurred in quarter 3 of the year of the  
**Current Reporting Period** and after July 1,

Locate an Op Supp Data record for the location and quarter 3 where  
ParameterCode = "OSTIME".

if found,  
set **Update Value** to OpValue.

add **Update Value** to **OS OPTIME Calculated Value**.

Otherwise,  
set **Annual OPTIME Calculated Value** to null.  
set **OS OPTIME Calculated Value** to null.

if (**Current Op Time Summary Value Record** is not null)

If (**Current Op Time Summary Value Record**.YearToDateTotal is null and **Annual Reporting Requirement** == true) OR  
(**Current Op Time Summary Value Record**.YearToDateTotal is less than 0,  
append "YearToDateTotal" to **OPTIME Summary Invalid Fields**

If (**Current Op Time Summary Value Record**.OzoneSeasonToDateTotal is null and **OS Reporting Requirement** == true  
AND Quarter of the **Current Reporting Period** is equal to 2 or 3 or 4), OR **Current Op Time Summary Value  
Record**.OzoneSeasonToDateTotal is less than 0,  
append "OzoneSeasonToDateTotal" to **OPTIME Summary Invalid Fields**

If (**Current Op Time Summary Value Record**.YearToDateTotal is not rounded to two decimal places)

---

```
    append "YearToDateTotal" to Imprecise Fields

    If (Current Op Time Summary Value Record.OzoneSeasonToDateTotal is not rounded to two decimal places)
        append "OzoneSeasonToDateTotal" to Imprecise Fields

    If (OPTIME Summary Invalid Fields is not null)
        return result C

    else if (Imprecise Fields is not null)
        Set OPTIME Summary Invalid Fields to Imprecise Fields
        return result E

    else if (Annual OPTIME Calculated Value is not null OR OS OPTIME Calculated Value is not null)

        Tolerance = Lookup Tolerance from Cross-Check Table "Quarterly Emissions Tolerances" where
            Parameter = "OPTIME" AND
            UOM = "HR"

        if (Annual OPTIME Calculated Value is not null AND Annual OPTIME Calculated Value <> Current Op Time Summary Value Record.YearToDateTotal)
            append "YearToDateTotal" to OPTIME Summary Invalid Fields

        if (OS OPTIME Calculated Value is not null AND OS OPTIME Calculated Value <> Current Op Time Summary Value Record.OzoneSeasonToDateTotal)

            if (ABS(OS OPTIME Calculated Value - Current Op Time Summary Value Record.OzoneSeasonToDateTotal) > Tolerance)
                append "OzoneSeasonToDateTotal" to OPTIME Summary Invalid Fields

        If OPTIME Summary Invalid Fields is not null,
            If (OPTIME Summary Invalid Fields contains "Year")
                If (OPTIME Summary Invalid Fields contains "Ozone")
                    return result D
                else
                    return result G
            else
                return result H

    // if no result

    if (OS Reporting Requirement == false and Current Op Time Summary Value Record.OzoneSeasonToDateTotal is not null)
        return result F

    else if (Annual Reporting Requirement == false and Current Op Time Summary Value Record.YearToDateTotal is not null)
        return result I
```



**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The program could not determine ozone-season-to-date totals for [osparam], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
B	The program could not determine year-to-date for [param], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
C	The [fieldname] in the Summary Value record for [param] is missing or invalid.	Critical Error Level 1
D	The YearToDateTotal of [ytdval] in the Summary Value record for [param] is inconsistent with the recalculated value of [ytdcalc], and the OzoneSeasonToDateTotal of [osval] in the Summary Value record for [param] is inconsistent with the recalculated value of [oscalc].	Critical Error Level 1
E	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1
F	You reported OzoneSeasonToDate in the Summary Value record for [param], but this is not valid for locations that are not associated with an ozone-season program.	Critical Error Level 1
G	The YearToDateTotal of [ytdval] in the Summary Value record for [param] is inconsistent with the recalculated value of [ytdcalc].	Critical Error Level 1
H	The OzoneSeasonToDateTotal of [osval] in the Summary Value record for [param] is inconsistent with the recalculated value of [oscalc].	Critical Error Level 1
I	You reported YearToDate in the Summary Value record for [param], but this is not valid for locations that only report during the ozone season.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report Summary Value Evaluation

**Check Code:** HOURAGG-16

**Check Name:** Compare Operating Hours YTD and OS Values

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check compares the reported annual and ozone-season operating hours with the calculated values and generates an error message if the difference is greater than the accepted tolerance.

**Validation Tables:**

[Quarterly Emissions Tolerances] (Cross Check Table)

**Specifications:**

*Annual OPHOURS Calculated Value* = null

*OS OPHOURS Calculated Quarterly Value* = null

*OS OPHOURS Calculated Value* = null

*OPHOURS Summary Invalid Fields* = null

*Imprecise Fields* = null

if (*Rpt Period Op Hours Calculated Value* is not null)

    If *Annual Reporting Requirement* == true

        If (*Emissions Tolerance Deviators* contains "OPHOURS")

*Annual OPHOURS Calculated Value* = *Current Op Hours Summary Value Record*.Current Reporting Period  
Total

        else

*Annual OPHOURS Calculated Value* = *Rpt Period Op Hours Calculated Value*

    If *OS Reporting Requirement* == true)

        if (the Quarter of the *Current Reporting Period* is equal to 2 or 3)

*OS OPHOURS Calculated Quarterly Value* = *OS Op Hours Accumulator Array* for this location.

*OS OPHOURS Calculated Value* = *OS OPHOURS Calculated Quarterly Value*.

        else if (Quarter of the *Current Reporting Period* is equal to 4)

*OS OPHOURS Calculated Quarterly Value* = 0.

*OS OPHOURS Calculated Value* = 0.

*OS OPHOURS Calculated Value* = *OS OPHOURS Calculated Quarterly Value*.

If (the Quarter of the *Current Reporting Period* is greater than 2 OR (*Annual Reporting Requirement* == true AND the Quarter of the *Current Reporting Period* is equal to 2))

    If (*Start Quarter* is not null)

        For each quarter in the current year from the *Start Quarter* to the quarter prior to the quarter of the *Current Reporting Period*:

            If this quarter is equal to 2, AND *OS Reporting Requirement* == true, AND *OS Active Program Earliest UMCBD* occurred in or before quarter 2 of the *Current Reporting Period* year,

                Locate an Op Supp Data record for the location and quarter where ParameterCode = "OSHOURLS" and FuelCd is null.

                If not found,

                    set *Annual OPHOURS Calculated Value* to null.

                    set *OS OPHOURS Calculated Value* to null

                    return result A

                Otherwise,

add OpValue to **OS OPHOURS Calculated Value**.

If this quarter is not equal to 2 OR **Annual Reporting Requirement** == true,

Locate an Op Supp Data record for the location and quarter where ParameterCode = "OPHOURS" and FuelCd is null.

If not found,

set **Annual OPHOURS Calculated Value** to null.

set **OS OPHOURS Calculated Value** to null

return result B

Otherwise,

if **Annual Reporting Requirement** == true

add OpValue to **Annual OPHOURS Calculated Value**.

if this quarter is equal to 3 AND **OS Reporting Requirement** == true

set **Update Value** to OpValue.

if **OS Active Program Earliest UMCBD** occurred in quarter 3 of the year of the **Current Reporting Period** and after July 1,

Locate an Op Supp Data record for the location and quarter 3 where ParameterCode = "OSHOURS".

if found,

set **Update Value** to OpValue.

add **Update Value** to **OS OPHOURS Calculated Value**.

Otherwise,

set **Annual OPHOURS Calculated Value** to null.

set **OS OPHOURS Calculated Value** to null.

if (**Current Op Hours Summary Value Record** is not null)

If (**Current Op Hours Summary Value Record**.YearToDateTotal is null and **Annual Reporting Requirement** == true) OR (**Current Op Hours Summary Value Record**.YearToDateTotal is less than 0,  
append "YearToDateTotal" to **OPHOURS Summary Invalid Fields**

If (**Current Op Hours Summary Value Record**.OzoneSeasonToDateTotal is null and **OS Reporting Requirement** == true AND Quarter of the **Current Reporting Period** is equal to 2 or 3 or 4), OR **Current Op Hours Summary Value Record**.OzoneSeasonToDateTotal is less than 0,  
append "OzoneSeasonToDateTotal" to **OPHOURS Summary Invalid Fields**

If (**Current Op Hours Summary Value Record**.YearToDateTotal is not rounded to zero decimal places)  
append "YearToDateTotal" to **Imprecise Fields**

If (**Current Op Hours Summary Value Record**.OzoneSeasonToDateTotal is not rounded to zero decimal places)  
append "OzoneSeasonToDateTotal" to **Imprecise Fields**

If (**OPHOURS Summary Invalid Fields** is not null)  
return result C

else if (**Imprecise Fields** is not null)  
set **OPHOURS Summary Invalid Fields** to **Imprecise Fields**  
return result E

else if (*Annual OPHOURS Calculated Value* is not null OR *OS OPHOURS Calculated Value* is not null)

Tolerance = Lookup Tolerance from Cross-Check Table "Quarterly Emissions Tolerances" where  
Parameter = "OPHOURS" AND  
UOM = "HR"

if (*Annual OPHOURS Calculated Value* is not null AND *Annual OPHOURS Calculated Value* < *Current Op Hours Summary Value Record.YearToDateTotal*)  
append "YearToDateTotal" to *OPTIME Summary Invalid Fields*

if (*OS OPHOURS Calculated Value* is not null AND *OS OPHOURS Calculated Value* < *Current Op Hours Summary Value Record.OzoneSeasonToDateTotal*)

if (ABS(*OS OPHOURS Calculated Value* - *Current Op Hours Summary Value Record.OzoneSeasonToDateTotal*) > Tolerance)  
append "OzoneSeasonToDateTotal" to *OPHOURS Summary Invalid Fields*

If *OPHOURS Summary Invalid Fields* is not null,

If (*OPHOURS Summary Invalid Fields* contains "Year")

If (*OPHOURS Summary Invalid Fields* contains "Ozone")

return result D

else

return result G

else

return result H

// if no result

if (*OS Reporting Requirement* == false and *Current Op Hours Summary Value Record.OzoneSeasonToDateTotal* is not null)

return result F

else if (*Annual Reporting Requirement* == false and *Current Op Hours Summary Value Record.YearToDateTotal* is not null)

return result I

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The program could not determine ozone-season-to-date totals for [osparam], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
B	The program could not determine year-to-date for [param], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
C	The [fieldname] in the Summary Value record for [param] is missing or invalid.	Critical Error Level 1
D	The YearToDateTotal of [ytdval] in the Summary Value record for [param] is inconsistent with the recalculated value of [ytdcalc], and the OzoneSeasonToDateTotal of [osval] in the Summary Value record for [param] is inconsistent with the recalculated value of [oscalc].	Critical Error Level 1
E	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1
F	You reported OzoneSeasonToDate in the Summary Value record for [param], but this is not valid for locations that are not associated with an ozone-season program.	Critical Error Level 1
G	The YearToDateTotal of [ytdval] in the Summary Value record for [param] is inconsistent with the recalculated value of [ytdcalc].	Critical Error Level 1
H	The OzoneSeasonToDateTotal of [osval] in the Summary Value record for [param] is inconsistent with the recalculated value of [oscalc].	Critical Error Level 1
I	You reported YearToDate in the Summary Value record for [param], but this is not valid for locations that only report during the ozone season.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report Summary Value Evaluation

**Check Code:** HOURAGG-17

**Check Name:** Check BCO2 Summary Value

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Specifications:**

**Current BCO2 Summary Value Record** = SummaryValue record at this location where  
 Parameter = "BCO2" AND  
 Reporting Period ID = Current Reporting Period

Set **RGGI Begin Date**, **RGGI Start Quarter**, AND **BCO2 Quarterly Reported Value** to null.

if (**Current BCO2 Summary Value Record** is not null)

if (**CurrentMonitorPlanLocationRecord**.StackPipeID is not null)  
 return result A

else

Locate a Program record for the unit where the ProgramCode == "RGGI", the UnitMonitorCertBeginDate is on or prior to the last day of the reporting period, and the EndDate is null or is on or after the first day of reporting period.

If not found,  
 return result B

else

Set **RGGI Begin Date** to the later of the UnitMonitorCertBeginDate and the EmissionsRecordingBeginDate (if not null) in the retrieved record.

If **RGGI Begin Date** is in a year prior to the current reporting period,  
 Set **RGGI Start Quarter** to 1

else

Set **RGGI Start Quarter** to the quarter of the **RGGI Begin Date**.

if (**Current BCO2 Summary Value Record**.Current Reporting Period Total < 0)  
 return result C

else if (**Current BCO2 Summary Value Record**.Current Reporting Period Total is not rounded to one decimal place)  
 return result D

else

**BCO2 Quarterly Reported Value** = **Current BCO2 Summary Value Record**.Current Reporting Period Total

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported a Summary Value record for [param], but this value should only be reported at the unit, not at a stack or pipe.	Critical Error Level 1
B	You reported a Summary Value record for BCO2, but this location does not belong to the RGGI program during this reporting period.	Critical Error Level 1
C	The CurrentReportingPeriodTotal reported in the Summary Value record for [param] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
D	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1
E	This check result is obsolete.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Evaluation
---	-------------------	---

**Check Code:** HOURAGG-18

**Check Name:** Compare BCO2 Mass YTD Values

**Related Former Checks:**

**Applicability:** General Check

**Description:****Validation Tables:**

[Quarterly Emissions Tolerances] (Cross Check Table)

**Specifications:**

Set *Annual BCO2 Calculated Value* to null.

If (*BCO2 Quarterly Reported Value* is not null)

*Annual BCO2M Calculated Value* = *BCO2 Quarterly Reported Value*

else

*Annual BCO2M Calculated Value* = -1

If (*RGGI Start Quarter* is not null AND Quarter of the *Current Reporting Period* is greater than 1)

For each quarter in the current year from the *RGGI Start Quarter* to the quarter prior to the quarter of the *Current Reporting Period*:

Locate an Op Supp Data record for the location and quarter where ParameterCode = "BCO2".

If not found,

If (*BCO2 Quarterly Reported Value* is not null)

set *Annual BCO2 Calculated Value* to null

return result A

Otherwise,

If (*Annual BCO2M Calculated Value* == -1)

Set *Annual BCO2M Calculated Value* to OpValue

else

add OpValue to *Annual BCO2 Calculated Value*.

If (*Current BCO2 Summary Value Record* is not null)

If (*Annual BCO2M Calculated Value* = -1)

set *Annual BCO2 Calculated Value* to null

return result G

else if (*Current BCO2 Summary Value Record*.YearToDateTotal is null or is less than 0)

return result B

else if (*Current BCO2 Summary Value Record*.YearToDateTotal is not rounded to one decimal place)

return result C

else if (*Annual BCO2 Calculated Value* is not null)

if (*Annual BCO2 Calculated Value* <> *Current BCO2 Summary Value Record*.YearToDateTotal)

Tolerance = Lookup Tolerance from Cross-Check Table "Quarterly Emissions Tolerances" where

Parameter = "CO2M" AND

UOM = "TON"

if (ABS(*Annual BCO2 Calculated Value* - *Current BCO2 Summary Value Record*.YearToDateTotal) > Tolerance)



return result D

// If no result

If (*Current BCO2 Summary Value Record.OzoneSeasonToDateTotal* is not null)  
return result E.

else

If (*Annual BCO2 Calculated Value* == -1)  
set *Annual BCO2 Calculated Value* to null

If (*Annual BCO2 Calculated Value* > 0)  
return result F

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The program could not determine year-to-date for [param], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
B	The [fieldname] in the Summary Value record for [param] is missing or invalid.	Critical Error Level 1
C	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1
D	The YearToDateTotal of [ytdval] in the Summary Value record for [param] is inconsistent with the recalculated value of [ytdcalc].	Critical Error Level 1
E	You reported OzoneSeasonToDate in the Summary Value record for [param], but this is not valid for this parameter.	Critical Error Level 1
F	You did not report a Summary Value record to report year-to-date total for [param].	Critical Error Level 1
G	You reported a Summary Value record for [param], but there was no [param] method defined in your monitoring plan that was active during the year.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report Summary Value Evaluation

**Check Category:**

**Hourly Appendix D**

**Check Code:** HOURAD-1

**Check Name:** Initialize Accumulators for Appendix D Calculations

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:** Set all Appendix D Accumulators to ZERO

**Specifications:**

*HI App D Accumulator* = 0  
*SO2 App D Accumulator* = 0  
*CO2 App D Accumulator* = 0  
*NOXR App E Accumulator* = 0  
*Current Fuel Flow Record* = null  
*Current Fuel Group* = null  
*Fuels Used List* = null

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>

Usage:		
1	Process/Category:	Emissions Data Evaluation Report ----- Appendix D/E Unit-Level Initialization

**Check Code:** HOURAD-3

**Check Name:** Initialize Fuel Flow Record

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:** Initialization procedure for fuel flow category.

**Specifications:**

```
Current Fuel Group = Current Fuel Flow Record.Fuel_Group_Cd  
  
if (Current Fuel Flow Record.UnitFuelCd in set {OGS, PRG,OOL})  
    Special Fuel Burned = true
```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAD-4

**Check Name:** Check Fuel Usage Time

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

*HFF Usage Time Status* = true

If (*Current Fuel Flow Record*.FuelUsageTime is null OR *Current Fuel Flow Record*.FuelUsageTime < 0 OR *Current Fuel Flow Record*.FuelUsageTime > 1)

*HFF Usage Time Status* = false

return result A

else if (*Current Hourly Op Record*.OperatingTime > 0 AND *Current Hourly Op Record*.OperatingTime <= 1)

if *Current Fuel Flow Record*.FuelCode is not in *Fuels Used List*

add 1 to *Fuel Op Hours Accumulator Array* for the location and fuel

append FuelCode to the *Fuels Used List*

if (*Current Fuel Flow Record*.FuelUsageTime > *Current Hourly Op Record*.OperatingTime)

*HFF Usage Time Status* = false

return result B

else if (*Hourly Fuel Flow Count For Gas* + *Hourly Fuel Flow Count For Oil* == 1 AND (*MP Pipe Config for Hourly Checks* is null OR *Current Hourly Op Record*.LocationName begins with "CP") AND *Current Fuel Flow Record*.FuelUsageTime <>

*Current Hourly Op Record*.OperatingTime)

*HFF Usage Time Status* = false

return result B

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The FuelUsageTime reported in the HFF record for FuelCode [fueled] is invalid. The must be greater than 0 and less than or equal to 1.	Critical Error Level 1
B	The FuelUsageTime reported in the HFF record for FuelCode [fueled] is inconsistent with the OperatingTime for the hour.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAD-5

**Check Name:** Check Volumetric SODC Code

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:** Validation checks on Volumetric SODC Code for the Current Fuel Flow Record

**Specifications:**

**HFF SODC Status** = true

If (**Current Fuel Flow Record**.SourceOfDataVolumetricCode is null)

    If (**Current Fuel Flow Record**.VolumetricFlowRate is not null)

**HFF SODC Status** == false

        return result A

else

    If (**Current Fuel Flow Record**.VolumetricFlowRate is null)

**HFF SODC Status** == false

        return result B

    else if (**Current Fuel Group** == "GAS" and **Current Fuel Flow Record**.SourceOfDataVolumetricCode in set {5, 6})

**HFF SODC Status** == false

        return result C

    else if (**Current Fuel Flow Record**.SourceOfDataVolumetricCode = "3" AND **Current Unit Is Peaking** == false)

**HFF SODC Status** == false

        return result D

    else if (**HFF Fuel Indicator Code** is not null)

        if (**Current Fuel Flow Record**.SourceOfDataVolumetricCode == "4" AND **HFF Fuel Indicator Code** <> "E")

**HFF SODC Status** == false

            return result E

        else if (**Current Fuel Flow Record**.SourceOfDataVolumetricCode in set {5, 6} AND **HFF Fuel Indicator Code** <> "I")

**HFF SODC Status** == false

            return result F

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a [fieldname] in the HFF record for FuelCode [fuelcd], but you reported a [ratefieldname].	Critical Error Level 1
B	You reported a [fieldname] in the HFF record for FuelCode [fuelcd], but you did not report a [ratefieldname].	Critical Error Level 1
C	The SourceOfDataVolumetricCode reported in the HFF record for FuelCode [fuelcd] is invalid.	Critical Error Level 1
D	You reported a [fieldname] of 3 in the HFF record for FuelCode [fuelcd], but, according to the qualification record in your monitoring plan, this is not a peaking unit.	Critical Error Level 1
E	You reported a [fieldname] of 4 in the HFF record for FuelCode [fuelcd], which indicates that the fuel is an emergency fuel, but according to the Unit Fuel record in your monitoring plan, this fuel is not an emergency fuel.	Critical Error Level 1
F	You reported a [fieldname] of [sodc] in the HFF record for FuelCode [fuelcd], which indicates that the fuel is an igniter fuel, but according to the Unit Fuel record in your monitoring plan, this fuel is not an igniter fuel.	Critical Error Level 1

## Usage:

1      Process/Category:      Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAD-6

**Check Name:** Check Oil Mass SODC Code

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:** Validation checks on Mass SODC Code for the Current Oil Fuel Flow Record

**Specifications:**

**HFF Mass SODC Status** == true

If (**Current Fuel Flow Record**.SourceOfDataMassCode is null)

If (**Current Fuel Flow Record**.MassFlowRate is not null)

**HFF Mass SODC Status** == false

return result A

else

If (**Current Fuel Flow Record**.MassFlowRate is null)

**HFF Mass SODC Status** == false

return result B

else if (**Current Fuel Flow Record**.VolumetricFlowRate is not null AND **Current Fuel Flow Record**.SourceOfDataMassCode <> "2")

**HFF Mass SODC Status** == false

return result C

else if (**Current Fuel Flow Record**.VolumetricFlowRate is null AND **Current Fuel Flow Record**.SourceOfDataMassCode == "2")

**HFF Mass SODC Status** == false

return result D

else if (**Current Fuel Flow Record**.SourceOfDataMassCode = "3" AND **Current Unit Is Peaking** == false)

**HFF Mass SODC Status** == false

return result E

else if (**HFF Fuel Indicator Code** is not null)

if (**Current Fuel Flow Record**.SourceOfDataMassCode == "4" AND **HFF Fuel Indicator Code** <> "E")

**HFF Mass SODC Status** == false

return result F

else if (**Current Fuel Flow Record**.SourceOfDataMassCode in set {5, 6} AND **HFF Fuel Indicator Code** <> "I")

**HFF Mass SODC Status** == false

return result G

## Results:

Result	Response	Severity
A	You did not report a [fieldname] in the HFF record for FuelCode [fuelcd], but you reported a [ratefieldname].	Critical Error Level 1
B	You reported a [fieldname] in the HFF record for FuelCode [fuelcd], but you did not report a [ratefieldname].	Critical Error Level 1
C	You reported a SourceOfDataMassCode of [sodc] in the HFF record for FuelCode [fuelcd], but you also reported a VolumetricFlowRate. The SourceOfDataMassCode must be 2 when mass oil flow is calculated from volumetric oil flow.	Critical Error Level 1
D	You reported a SourceOfDataMassCode of 2 in the HFF record for FuelCode [fuelcd], but you did not report a VolumetricFlowRate. The SourceOfDataMassCode should be 2 only when the mass oil rate is calculated from volumetric oil flow.	Critical Error Level 1
E	You reported a [fieldname] of 3 in the HFF record for FuelCode [fuelcd], but, according to the qualification record in your monitoring plan, this is not a peaking unit.	Critical Error Level 1
F	You reported a [fieldname] of 4 in the HFF record for FuelCode [fuelcd], which indicates that the fuel is an emergency fuel, but according to the Unit Fuel record in your monitoring plan, this fuel is not an emergency fuel.	Critical Error Level 1
G	You reported a [fieldname] of [sodc] in the HFF record for FuelCode [fuelcd], which indicates that the fuel is an igniter fuel, but according to the Unit Fuel record in your monitoring plan, this fuel is not an igniter fuel.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Hourly Fuel Flow



**Check Code:** HOURAD-7

**Check Name:** Check Fuel Flow Monitoring System

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:** Validates the Monitoring System reported in the HourlyFuelFlowData record

**Specifications:**

*HFF System Type* = null

*FuelFlowComponentRecords* = null

*CurrentAppendixDStatus* = null

**f** (*Current Fuel Flow Record*.MonitoringSystemID is null)

    If (*Current Fuel Flow Record*.SourceOfDataVolumetricCode in set {0, 9} OR (*Current Fuel Group* == "OIL" AND *Current Fuel Flow Record*.SourceOfDataMassCode in set {0, 9}))

        return result A

    else if (*Legacy Data Evaluation* == false AND (*Current Fuel Flow Record*.SourceOfDataVolumetricCode in set {1, 3} OR (*Current Fuel Group* == "OIL" AND *Current Fuel Flow Record*.SourceOfDataMassCode in set {1, 3})))

        return result B

    else if (*Current Fuel Group* == "GAS")

*HFF System Type* = "GAS"

    else if (*Current Fuel Flow Record*.VolumetricFlowRate is not null)

*HFF System Type* = "OILV"

    else

*HFF System Type* = "OILM"

else

    if (*Current Fuel Flow Record*.SourceOfDataVolumetricCode == "4")

        return result C

    else if (*Current Fuel Group* == "OIL" AND (*Current Fuel Flow Record*.SourceOfDataVolumetricCode in set {5, 6} OR *Current Oil Fuel Flow Record*.SourceOfDataMassCode in set {5, 6}))

        return result C

    else

*Current Mon Sys Record* = find active MonitoringSystem record where

            MonitoringSystemId = *Current Fuel Flow Record*.MonitoringSystemID

        if *Current Mon Sys Record* is null

            return result D

        else if (*Current Fuel Group* == "GAS" AND *Current Mon Sys Record*.SystemTypeCode <> "GAS")

            return result E

        else if (*Current Fuel Group* == "OIL" AND *Current Mon Sys Record*.SystemTypeCode not in set {OILV, OILM})

            return result F

        else if (*Current Fuel Group* == "OIL" AND *Current Oil Fuel Flow Record*.SourceOfDataMassCode == "2" AND *Current Mon Sys Record*.SystemTypeCode <> "OILV")

            return result G

        else

*HFF System Type* = *Current Mon Sys Record*.SystemTypeCode

        if *Current Mon Sys Record*.FuelCode is not null and is not equal to *Current Fuel Flow Record*.FuelCode

*HFF System Fuel* = *Current Mon Sys Record*.FuelCode

            return result H

    else if (*Current Fuel Flow Record*.SourceOfDataVolumetricCode in set {0,9} OR (*Current Fuel Group* == "OIL" AND *Current Fuel Flow Record*.SourceOfDataMassCode in set {0,9}))

        if (*Current Fuel Group* = "OIL")

            Locate *MonitorSystemComponentRecordsByHourLocation* where the SystemID is equal to *CurrentFuelFlowRecord*.SystemID and the ComponentTypeCd = "OFFM" or "BOFF"

For each retrieved record found:

If (*MonitorSystemComponentRecordsByHourLocation*.ComponentTypeCd == "OFFM")

Add the *MonitorSystemComponentRecordsByHourLocation* record to *FuelFlowComponentRecords*.

If none were found,  
return result I.

else if (*Current Fuel Group* = "GAS")

Locate *MonitorSystemComponentRecordsByHourLocation* where the SystemID is equal to *CurrentFuelFlowRecord*.SystemID and the ComponentTypeCd = "GFFM" or "BGFF"

For each retrieved record found:

If (*MonitorSystemComponentRecordsByHourLocation*.ComponentTypeCd == "GFFM")

Add the *MonitorSystemComponentRecordsByHourLocation* record to *FuelFlowComponentRecords*.

If none were found,  
return result I.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported a SourceOfDataVolumetricCode or SourceOfDataMassCode in the HFF record for FuelCode [fuelcd], indicating the use of a fuel flowmeter system, but you did not report its MonitoringSystemID.	Critical Error Level 1
B	You reported a SourceOfDataVolumetricCode or SourceOfDataMassCode in the HFF record for FuelCode [fuelcd] that indicates the use of substitute data, but you did not report a MonitoringSystemID. This was not required for legacy EDR data, but for ECMPS, you should report the primary MonitoringSystemID of the fuel flowmeter system that normally records the flow for this fuel.	Critical Error Level 1
C	You reported a SourceOfDataVolumetricCode or SourceOfDataMassCode in the HFF record for FuelCode [fuelcd] that indicates the use of an emergency or igniter fuel, so you should not have reported a MonitoringSystemID in this record.	Critical Error Level 1
D	You reported MonitoringSystemID [ID] in the HFF record for FuelCode [fuelcd], but there is no MonitorSystem record for this system in your monitoring plan that was active during the hour.	Critical Error Level 1
E	You reported MonitoringSystemID [ID] in the HFF record for FuelCode [fuelcd], but this system is not a GAS monitoring system.	Critical Error Level 1
F	You reported MonitoringSystemID [ID] in the HFF record for FuelCode [fuelcd], but this system is not an OILM or OILV monitoring system.	Critical Error Level 1
G	You reported a SourceOfDataMassCode of 2 in the HFF record for FuelCode [fuelcd], indicating that you are calculating mass oil rate from volumetric oil flow, but MonitoringSystemID [ID] is not an OILV monitoring system.	Critical Error Level 1
H	Your reported MonitoringSystemID [ID] in the HFF record for FuelCode [fuelcd], but the FuelCode for this system in the MonitorSystem record is [sysfuel]. The FuelCode in the Monitor System record should be the same as the FuelCode in the HFF record.	Critical Error Level 1
I	You did not report any active fuel flowmeter components in your monitoring plan for MonitoringSystemID [ID]. The QA status for Appendix D testing for this system will not be evaluated.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAD-8

**Check Name:** Check Volumetric Units of Measure

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

**HFF UOM Status** = true

If (**Current Fuel Flow Record**.VolumetricUnitsOfMeasureCode is null)

    If (**Current Fuel Flow Record**.VolumetricFlowRate is not null)

**HFF UOM Status** = false

        return result A

else

    If (**Current Fuel Flow Record**.VolumetricFlowRate is null)

**HFF UOM Status** = false

        return result B

    else if (**Current Fuel Group** == "OIL" AND **Current Fuel Flow Record**.VolumetricUnitsOfMeasureCode is not in set {"GALHR", "BBLHR", "M3HR", "SCFH"})

**HFF UOM Status** = false

        return result C

    else if (**Current Fuel Group** == "GAS" AND **Current Fuel Flow Record**.VolumetricUnitsOfMeasureCode <> "HSCF")

**HFF UOM Status** = false

        return result C

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a [fieldname] in the HFF record for FuelCode [fuelcd], but you reported a [ratefieldname].	Critical Error Level 1
B	You reported a [fieldname] in the HFF record for FuelCode [fuelcd], but you did not report a [ratefieldname].	Critical Error Level 1
C	The VolumetricUnitsOfMeasureCode reported in the HFF record for FuelCode [fuelcd] is invalid.	Critical Error Level 1

#### Usage:

1      Process/Category:      Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAD-9

**Check Name:** Check Fuel in HFF Record

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

```
HFF Fuel Indicator Code = null
Locate active UnitFuel record for the location
    where FuelCd = Current Fuel Flow Record.UnitFuelCd

If found,
    HFF Fuel Indicator Code = Current Fuel Flow Record.IndicatorCd
else
    return result A
```

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report an active Unit Fuel record for FuelCode [fuelcd] in your monitoring plan.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAD-10

**Check Name:** Check Volumetric Flow in HFF Record

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

*HFF Calc Volumetric Rate* = null

*HFF Max Heat Input for Volume* = null

If (*HFF System Type* is not null AND *HFF SOD Status* == true AND *HFF Mass SODC Status* == true AND *HFF UOM Status* == true)

    If (*Current Fuel Flow Record*.VolumetricFlowRate is null)

        If (*HFF System Type* <> "OILM")

            return result A

    else

        If (*HFF System Type* == "OILM")

            return result B

    else if (*Current Fuel Flow Record*.SourceOfDataVolumetricCode == "4")

        If (*Current Entity Type* is equal to "Unit")

            Locate a Unit Capacity record for the location and hour.

        If exactly one record is found, and the MaximumHourlyHeatInputCapacity in the retrieved record is greater than 0,

*HFF Max Heat Input for Volume* =

*UnitCapacityByHourLocation*.MaximumHourlyHeatInputCapacity

        If (*HFF GCV* is not null)

            If (*Current Fuel Flow Record*.MassFlowRate is null)

*HFF Calc Volumetric Rate* = *HFF Max Heat Input for Volume* / *HFF GCV* \*  
1000000, rounded to one decimal place.

            else if (*HFF Density* is not null)

*HFF Calc Volumetric Rate* = *HFF Max Heat Input for Volume* / *HFF GCV* /  
*HFF Density* \* 1000000, rounded to one decimal place.

        else

            return result M

    else

        If (*Current Fuel Flow Record*.VolumetricFlowRate <= 0)

            return result E

        else

*HFF Calc Volumetric Rate* = *Current Fuel Flow Record*.VolumetricFlowRate

    else if (*Current Fuel Flow Record*.SourceOfDataVolumetricCode == "9")

        If (*Current Fuel Group* == "GAS")

*HFF Volumetric Default Parameter* = "MNGF"

        else

*HFF Volumetric Default Parameter* = "MNOF"

        Count active *Default Record* for the location where

            ParameterCode == *HFF Volumetric Default Parameter*

            FuelCode == *Current Fuel Flow Record*.FuelCode

```

    if (Count <> 1)
        return result C
    else if (Default Record.DefaultValue <= 0)
        return result D
    else if (Default Record.DefaultUnitsOfMeasureCode == Current Fuel Flow Record.VolumetricUnitsOfMeasureCode)
        HFF Calc Volumetric Rate = Default Record.DefaultValue
        If (Current Fuel Flow Record.VolumetricFlowRate <= 0)
            return result E
        else if (Current Fuel Flow Record.VolumetricFlowRate <> HFF Calc Volumetric Rate)
            return result F
    else
        If (Current Fuel Flow Record.VolumetricFlowRate <= 0)
            return result E
        else
            return result G
    else if Current Fuel Flow Record.MonitoringSystemID is not null)

        If (Current Fuel Flow Record.VolumetricFlowRate <= 0)
            return result E
        else
            If (Current Fuel Flow Record.SourceOfDataVolumetricCode <> 3)
                HFF Calc Volumetric Rate = Current Fuel Flow Record.VolumetricFlowRate

                Count active System Fuel Flow Record for the system.

                If (Count <> 1)
                    return result H
                else if (System Fuel Flow Record.MaximumFuelFlowRate <= 0)
                    return result I
                else if (System Fuel Flow Record.SystemFuelFlowUOMCode == Current Fuel Flow Record.VolumetricUnitsOfMeasureCode)
                    If (Current Fuel Flow Record.SourceOfDataVolumetricCode == 3)
                        HFF Calc Volumetric Rate = System Fuel Flow Record.MaximumFuelFlowRate
                        If Current Fuel Flow Record.VolumetricFlowRate <> HFF Calc Volumetric Rate)
                            return result J
                    else
                        If (HFF Calc Volumetric Rate > System Fuel Flow Record.MaximumFuelFlowRate)
                            return result K
                else
                    return result L
            else
                If (Current Fuel Flow Record.VolumetricFlowRate <= 0)
                    return result E
                else
                    HFF Calc Volumetric Rate = Current Fuel Flow Record.VolumetricFlowRate

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a VolumetricFlowRate in the HFF record for FuelCode [fuelcd], which is required when using [systype] MonitoringSystemID [ID].	Critical Error Level 1
B	You reported a VolumetricFlowRate in the HFF record for FuelCode [fuelcd], which is invalid when using an OILM system.	Critical Error Level 1
C	You did not report one and only one default record for [parameter] for FuelCode [fuelcd] in your monitoring plan that was active during current hour.	Critical Error Level 1
D	The DefaultValue reported in the active [parameter] default record for the hour is invalid.	Critical Error Level 1
E	The VolumetricFlowRate reported in the HFF record for FuelCode [fuelcd] is invalid.	Critical Error Level 1
F	You reported a SourceOfDataVolumetricCode of [sodc] in the HFF record for FuelCode [fuelcd], but the VolumetricFlowRate is not equal to the fuel flow rate defined in the active [parameter] default record in your monitoring plan.	Critical Error Level 1
G	The VolumetricUnitsOfMeasureCode in the HFF record for FuelCode [fuelcd] is not the same as the DefaultUnitsOfMeasureCode in the active [parameter] default record in your monitoring plan.	Critical Error Level 1
H	You did not report one and only one active SystemFuelFlow record for MonitoringSystemID [ID] in your monitoring plan for the hour.	Critical Error Level 1
I	The MaximumFuelFlowRate reported in the active System Fuel Flow record for MonitoringSystemID [ID] in your monitoring plan is invalid.	Critical Error Level 1
J	You reported a SourceOfDataVolumetricCode of 3 in the HFF record for FuelCode [fuelcd], but the VolumetricFlowRate is not equal to the MaximumFuelFlowRate specified in the active System Fuel Flow record for MonitoringSystemID [ID] in your monitoring plan.	Critical Error Level 1
K	Warning: The VolumetricFlowRate reported in the HFF record for FuelCode [fuelcd] exceeds the MaximumFuelFlowRate specified in the active System Fuel Flow record for MonitoringSystemID [ID] in your monitoring plan. Sources are required to periodically (at least once annually) evaluate the appropriateness of these maximum values in the monitoring plan and make proper adjustments when necessary. You should investigate the cause of these exceedances and determine whether an adjustment to your monitoring systems or monitoring plan is necessary.	Informational Message
L	The VolumetricUnitsOfMeasureCode in the HFF record for FuelCode [fuelcd] is not the same as the SystemFuelFlowUOMCode in the active System Fuel Flow record for MonitoringSystemID [ID] in your monitoring plan.	Critical Error Level 1
M	You did not report one and only one valid active Unit Capacity record in your monitoring plan for the unit for the hour.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Hourly Fuel Flow



**Check Code:** HOURAD-11

**Check Name:** Check Mass Oil Flow in HFF Record

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

```

HFF Calc Mass Oil Rate = null
HFF Max Heat Input for Mass = null
If (HFF System Type is not null AND HFF SOD Status == true AND HFF Mass SODC Status == true AND HFF UOM Status == true)
    If (Current Fuel Flow Record.MassFlowRate is null)
        If (HFF System Type == "OILM")
            return result A
        Else if (HFF System Type == "OILV")
            If (Current Fuel Flow Record.SourceOfDataMassCode == "2")
                return result B
            Else if (Current Unit is ARP == true)
                return result C
        else
            If (HFF System Type == "GAS")
                return result D
            else if (HFF System Type == "OILV")
                If (Current Fuel Flow Record.SourceOfDataMassCode == "2" AND Current Fuel Flow Record.MassFlowRate
                    <= 0)
                    return result E
                else if (Current Fuel Flow Record.SourceOfDataMassCode == "4")

                    If (Current Entity Type is equal to "Unit")
                        Locate a Unit Capacity record for the location and hour.

                        If exactly one record is found, and the MaximumHourlyHeatInputCapacity in the retrieved record is greater
                        than 0,
                            HFF Max Heat Input for Mass =
                                UnitCapacityByHourLocation.MaximumHourlyHeatInputCapacity

                            If (HFF GCV is not null)

                                HFF Calc Mass Oil Rate = HFF Max Heat Input for Mass / HFF GCV * 1000000,
                                    rounded to one decimal place.

                                else
                                    return result M
                            else
                                If (Current Fuel Flow Record.MassFlowRate <= 0)
                                    return result E
                                else
                                    HFF Calc Mass Oil Rate = Current Fuel Flow Record.MassFlowRate

                    else if (Current Fuel Flow Record.SourceOfDataMassCode == "9")
                        HFF Mass Oil Default Parameter = "MNOF"

                        Count active Default Record for the location where
                            ParameterCode == HFF Mass Oil Default Parameter
                            FuelCode == Current Fuel Flow Record.FuelCode
                        if (Count <> 1)
                            return result F
                        else if (Default Record.DefaultValue <= 0 OR Default Record.DefaultUnitsOfMeasureCode <> "LBHR")

```

---

```
        return result G
    else
        HFF Calc Mass Oil Rate = Default Record.DefaultValue
        If (Current Fuel Flow Record.MassFlowRate <= 0)
            return result E
        else if (Current Fuel Flow Record.MassFlowRate <> HFF Calc Mass Oil Rate)
            return result H

    else if (Current Fuel Flow Record.MonitoringSystemID is not null)

        If (Current Fuel Flow Record.MassFlowRate <= 0)
            return result E
        else
            If (Current Fuel Flow Record.SourceOfDataMassCode <> 3)
                HFF Calc Mass Oil Rate = Current Fuel Flow Record.MassFlowRate

            Count active System Fuel Flow Record for the system.

            If (Count <> 1)
                return result I

            else if (System Fuel Flow Record.MaximumFuelFlowRate <= 0 OR System Fuel Flow Record.SystemFuelFlowUOMCode <> "LBHR")
                return result J
            else
                If (Current Fuel Flow Record.SourceOfDataMassCode == 3)
                    HFF Calc Mass Oil Rate = System Fuel Flow Record.MaximumFuelFlowRate
                    If (Current Fuel Flow Record.MassFlowRate <> HFF Calc Mass Oil Rate)
                        return result K
                else
                    If (HFF Calc Mass Oil Rate > System Fuel Flow Record.MaximumFuelFlowRate)
                        return result L

    else
        If (Current Fuel Flow Record.MassFlowRate <= 0)
            return result E
        else
            HFF Calc Mass Oil Rate = Current Fuel Flow Record.MassFlowRate
```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a [fieldname] in the HFF record for FuelCode [fuelcd], but the MonitoringSystemID [ID] is an [systype] fuel flow system.	Critical Error Level 1
B	You reported a SourceOfDataMassCode of 2 in the HFF record for FuelCode [fuelcd], which indicates that the mass oil rate was calculated from the volumetric oil rate, but you did not report a MassFlowRate in the record.	Critical Error Level 1
C	You did not report a [fieldname] in the HFF record for FuelCode [fuelcd], but this value is required for an ARP unit.	Critical Error Level 1
D	You reported a MassFlowRate in the HFF record for FuelCode [fuelcd]. This value should be blank for a gas fuel.	Critical Error Level 1
E	The MassFlowRate reported in the HFF record for FuelCode [fuelcd] is invalid.	Critical Error Level 1
F	You did not report one and only one default record for [parameter] for FuelCode [fuelcd] in your monitoring plan that was active during current hour.	Critical Error Level 1
G	The DefaultValue or DefaultUnitsOfMeasureCode reported in the active [parameter] default record for the hour is invalid.	Critical Error Level 1
H	You reported a SourceOfDataMassCode of [sodc] in the HFF record for FuelCode [fuelcd], but the MassFlowRate is not equal to the fuel flow rate defined in the active [parameter] default record in your monitoring plan.	Critical Error Level 1
I	You did not report one and only one active SystemFuelFlow record for MonitoringSystemID [ID] in your monitoring plan for the hour.	Critical Error Level 1
J	The MaximumFuelFlowRate or SystemFuelFlowUOMCode reported in the active System Fuel Flow record for MonitoringSystemID [ID] in your monitoring plan is invalid.	Critical Error Level 1
K	You reported a SourceOfDataMassCode of 3 in the HFF record for FuelCode [fuelcd], but the MassFlowRate is not equal to the MaximumFuelFlowRate specified in the active System Fuel Flow record for MonitoringSystemID [ID] in your monitoring plan.	Critical Error Level 1
L	Warning: The MassFlowRate reported in the HFF record for FuelCode [fuelcd] exceeds the MaximumFuelFlowRate specified in the active System Fuel Flow record for MonitoringSystemID [ID] in your monitoring plan. Sources are required to periodically (at least once annually) evaluate the appropriateness of these maximum values in the monitoring plan and make proper adjustments when necessary. You should investigate the cause of these exceedances and determine whether an adjustment to your monitoring systems or monitoring plan is necessary.	Informational Message
M	You did not report one and only one valid active Unit Capacity record in your monitoring plan for the unit for the hour.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAD-12

**Check Name:** Determine Density

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Validation Tables:**

Fuel Type Reality Checks for Density (Cross Check Table)  
 Fuel Type Warning Levels for Density (Cross Check Table)  
 Table D-6 Missing Data Values (Cross Check Table)

**Specifications:**

*HFF Density* = null

*Current Density Record* = null

Count the HourlyParamFuelFlow record where

HourlyParamFuelFlow.HourlyFuelFlowID = *Current Fuel Flow Record*.HourlyFuelFlowID AND  
 HourlyParamFuelFlow.ParameterCode = "DENSOIL"

If (*Count* > 1)

return result A

Else If (*Count* == 0)

If (*HFF System Type* == "OILV" and *Current Fuel Flow Record*.SourceOfDataMassCode == "2")  
 return result B

Else if (*HFF System Type* = "OILV" AND *Current Fuel Flow Record*.SourceOfDataMassCode == "2")

*Current Density Record* = matching record

*Density UOM* = *Current Density Record*.ParameterUOMCode

if (*Density UOM* not in set {LBGAL, LBBBL, LBM3, LBSCF})

return result C

else if (*Current Fuel Flow Record*.VolumetricUnitsOfMeasureCode == "GALHR" AND *Density UOM* <> "LBGAL")

return result D

else if (*Current Fuel Flow Record*.VolumetricUnitsOfMeasureCode == "BBLHR" AND *Density UOM* <> "LBBBL")

return result D

else if (*Current Fuel Flow Record*.VolumetricUnitsOfMeasureCode == "M3HR" AND *Density UOM* <> "LBM3")

return result D

else if (*Current Fuel Flow Record*.VolumetricUnitsOfMeasureCode == "SCFH" AND *Density UOM* <> "LBSCF")

return result D

else if (*Current Density Record*.ParamValFuel > 0)

*Density Default* = null

If (*Current Density Record*.SampleTypeCode == 8)

*Density Default* = Lookup "MissingDataValue" in "Table D-6 Missing Data Values"

where "Parameter" column = "DENSOIL - " + *Density UOM* AND "FuelCode" column = *Current Fuel Flow Record*.FuelCode

If (*Density Default* == null)

*Max Expected Density* = Lookup "Upper Value" in "Fuel Type Warning Levels for Density Cross Check Table"  
 where "Fuel Code - Units Of Measure" column = concatenation of (*Current Fuel Flow Record*.FuelCode,  
 " - ", *Density UOM*)

*Min Expected Density* = Lookup "Lower Value" in "Fuel Type Warning Levels for Density Cross Check Table"  
 where "Fuel Code - Units Of Measure" column = concatenation of (*Current Fuel Flow Record*.FuelCode,  
 " - ", *Density UOM*)

*Max Allowed Density* = Lookup "Upper Value" in "Fuel Type Reality Checks for Density Cross Check Table"  
 where "Fuel Code - Units Of Measure" column = concatenation of (*Current Fuel Flow Record*.FuelCode,  
 " - ", *Density UOM*)

```

    Min Allowed Density = Lookup "Lower Value" in "Fuel Type Reality Checks for Density Cross Check Table"
    where "Fuel Code - Units Of Measure" column = concatenation of (Current Fuel Flow Record.FuelCode,
    " - ", Density UOM)

    if (Max Allowed Density is not null AND Current Density Record.ParamValFuel > Max Allowed Density) OR (Min
    Allowed Density is not null AND Current Density Record.ParamValFuel < Min Allowed Density)
        return result E
    else
        HFF Density = Current Density Record.ParamValFuel
        if (Min Expected Density is not null AND HFF Density < Min Expected Density) OR (Max Expected
        Density is not null AND HFF Density > Max Expected Density)
            return result F

    else
        if (Density Default == Current Density Record.ParamValFuel)
            HFF Density = Current Density Record.ParamValFuel
        else
            return result G

    else
        return result H

else
    return result I

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one HPFF record for [parameter] for FuelCode [fuelcd] for the hour.	Critical Error Level 1
B	You did not report an HPFF record for [parameter] for FuelCode [fuelcd] for the hour.	Critical Error Level 1
C	The ParameterUOMCode reported in the HPFF record for DENSOIL for FuelCode [fuelcd] is missing or invalid.	Critical Error Level 1
D	The ParameterUOMCode reported in the HPFF record for DENSOIL for FuelCode [fuelcd] is inconsistent with the VolumetricUnitsOfMeasureCode reported in the associated HFF record.	Critical Error Level 1
E	The ParameterValueForFuel reported in the HPFF record for [parameter] for FuelCode [fuelcd] is outside the range of allowable values for the fuel type.	Critical Error Level 1
F	The ParameterValueForFuel reported in the HPFF record for [parameter] for FuelCode [fuelcd] is outside the range of expected values for the fuel type.	Critical Error Level 2
G	You reported a SampleTypeCode of 8 in the HPFF record for [parameter] for FuelCode [fuelcd], indicating the use of a Table D-6 default, but the ParameterValueForFuel does not equal the default value for the fuel.	Critical Error Level 1
H	The ParameterValueForFuel reported in the HPFF record for [parameter] for FuelCode [fuelcd] is invalid. The value should be greater than 0.	Critical Error Level 1
I	You reported an HPFF record for [parameter] for FuelCode [fuelcd], but this value is only appropriate when using an OILV system and a SourceOfDataMassCode equal to 2.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAD-13

**Check Name:** Check Density Sample Type

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

If (*Current Density Record* is not null)  
    If *Current Density Record*.SampleTypeCode not in {1, 2, 5, 6, 7, 8}  
        return result A

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The SampleTypeCode reported in the HPFF record for DENSOIL for FuelCode [fuelcd] is missing or invalid.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAD-14

**Check Name:** Check Extraneous Density Record Fields

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

*Hourly Extraneous Fields* = null

If (*Current Density Record* is not null)

    If (*Current Density Record*.FormulaIdentifier is not null)  
        append "FormulaIdentifier" to *Hourly Extraneous Fields*

    If (*Current Density Record*.MonitoringSystemID is not null)  
        append "MonitoringSystemID" to *Hourly Extraneous Fields*

    If (*Current Density Record*.SegmentNumber is not null)  
        append "SegmentNumber" to *Hourly Extraneous Fields*

    If (*Current Density Record*.OperatingConditionCode is not null)  
        append "OperatingConditionCode" to *Hourly Extraneous Fields*

    If (*Hourly Extraneous Fields* is not null)  
        return result A

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported [fieldnames] in the HPFF record for DENSOIL for FuelCode [fuelcd]. This data should be blank.	Non-Critical Error

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAD-15

**Check Name:** Calculate Mass Oil Flow

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

*If HFF Calc Volumetric Flow* is not null AND *HFF Density* is not null)

*HFF Calc Mass Oil Flow* = *HFF Density* \* *HFF Calc Volumetric Flow*, and round the result to one decimal place (0.1)

Flow Rate Tolerance = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
Parameter = "OILM" AND  
UOM = "LBHR"

If (*Current Fuel Flow Record*.MassFlowRate > 0)

if (ABS(*Current Fuel Flow Record*.MassFlowRate - *HFF Calc Mass Oil Flow*) > Flow Rate Tolerance)  
return result A

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The MassFlowRate reported in the HFF record for FuelCode [fuelcd] is inconsistent with the value calculated from the VolumetricFlowRate and density.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Hourly Fuel Flow



**Check Code:** HOURAD-16

**Check Name:** Determine GCV

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Validation Tables:**

Fuel Type Reality Checks for GCV (Cross Check Table)  
 Fuel Type Warning Levels for GCV (Cross Check Table)  
 Table D-6 Missing Data Values (Cross Check Table)

**Specifications:**

*HFF GCV* = null

*Current GCV Record* = null

Count the HourlyParamFuelFlow record where

HourlyParamFuelFlow.HourlyFuelFlowID = *Current Fuel Flow Record*.HourlyFuelFlowID AND  
 HourlyParamFuelFlow.ParameterCode = "GCV"

If (*Count* > 1)

return result A

Else If (*Count* == 0)

If (*Current HI HPFF Record* is not null)

return result B

Else if (*Current HI HPFF Record* is not null)

*Current GCV Record* = matching record

*GCVUOM* = *Current GCV Record*.ParameterUOMCode

if (*GCVUOM* not in set {BTUGAL, BTUBBL, BTUM3, BTUSCF, BTULB, BTUHSCF})

return result C

else if (*Current Fuel Group* == "GAS" AND *GCVUOM* <> "BTUHSCF")

return result D

else if (*Current Fuel Group* == "OIL" AND *Current Fuel Flow Record*.MassFlowRate is not null AND *GCVUOM* <> "BTULB")

return result D

else if (*Current Fuel Group* == "OIL" AND *Current Fuel Flow Record*.MassFlowRate is null AND *Current Fuel Flow Record*.VolumetricUnitsOfMeasureCode == "GALHR" AND *GCVUOM* <> "BTUGAL")

return result D

else if (*Current Fuel Group* == "OIL" AND *Current Fuel Flow Record*.MassFlowRate is null AND *Current Fuel Flow Record*.VolumetricUnitsOfMeasureCode == "BBLHR" AND *GCVUOM* <> "BTUBBL")

return result D

else if (*Current Fuel Group* == "OIL" AND *Current Fuel Flow Record*.MassFlowRate is null AND *Current Fuel Flow Record*.VolumetricUnitsOfMeasureCode == "M3HR" AND *GCVUOM* <> "BTUM3")

return result D

else if (*Current Fuel Group* == "OIL" AND *Current Fuel Flow Record*.MassFlowRate is null AND *Current Fuel Flow Record*.VolumetricUnitsOfMeasureCode == "SCFH" AND *GCVUOM* <> "BTUSCF")

return result D

else if (*Current GCV Record*.ParamValFuel > 0)

*GCV Default* = null

If (*Current GCV Record*.SampleTypeCode == 8)

*GCV Default* = Lookup "MissingDataValue" in "Table D-6 Missing Data Values"

where "Parameter" column = "GCV - " + *GCVUOM* AND "FuelCode" column = *Current Fuel Flow Record*.FuelCode

If (*GCV Default* == null)

*GCV Default* = Lookup "MissingDataValue" in "Table D-6 Missing Data Values"

where "Parameter" column = "GCV - " + *GCVUOM* and FuelCode column is null.

If (*GCV Default* == null)

*Max Expected GCV* = Lookup "Upper Value" in "Fuel Type Warning Levels for GCV Cross Check Table"  
 where "Fuel Code - Units Of Measure" column = concatenation of (***Current Fuel Flow Record***.FuelCode,  
 " - ", *GCVUOM*)

*Min Expected GCV* = Lookup "Lower Value" in "Fuel Type Warning Levels for GCV Cross Check Table"  
 where "Fuel Code - Units Of Measure" column = concatenation of (***Current Fuel Flow Record***.FuelCode,  
 " - ", *GCVUOM*)

*Max Allowed GCV* = Lookup "Upper Value" in "Fuel Type Reality Checks for GCV Cross Check Table"  
 where "Fuel Code - Units Of Measure" column = concatenation of (***Current Fuel Flow Record***.FuelCode,  
 " - ", *GCVUOM*)

*Min Allowed GCV* = Lookup "Lower Value" in "Fuel Type Reality Checks for GCV Cross Check Table"  
 where "Fuel Code - Units Of Measure" column = concatenation of (***Current Fuel Flow Record***.FuelCode,  
 " - ", *GCVUOM*)

if (*Max Allowed GCV* is not null AND ***Current GCV Record***.ParamValFuel > *Max Allowed GCV*) OR (*Min Allowed GCV* is not null AND ***Current GCV Record***.ParamValFuel < *Min Allowed GCV*)  
 return result E

else if (***Current GCV Record***.ParamValFuel is not rounded to one decimal place)  
 return result J

else

***HFF GCV*** = ***Current GCV Record***.ParamValFuel

if (*Min Expected GCV* is not null AND ***HFF GCV*** < *Min Expected GCV*) OR (*Max Expected GCV* is not  
 null AND ***HFF GCV*** > *Max Expected GCV*)

return result F

else

If (***Current GCV Record***.ParamValFuel is not rounded to one decimal place)  
 return result J

else if (*GCV Default* == ***Current GCV Record***.ParamValFuel)  
***HFF GCV*** = ***Current GCV Record***.ParamValFuel

else

return result G

else

return result H

else

return result I

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one HPFF record for [parameter] for FuelCode [fuelcd] for the hour.	Critical Error Level 1
B	You did not report a HPFF record for GCV for FuelCode [fuelcd] for the hour.	Critical Error Level 1
C	The ParameterUOMCode reported in the HPFF record for GCV for FuelCode [fuelcd] is missing or invalid.	Critical Error Level 1
D	The ParameterUOMCode reported in the HPFF record for GCV for FuelCode [fuelcd] is inconsistent with the fuel flow units of measure.	Critical Error Level 1
E	The ParameterValueForFuel reported in the HPFF record for [parameter] for FuelCode [fuelcd] is outside the range of allowable values for the fuel type.	Critical Error Level 1
F	The ParameterValueForFuel reported in the HPFF record for [parameter] for FuelCode [fuelcd] is outside the range of expected values for the fuel type.	Non-Critical Error
G	You reported a SampleTypeCode of 8 in the HPFF record for [parameter] for FuelCode [fuelcd], indicating the use of a Table D-6 default, but the ParameterValueForFuel does not equal the default value for the fuel.	Critical Error Level 1
H	The ParameterValueForFuel reported in the HPFF record for GCV for FuelCode [fuelcd] is invalid. The value must be greater than 0.	Critical Error Level 1
I	You reported an HPFF record for GCV for FuelCode [fuelcd], but you have not reported an HPFF record for HI for the hour.	Critical Error Level 1
J	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAD-17

**Check Name:** Check GCV Sample Type

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

```
If (Current GCV Record is not null)
  If (Current Fuel Group == "OIL" AND Current GCV Record.SampleTypeCode not in {1, 2, 5, 6, 7, 8})
    return result A
  else if (Current Fuel Group == "GAS" AND Current GCV Record.SampleTypeCode not in {0, 2, 3, 4, 6, 7, 8})
    return result A
```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The SampleTypeCode reported in the HPFF record for GCV for FuelCode [fuelcd] is missing or invalid.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAD-18

**Check Name:** Check Extraneous GCV Record Fields

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

```
Hourly Extraneous Fields = null

If (Current GCV Record is not null)

    If (Current GCV Record.FormulaIdentifier is not null)
        append "FormulaIdentifier" to Hourly Extraneous Fields
    If (Current GCV Record.MonitoringSystemID is not null)
        append "MonitoringSystemID" to Hourly Extraneous Fields
    If (Current GCV Record.SegmentNumber is not null)
        append "SegmentNumber" to Hourly Extraneous Fields
    If (Current GCV Record.OperatingConditionCode is not null)
        append "OperatingConditionCode" to Hourly Extraneous Fields

If (Hourly Extraneous Fields is not null)
    return result A
```

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported [fieldnames] in the HPFF record for GCV for FuelCode [fueled]. This data should be blank.	Non-Critical Error

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAD-19

**Check Name:** Validate Heat Input Record

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

***Current HI HPFF Record*** = null

Count the HourlyParamFuelFlow record where  
 HourlyParamFuelFlow.HourlyFuelFlowID = ***Current Fuel Flow Record***.HourlyFuelFlowID AND  
 HourlyParamFuelFlow.ParameterCode = "HI"

If (*Count* > 1)

***HI App D Accumulator*** = -1

return result A

Else If (*Count* == 0)

If (***Heat Input App D Method Active For Hour*** == true)

***HI App D Accumulator*** = -1

return result B

Else if (***Heat Input App D Method Active For Hour*** == true)

***Current HI HPFF Record*** = matching record

***HI HPFF Exists*** = true

if (***Current HI HPFF Record***.MonitoringFormulaId is null)

return result C

else

***Cur HI Mon Formula Record*** = Lookup active formula in MonitoringFormula Table where  
 MonitoringFormulaID = ***Current HI HPFF Record***.MonitoringFormulaID

if (***Cur HI Mon Formula Record*** is null)

return result D

else if (***Cur HI Mon Formula Record***.ParameterCode <> "HI")

return result E

else if (***Current Fuel Group*** == "GAS")

If (***Cur HI Mon Formula Record***.EquationCode not in set {D-6, F-20})

return result F

else if (***Current Fuel Flow Record***.MassFlowRate is not null)

If (***Cur HI Mon Formula Record***.EquationCode not in set {D-8, F-19})

return result F

else

If (***Cur HI Mon Formula Record***.EquationCode <> "F-19V")

return result F

else

return result G

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one HPFF record for [parameter] for FuelCode [fuelcd] for the hour.	Critical Error Level 1
B	You did not report an HPFF record for [parameter] for FuelCode [fuelcd] for the hour.	Critical Error Level 1
C	You did not report a FormulaID in the HPFF record for HI for FuelCode [fuelcd].	Critical Error Level 1
D	You reported FormulaID [ID] in the HPFF record for HI for FuelCode [fuelcd], but there is no active Formula record for this formula in your monitoring plan.	Critical Error Level 1
E	You reported FormulaID [ID] in the HPFF record for HI for FuelCode [fuelcd], but this is not an HI formula.	Critical Error Level 1
F	The FormulaCode of FormulaID [ID] reported in the HPFF record for HI for FuelCode [fuelcd] is invalid.	Critical Error Level 1
G	You reported an HPFF record for GCV for FuelCode [fuelcd], but you have not reported an HPFF record for HI for the hour.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAD-20

**Check Name:** Check Extraneous Heat Input Record Fields

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

*Hourly Extraneous Fields* = null

If (*Current HI HPFF Record* is not null)

If (*Current HI HPFF Record*.MonitoringSystemID is not null)  
append "MonitoringSystemID" to *Hourly Extraneous Fields*

If (*Current HI HPFF Record*.SegmentNumber is not null)  
append "SegmentNumber" to *Hourly Extraneous Fields*

If (*Current HI HPFF Record*.OperatingConditionCode is not null)  
append "OperatingConditionCode" to *Hourly Extraneous Fields*

If (*Current HI HPFF Record*.SampleTypeCode is not null)  
append "SampleTypeCode" to *Hourly Extraneous Fields*

If (*Hourly Extraneous Fields* is not null)  
return result A

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported [fieldnames] in the HPFF record for HI for FuelCode [fuelcd]. This data should be blank.	Non-Critical Error

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---



**Check Code:** HOURAD-21

**Check Name:** Calculate Heat Input Rate

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

*HFF Calc HI Rate* = null

If (*Current HI HPFF Record* is not null)

if (*Current Fuel Flow Record*.SourceOfDataVolumetricCode == "4")  
     if (*HFF Max Heat Input for Volume* is not null)  
         *HFF Calc HI Rate* = *HFF Max Heat Input for Volume*  
     else  
         *HI App D Accumulator* = -1  
         return result A

else if (*Current Fuel Flow Record*.SourceOfDataMassCode == "4")  
     if (*HFF Max Heat Input for Mass* is not null)  
         *HFF Calc HI Rate* = *HFF Max Heat Input for Mass*  
     else  
         *HI App D Accumulator* = -1  
         return result A

else if (*HFF GCV* is not null)

*HI HPFF Tolerance* = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
     Parameter = "HI HPFF" AND  
     UOM = "MMBTUHR"

If (*HFF System Type* == "GAS" OR *Current Fuel Flow Record*.MassFlowRate is null)  
     If (*HFF Calc Volumetric Rate* is not null)  
         *HFF Calc HI Rate* = *HFF Calc Volumetric Rate* \* *HFF GCV* / 1000000, and round the result to one decimal place.  
     else  
         *HI App D Accumulator* = -1  
         return result A

else  
     if (*HFF Calc Mass Oil Rate* is not null)  
         *HFF Calc HI Rate* = *HFF Calc Mass Oil Rate* \* *HFF GCV* / 1000000, and round the result to one decimal place.  
     else  
         *HI App D Accumulator* = -1  
         return result A

If (*HFF Calc HI Rate* is not null)  
     If *Current Fuel Flow Record*.FuelUsageTime > 0 AND *Current Fuel Flow Record*.FuelUsageTime <= 1 AND *HI App D Accumulator* >= 0)  
         // Note - this accumulates totals for all Fuel flow records and does not work like a normal parameter  
         *HI App D Accumulator* = *HI App D Accumulator* + *HFF Calc HI Rate* \* *Current Fuel Flow Record*.FuelUsageTime

else

***HI App D Accumulator*** = -1

If (***Current HI HPFF Record***.ParamValFuel > 0)

If (***Current Fuel Flow Record***.SourceOfDataVolumetricCode == "4" OR ***Current Fuel Flow Record***.SourceOfDataMassCode == "4")

***f*** (***HFF Calc HI Rate*** is equal to ***Current HI HPFF Record***.ParamValFuel)

if (***Current Fuel Flow Record***.SourceOfDataVolumetricCode == "4")

If (***Current Fuel Flow Record***.VolumetricFlowRate is greater than 0, AND  
***HFF Calc Volumetric Rate*** is not equal to ***Current Fuel Flow Record***.VolumetricFlowRate)

*Flow Tolerance* = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where Parameter = "FOIL"

if (ABS(***HFF Calc Volumetric Rate*** - ***Current Fuel Flow Record***.VolumetricFlowRate) > *Flow Tolerance*)  
return result C

else

If (***Current Fuel Flow Record***.MassFlowRate is greater than 0, AND  
***HFF Calc Mass Oil Rate*** is not equal to ***Current Fuel Flow Record***.MassFlowRate)

*Flow Tolerance* = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where Parameter = "FOIL"

if (ABS(***HFF Calc Mass Oil Rate*** - ***Current Fuel Flow Record***.MassFlowRate) > *Flow Tolerance*)  
return result D

else

If (ABS(***HFF Calc HI Rate*** - ***Current HI HPFF Record***.ParamValFuel) > *HI HPFF Tolerance*)  
return result B

else

***HI App D Accumulator*** = -1  
return result A

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The ParameterValueForFuel in the HPFF record for [parameter] for FuelCode [fuelcd] could not be recalculated due to errors listed above.	Informational Message
B	The ParameterValueForFuel reported in the HPFF record for HI for FuelCode [fuelcd] is inconsistent with the recalculated value.	Critical Error Level 1
C	You reported a SourceOfDataVolumetricCode of 4, indicating that you burned an emergency fuel, but the VolumetricFlowRate in the HFF record for FuelCode [fuelcd] is inconsistent with the maximum fuel flow rate for the unit. When you burn an emergency fuel, you should report the maximum fuel flow rate, which is based on the maximum hourly heat input capacity of the unit.	Critical Error Level 1
D	You reported a SourceOfDataMassCode of 4, indicating that you burned an emergency fuel, but the MassFlowRate in the HFF record for FuelCode [fuelcd] is inconsistent with the maximum fuel flow rate for the unit. When you burn an emergency fuel, you should report the maximum fuel flow rate, which is based on the maximum hourly heat input capacity of the unit.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAD-22

**Check Name:** Check Reported Heat Input

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

If (*Current HI HPFF Record* is not null)

    If (*Current HI HPFF Record*.ParamValFuel >= 0

        If (*Current HI HPFF Record*.ParamValFuel is not rounded to one decimal place)  
            return result D

    else if (*Current Fuel Flow Record*.SourceOfDataVolumetricCode == "4" and *HFF Max Heat Input for Volume* is not null)

        if (*Current HI HPFF Record*.ParamValFuel is not equal to *HFF Max Heat Input for Volume*)  
            return result E

    else if (*Current Fuel Flow Record*.SourceOfDataMassCode == "4" and *HFF Max Heat Input for Mass* is not null)

        if (*Current HI HPFF Record*.ParamValFuel is not equal to *HFF Max Heat Input for Mass*)  
            return result F

    else

        If *Current Entity Type* == "CP",

            Count active UnitCapacity record for each unit linked to the pipe  
            if (*Count* < 1 for any unit)  
                return result A

        else

            Calculate Max Heat Input as the sum of *Unit Capacity Record*.MaximumHourlyHeatInputCapacity for all units.

    else

        Count active UnitCapacity record for the associated unit.

        if (*Count* < 1)  
            return result A

        else

            Max Heat Input = *Unit Capacity Record*.MaximumHourlyHeatInputCapacity

        if *Current HI HPFF Record*.ParamValFuel > *Unit Capacity Record*.MaximumHourlyHeatInputCapacity  
            return result B

    else

        return result C

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report one and only one active Unit Capacity record in your monitoring plan for the unit (or for each unit linked to the pipe) for the hour.	Critical Error Level 1
B	Warning: The ParameterValueForFuel reported in the HPFF record for HI for FuelCode [fuelcd] exceeds the MaximumHourlyHeatInputCapacity reported in the Unit Capacity record in your monitoring plan. Sources are required to periodically (at least once annually) evaluate the appropriateness of maximum values in the monitoring plan and make proper adjustments when necessary. You should investigate the cause of these exceedances and determine whether an adjustment to the MaximumHourlyHeatInputCapacity reported in your monitoring plan is necessary.	Informational Message
C	The ParameterValueForFuel reported in the HPFF record for HI for FuelCode [fuelcd] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
D	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1
E	You reported a SourceOfDataVolumetricCode of 4 in the HFF record, indicating that you burned an emergency fuel. However, you did not report the maximum hourly heat input capacity for the unit as the ParameterValueforFuel in the HPFF record for HI, which is required when you burn an emergency fuel.	Critical Error Level 1
F	You reported a SourceOfDataMassCode of 4 in the HFF record, indicating that you burned an emergency fuel. However, you did not report the maximum hourly heat input capacity for the unit as the ParameterValueforFuel in the HPFF record for HI, which is required when you burn an emergency fuel.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAD-23

**Check Name:** Check Heat Input Units Of Measure

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

If (*Current HI HPFF Record* is not null)

    If (*Current HI HPFF Record*.ParameterUOMCode <> "MMBTUHR")

        return result A

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The ParameterUOMCode reported in the HPFF record for HI for FuelCode [fuelcd] is missing or invalid. The value should be "MMBTUHR".	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAD-24

**Check Name:** Validate SO2 Record

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

*Current SO2 HPFF Record* = null

*HFF SO2 Equation Code* = null

Count the HourlyParamFuelFlow record where

HourlyParamFuelFlow.HourlyFuelFlowID = *Current Fuel Flow Record*.HourlyFuelFlowID AND

HourlyParamFuelFlow.ParameterCode = "SO2"

If (*Count* > 1)

*SO2 App D Accumulator* = -1

return result A

Else If (*Count* == 0)

If (*SO2 App D Method Active For Hour* == true)

*SO2 App D Accumulator* = -1

return result B

Else if (*SO2 App D Method Active For Hour* == true)

*Current SO2 HPFF Record* = matching record

*SO2 HPFF Exists* = true

if (*Current SO2 HPFF Record*.MonitoringFormulaId is null

return result C

else

*Cur SO2 Mon Formula Record* = Lookup active formula in MonitoringFormula Table where  
MonitoringFormulaID = *Current SO2 HPFF Record*.MonitoringFormulaID

if (*Cur SO2 Mon Formula Record* is null)

return result D

else if (*Cur SO2 Mon Formula Record*.ParameterCode <> "SO2")

return result E

else if (*Current Fuel Group* == "GAS")

If (*Cur SO2 Mon Formula Record*.EquationCode in set {D-4, D-5})

*HFF SO2 Equation Code* = *Cur SO2 Mon Formula Record*.EquationCode

else

return result F

else

If (*Cur SO2 Mon Formula Record*.EquationCode == "D-2")

*HFF SO2 Equation Code* = *Cur SO2 Mon Formula Record*.EquationCode

else

return result F

else

return result G

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one HPFF record for [parameter] for FuelCode [fuelcd] for the hour.	Critical Error Level 1
B	You did not report an HPFF record for [parameter] for FuelCode [fuelcd] for the hour.	Critical Error Level 1
C	You did not report a FormulaID in the HPFF record for SO2 for FuelCode [fuelcd].	Critical Error Level 1
D	You reported FormulaID [ID] in the HPFF record for SO2 for FuelCode [fuelcd], but there is no active Formula record for this formula in your monitoring plan.	Critical Error Level 1
E	You reported FormulaID [ID] in the HPFF record for SO2 for FuelCode [fuelcd], but this is not an SO2 formula.	Critical Error Level 1
F	The FormulaCode of FormulaID [ID] reported in the HPFF record for SO2 for FuelCode [fuelcd] is invalid.	Critical Error Level 1
G	You reported an HPFF record for SO2 for FuelCode [fuelcd], but you do not have an active Appendix D SO2 method for the hour.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Hourly Fuel Flow



**Check Code:** HOURAD-25

**Check Name:** Check Extraneous SO2 Record Fields

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

*Hourly Extraneous Fields* = null

If (*Current SO2 HPFF Record* is not null)

    If (*Current SO2 HPFF Record*.MonitoringSystemID is not null)

        append "MonitoringSystemID" to *Hourly Extraneous Fields*

    If (*Current SO2 HPFF Record*.SegmentNumber is not null)

        append "SegmentNumber" to *Hourly Extraneous Fields*

    If (*Current SO2 HPFF Record*.OperatingConditionCode is not null)

        append "OperatingConditionCode" to *Hourly Extraneous Fields*

    If (*Current SO2 HPFF Record*.SampleTypeCode is not null)

        append "SampleTypeCode" to *Hourly Extraneous Fields*

    If (*Hourly Extraneous Fields* is not null)

        return result A

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported [fieldnames] in the HPFF record for SO2 for FuelCode [fuelcd]. This data should be blank.	Non-Critical Error

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAD-26

**Check Name:** Check SO2 Units Of Measure

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

If (*Current SO2 HPFF Record* is not null)

    If (*Current SO2 HPFF Record*.ParameterUOMCode <> "LBHR")

        return result A

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The ParameterUOMCode reported in the HPFF record for SO2 for FuelCode [fuelcd] is missing or invalid. The value should be "LBHR".	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAD-27

**Check Name:** Calculate SO2 Mass Rate

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

**HFF Calc SO2** = null

If (**Current SO2 HPFF Record** is not null)

if (**Current Fuel Group** == "GAS" AND **HFF SO2 Equation Code** == "D-4" AND **HFF Sulfur** is not null AND **HFF Calc Volumetric Rate** is not null

**SO2 HPFF Tolerance** = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
Parameter = "SO2 Gas HPFF" AND  
UOM = "LBHR"

**HFF Calc SO2** = **HFF Sulfur** \* **HFF Calc Volumetric Rate** \* 2.0 / 7000, and round the result to 5 decimal places.

else if (**Current Fuel Group** == "GAS" AND **HFF SO2 Equation Code** == "D-5" AND **HFF SO2 Emission Rate** is not null AND **HFF Calc HI Rate** is not null

**SO2 HPFF Tolerance** = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
Parameter = "SO2 Gas HPFF" AND  
UOM = "LBHR"

**HFF Calc SO2** = **HFF SO2 Emission Rate** \* **HFF Calc HI Rate**, and round the result to 5 decimal places.

else if (**Current Fuel Group** == "OIL" AND **HFF Sulfur** is not null AND **HFF Calc Mass Oil Rate** is not null

**SO2 HPFF Tolerance** = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
Parameter = "SO2 Oil HPFF" AND  
UOM = "LBHR"

**HFF Calc SO2** = **HFF Sulfur** \* **HFF Calc Mass Oil Rate** \* 2.0 / 100, and round the result to 1 decimal place.

If (**HFF Calc SO2** is not null)

If **Current Fuel Flow Record.FuelUsageTime** > 0 AND **Current Fuel Flow Record.FuelUsageTime** <= 1 AND **SO2 App D Accumulator** >= 0)

// Note - this accumulates totals for all Fuel flow records and does not work like a normal parameter

**SO2 App D Accumulator** = **SO2 App D Accumulator** + **HFF Calc SO2** \* **Current Fuel Flow Record.FuelUsageTime**

else

**SO2 App D Accumulator** = -1

If (**Current SO2 HPFF Record.ParamValFuel** >= 0)

if (ABS(**HFF Calc SO2** - **Current SO2 HPFF Record.ParamValFuel**) > **SO2 HPFF Tolerance**)  
return result A

else

**SO2 App D Accumulator** = -1

return result B

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The ParameterValueForFuel reported in the HPFF record for SO2 for FuelCode [fuelcd] is inconsistent with the recalculated value.	Critical Error Level 1
B	The ParameterValueForFuel in the HPFF record for [parameter] for FuelCode [fuelcd] could not be recalculated due to errors listed above.	Informational Message

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAD-28

**Check Name:** Determine Sulfur Content

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Validation Tables:**

Fuel Type Reality Checks for Sulfur (Cross Check Table)  
 Fuel Type Warning Levels for Sulfur (Cross Check Table)  
 Table D-6 Missing Data Values (Cross Check Table)

**Specifications:**

*HFF Sulfur* = null

*Current Sulfur Record* = null

Count the HourlyParamFuelFlow record where

HourlyParamFuelFlow.HourlyFuelFlowID = *Current Fuel Flow Record*.HourlyFuelFlowID AND  
 HourlyParamFuelFlow.ParameterCode = "SULFUR"

If (*Count* > 1)

return result A

Else If (*Count* == 0)

If (*HFF SO2 Equation Code* in set {D-2, D-4})

return result B

Else if (*HFF SO2 Equation Code* in set {D-2, D-4})

*Current Sulfur Record* = matching record

*Sulfur UOM* = *Current Sulfur Record*.ParameterUOMCode

If (*Current Fuel Group* == "GAS" AND *Sulfur UOM* <> "GRHSCF")

return result C

else if (*Current Fuel Group* == "OIL" AND *Sulfur UOM* <> "PCT")

return result C

else if (*Current Sulfur Record*.ParamValFuel > 0)

*Sulfur Default* = null

If (*Sulfur UOM* == "GRHSCF")

*Sulfur Precision* = 1

else

*Sulfur Precision* = 4

If (*Current Sulfur Record*.SampleTypeCode == 8)

*Sulfur Default* = Lookup "MissingDataValue" in "Table D-6 Missing Data Values"

where "Parameter" column = "SULFUR" AND "FuelCode" column = *Current Fuel Flow Record*.FuelCode

If (*Sulfur Default* == null)

*Max Expected Sulfur* = Lookup "Upper Value" in "Fuel Flow Warning Levels for Sulfur Content Cross Check Table"

where "Fuel Code" column = *Current Fuel Flow Record*.FuelCode

*Min Expected Sulfur* = Lookup "Lower Value" in "Fuel Flow Warning Levels for Sulfur Content Cross Check Table"

where "Fuel Code" column = *Current Fuel Flow Record*.FuelCode

*Max Allowed Sulfur* = Lookup "Upper Value" in "Fuel Flow Reality Checks for Sulfur Content Cross Check Table"

where "Fuel Code" column = *Current Fuel Flow Record*.FuelCode

*Min Allowed Sulfur* = Lookup "Lower Value" in "Fuel Flow Reality Checks for Sulfur Content Cross Check Table"

where "Fuel Code" column = *Current Fuel Flow Record*.FuelCode

```

    If (Max Allowed Sulfur is not null AND Current Sulfur Record.ParamValFuel > Max Allowed Sulfur) OR (Min Allowed Sulfur is not null AND Current Sulfur Record.ParamValFuel < Min Allowed Sulfur)
        return result D
    else if (Current Sulfur Record.ParamValFuel is not rounded to Sulfur Precision)
        return result I
    else
        HFF Sulfur = Current Sulfur Record.ParamValFuel
        if (Min Expected Sulfur is not null AND HFF Sulfur < Min Expected Sulfur) OR (Max Expected Sulfur is not null AND HFF Sulfur > Max Expected Sulfur)
            return result E

    else
        If (Current Sulfur Record.ParamValFuel is not rounded to Sulfur Precision)
            return result I
        else if Sulfur Default == Current Sulfur Record.ParamValFuel
            HFF Sulfur == Current Sulfur Record.ParamValFuel
        else
            return result F

    else
        return result G

else
    return result H

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one HPFF record for [parameter] for FuelCode [fuelcd] for the hour.	Critical Error Level 1
B	You reported a formula with a FormulaCode of [code] in the HPFF record for SO2 for FuelCode [fuelcd], but you did not report an HPFF record for SULFUR. Use of this formula to calculate SO2 requires the reporting of the fuel's sulfur content.	Critical Error Level 1
C	The ParameterUOMCode reported in the HPFF record for SULFUR for FuelCode [fuelcd] is missing or invalid.	Critical Error Level 1
D	The ParameterValueForFuel reported in the HPFF record for [parameter] for FuelCode [fuelcd] is outside the range of allowable values for the fuel type.	Critical Error Level 1
E	The ParameterValueForFuel reported in the HPFF record for [parameter] for FuelCode [fuelcd] is outside the range of expected values for the fuel type.	Critical Error Level 2
F	You reported a SampleTypeCode of 8 in the HPFF record for [parameter] for FuelCode [fuelcd], indicating the use of a Table D-6 default, but the ParameterValueForFuel does not equal the default value for the fuel.	Critical Error Level 1
G	The ParameterValueForFuel reported in the HPFF record for [parameter] for FuelCode [fuelcd] is invalid. The value should be greater than 0.	Critical Error Level 1
H	You reported an HPFF record for [parameter] for FuelCode [fuelcd], but you do not require this value to calculate SO2.	Critical Error Level 1
I	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAD-29

**Check Name:** Check Extraneous Sulfur Record Fields

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

*Hourly Extraneous Fields* = null

If (*Current Sulfur Record* is not null)

    If (*Current Sulfur Record*.FormulaIdentifier is not null)

        append "FormulaIdentifier" to *Hourly Extraneous Fields*

    If (*Current Sulfur Record*.MonitoringSystemID is not null)

        append "MonitoringSystemID" to *Hourly Extraneous Fields*

    If (*Current Sulfur Record*.SegmentNumber is not null)

        append "SegmentNumber" to *Hourly Extraneous Fields*

    If (*Current Sulfur Record*.OperatingConditionCode is not null)

        append "OperatingConditionCode" to *Hourly Extraneous Fields*

    If (*Hourly Extraneous Fields* is not null)

        return result A

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported [fieldnames] in the HPFF record for SULFUR for FuelCode [fueled]. This data should be blank.	Non-Critical Error

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAD-30

**Check Name:** Check Sulfur Sample Type

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

If (*Current Sulfur Record* is not null)  
    If (*Current Fuel Group* == "OIL" AND *Current Sulfur Record*.SampleTypeCode not in {1, 2, 5, 6, 7, 8})  
        return result A  
    else if (*Current Fuel Group* == "GAS" AND *Current Sulfur Record*.SampleTypeCode not in {0, 2, 4, 5, 6, 7, 8})  
        return result A

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The SampleTypeCode reported in the HPFF record for SULFUR for FuelCode [fuelcd] is missing or invalid.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---



**Check Code:** HOURAD-31

**Check Name:** Determine SO2 Emission Rate

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

*HFF SO2 Emission Rate* = null  
*Current SO2R Record* = null

Count the HourlyParamFuelFlow record where  
 HourlyParamFuelFlow.HourlyFuelFlowID = *Current Fuel Flow Record*.HourlyFuelFlowID AND  
 HourlyParamFuelFlow.ParameterCode = "SO2R"

If (*Count* > 1)  
     return result A

Else If (*Count* == 0)  
     If (*HFF SO2 Equation Code* == "D-5")  
         return result B

Else if (*HFF SO2 Equation Code* == "D-5")

*Current SO2R Record* = matching record  
         If (*Current SO2R Record*.ParameterUOMCode <> "LBMMBTU")  
             return result C

        else if (*Current SO2R Record*.ParamValFuel > 0)  
             *HFF SO2 Emission Rate* = *Current SO2R Record*.ParamValFuel

        else  
             return result D

else  
     return result E

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one HPFF record for [parameter] for FuelCode [fuelcd] for the hour.	Critical Error Level 1
B	You reported a formula with a FormulaCode of "D-5" in the HPFF record for SO2 for FuelCode [fuelcd], but you did not report an HPFF record for SO2R. Use of formula D-5 to calculate SO2 requires the reporting of the SO2 emission rate for the fuel.	Critical Error Level 1
C	The ParameterUOMCode reported in the HPFF record for SO2R for FuelCode [fuelcd] is missing or invalid. The value should be "LBMMBTU".	Critical Error Level 1
D	The ParameterValueForFuel reported in the HPFF record for [parameter] for FuelCode [fuelcd] is invalid. The value should be greater than 0.	Critical Error Level 1
E	You reported an HPFF record for [parameter] for FuelCode [fuelcd], but you do not require this value to calculate SO2.	Critical Error Level 1

#### Usage:

1      Process/Category:      Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAD-32

**Check Name:** Check Extraneous SO2R Record Fields

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

*Hourly Extraneous Fields* = null

If (*Current SO2R Record* is not null)

If (*Current SO2R Record*.MonitoringSystemID is not null)  
append "MonitoringSystemID" to *Hourly Extraneous Fields*

If (*Current SO2R Record*.SegmentNumber is not null)  
append "SegmentNumber" to *Hourly Extraneous Fields*

If (*Current SO2R Record*.OperatingConditionCode is not null)  
append "OperatingConditionCode" to *Hourly Extraneous Fields*

If (*Current SO2R Record*.SampleTypeCode is not null)  
append "SampleTypeCode" to *Hourly Extraneous Fields*

If (*Hourly Extraneous Fields* is not null)  
return result A

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported [fieldnames] in the HPFF record for SO2R for FuelCode [fuelcd]. This data should be blank.	Non-Critical Error

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAD-33

**Check Name:** Check SO2R Formula

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

If (*Current SO2R Record* is not null)

    If (*Current SO2R Record*.FormulaIdentifier is null)

        If (*Current Fuel Flow Record*.FuelCode <> "PNG" OR *Current SO2R Record*.ParamValFuel <> 0.0006)  
            return result A

    else

*Cur SO2R Mon Formula Record* = Lookup active formula in MonitoringFormula Table where  
            MonitoringFormulaID = *Current SO2R Record*.MonitoringFormulaID

    if (*Cur SO2R Mon Formula Record* is null)

        return result B

    else if (*Cur SO2R Mon Formula Record*.ParameterCode <> "SO2R")  
        return result C

    else if (*Cur SO2R Mon Formula Record*.EquationCode <> "D-1H")  
        return result D

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a FormulaID in the HPFF record for SO2R for FuelCode [fuelcd]. This formula is required except when using the standard default emission rate of 0.0006 for pipeline natural gas.	Critical Error Level 1
B	You reported FormulaID [ID] in the HPFF record for SO2R for FuelCode [fuelcd], but there is no active Formula record for this formula in your monitoring plan.	Critical Error Level 1
C	You reported FormulaID [ID] in the HPFF record for SO2R for FuelCode [fuelcd], but this is not an SO2R formula.	Critical Error Level 1
D	The FormulaCode of FormulaID [ID] reported in the HPFF record for SO2R for FuelCode [fuelcd] is invalid. The FormulaCode should be "D-1H".	Critical Error Level 1

#### Usage:

1      Process/Category:      Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAD-34

**Check Name:** Check Reported SO2 Mass Rate

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

If (*Current SO2 HPFF Record* is not null)

If (*Current SO2 HPFF Record*.ParamValFuel is null or is less than 0  
return result A

else if (*Current Fuel Group* == "OIL" AND *Current SO2 HPFF Record*.ParamValFuel is not rounded to one decimal place)  
return result B

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The ParameterValueForFuel reported in the HPFF record for SO2 for FuelCode [fuelcd] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
B	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAD-35

**Check Name:** Determine FC Factor

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Validation Tables:**

Fuel Type Reality Checks for FC FACTOR (Cross Check Table)

**Specifications:**

**HFF Fc Factor** = null

**Current Fc Factor Record** = null

Count the HourlyParamFuelFlow record where

HourlyParamFuelFlow.HourlyFuelFlowID = **Current Fuel Flow Record**.HourlyFuelFlowID AND  
HourlyParamFuelFlow.ParameterCode = "FC"

If (*Count* > 1)

return result A

Else If (*Count* == 0)

If (**Current CO2 HPFF Record** is not null)

return result B

Else if (**Current CO2 HPFF Record** is not null)

**Current Fc Factor Record** = matching record

If (**Current Fc Factor Record**.ParameterUOMCode <> "SCFCBTU")

return result C

else if (**Current FcFactor Record**.ParamValFuel > 0)

if (**Current FcFactor Record**.ParamValFuel is not rounded to one decimal place)

return result G

else

**HFF Fc Factor** = **Current Fc Factor Record**.ParamValFuel

**Max Allowed Fc Factor** = Lookup "Upper Value" in "Fuel Type Reality Checks for FC Factor Cross Check Table"  
where "FuelType" column = **Current Fuel Group**

**Min Allowed Fc Factor** = Lookup "Lower Value" in "Fuel Type Reality Checks for FC Factor Cross Check Table"  
where "FuelType" column = **Current Fuel Group**

If (**Max Allowed FcFactor** is not null AND **Current Fc Factor Record**.ParamValFuel > **Max Allowed Fc Factor**)  
OR (**Min Allowed FcFactor** is not null AND **Current Fc Factor Record**.ParamValFuel < **Min Allowed Fc Factor**)  
return result D

else

return result E

else

return result F

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one HPFF record for [parameter] for FuelCode [fuelcd] for the hour.	Critical Error Level 1
B	You reported an HPFF record for CO2 for FuelCode [fuelcd], but you did not report an HPFF record for FC for the hour.	Critical Error Level 1
C	The ParameterUOMCode reported in the HPFF record for FC for FuelCode [fuelcd] is missing or invalid.	Critical Error Level 1
D	The ParameterValueForFuel reported in the HPFF record for [parameter] for FuelCode [fuelcd] is outside the range of allowable values for the fuel type.	Critical Error Level 1
E	The ParameterValueForFuel reported in the HPFF record for FC for FuelCode [fuelcd] is invalid.	Critical Error Level 1
F	You reported an HPFF record for FC for FuelCode [fuelcd], but you have not reported an HPFF record for CO2 for the hour.	Critical Error Level 1
G	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAD-36

**Check Name:** Check Extraneous Fc Factor Record Fields

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

*Hourly Extraneous Fields* = null

If (*Current Fc Factor Record* is not null)

    If (*Current Fc Factor Record*.FormulaIdentifier is not null)

        append "FormulaIdentifier" to *Hourly Extraneous Fields*

    If (*Current Fc Factor Record*.MonitoringSystemID is not null)

        append "MonitoringSystemID" to *Hourly Extraneous Fields*

    If (*Current Fc Factor Record*.SegmentNumber is not null)

        append "SegmentNumber" to *Hourly Extraneous Fields*

    If (*Current Fc Factor Record*.OperatingConditionCode is not null)

        append "OperatingConditionCode" to *Hourly Extraneous Fields*

    If (*Current Fc Factor Record*.SampleTypeCode is not null)

        append "SampleTypeCode" to *Hourly Extraneous Fields*

    If (*Hourly Extraneous Fields* is not null)

        return result A

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported [fieldnames] in the HPFF record for FC for FuelCode [fuelcd]. This data should be blank.	Non-Critical Error

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAD-37

**Check Name:** Validate CO2 Record

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

**Current CO2 HPFF Record** = null

Count the HourlyParamFuelFlow record where

HourlyParamFuelFlow.HourlyFuelFlowID = **Current Fuel Flow Record**.HourlyFuelFlowID AND  
HourlyParamFuelFlow.ParameterCode = "CO2"

If (*Count* > 1)

**CO2 App D Accumulator** = -1

return result A

Else If (*Count* == 0)

If (**CO2 App D Method Active For Hour** == true)

**CO2 App D Accumulator** = -1

If (**Legacy Data Evaluation** == false)

return result B

else

return result H

Else if (**CO2 App D Method Active For Hour** == true)

**Current CO2 HPFF Record** = matching record

**CO2 HPFF Exists** = true

if (**Current CO2 HPFF Record**.MonitoringFormulaId is null)

return result C

else

**Cur CO2 Mon Formula Record** = Lookup active formula in MonitoringFormula Table where  
MonitoringFormulaID = **Current CO2 HPFF Record**.MonitoringFormulaID

if (**Cur CO2 Mon Formula Record** is null)

return result D

else if (**Cur CO2 Mon Formula Record**.ParameterCode <> "CO2")

return result E

else if (**Cur CO2 Mon Formula Record**.EquationCode <> "G-4")

return result F

else

return result G



**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one HPFF record for [parameter] for FuelCode [fuelcd] for the hour.	Critical Error Level 1
B	Your monitoring plan indicates the use of the Appendix D CO2 method, but you did not report an HPFF record for CO2 for FuelCode [fuelcd] for the hour.	Critical Error Level 1
C	You did not report a FormulaID in the HPFF record for CO2 for FuelCode [fuelcd].	Critical Error Level 1
D	You reported FormulaID [ID] in the HPFF record for CO2 for FuelCode [fuelcd], but there is no active Formula record for this formula in your monitoring plan.	Critical Error Level 1
E	You reported FormulaID [ID] in the HPFF record for CO2 for FuelCode [fuelcd], but this is not a CO2 formula.	Critical Error Level 1
F	The FormulaCode of FormulaID [ID] reported in the HPFF record for CO2 for FuelCode [fuelcd] is invalid. The FormulaCode should be "G-4".	Critical Error Level 1
G	You reported an HPFF record for CO2 for FuelCode [fuelcd], but you do not have an active Appendix D CO2 method for the hour.	Critical Error Level 1
H	Your monitoring plan indicates the use of the Appendix D CO2 method, but you did not report an HPFF record for CO2 for FuelCode [fuelcd] for the hour. Fuel-specific CO2 emissions data was not required in the EDR data, but is required for all data submitted through ECMPS. The software will not recalculate CO2 emissions values.	Informational Message

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAD-38

**Check Name:** Check Extraneous CO2 Record Fields

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

*Hourly Extraneous Fields* = null

If (*Current CO2 HPFF Record* is not null)

If (*Current CO2 HPFF Record*.MonitoringSystemID is not null)  
append "MonitoringSystemID" to *Hourly Extraneous Fields*

If (*Current CO2 HPFF Record*.SegmentNumber is not null)  
append "SegmentNumber" to *Hourly Extraneous Fields*

If (*Current CO2 HPFF Record*.OperatingConditionCode is not null)  
append "OperatingConditionCode" to *Hourly Extraneous Fields*

If (*Current CO2 HPFF Record*.SampleTypeCode is not null)  
append "SampleTypeCode" to *Hourly Extraneous Fields*

If (*Hourly Extraneous Fields* is not null)  
return result A

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported [fieldnames] in the HPFF record for CO2 for FuelCode [fuelcd]. This data should be blank.	Non-Critical Error

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAD-39  
**Check Name:** Calculate CO2 Mass Rate  
**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

**HFF Calc CO2** = null

If (**Current CO2 HPFF Record** is not null)  
 if (**HFF Calc HI Rate** is not null AND **HFF Fc Factor** is not null)

**CO2 HPFF Tolerance** = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
 Parameter = "CO2" AND  
 UOM = "TNHR"

**HFF Calc CO2** = **HFF Calc HI Rate** \* **HFF Fc Factor** \* 44.0 / (385.0 \* 2000.0), and round the result to one decimal place.

If **Current Fuel Flow Record.FuelUsageTime** > 0 AND **Current Fuel Flow Record.FuelUsageTime** <= 1 AND **CO2 App D Accumulator** >= 0)

// Note - this accumulates totals for all Fuel flow records and does not work like a normal parameter

**CO2 App D Accumulator** = **CO2 App D Accumulator** + **HFF Calc CO2** \* **Current Fuel Flow Record.FuelUsageTime**

else

**CO2 App D Accumulator** = -1

If (**Current CO2 HPFF Record.ParamValFuel** >= 0)

if (ABS(**HFF Calc CO2** - **Current CO2 HPFF Record.ParamValFuel**) > **CO2 HPFF Tolerance**)  
 return result A

else

**CO2 App D Accumulator** = -1  
 return result B

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The ParameterValueForFuel reported for HPFF record for CO2 for FuelCode [fuelcd] is inconsistent with the recalculated value.	Critical Error Level 1
B	The ParameterValueForFuel in the HPFF record for [parameter] for FuelCode [fuelcd] could not be recalculated due to errors listed above.	Informational Message

## Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAD-40

**Check Name:** Check Reported CO2 Mass Rate

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

If (*Current CO2 HPFF Record* is not null)

    If (*Current CO2 HPFF Record*.ParamValFuel is null or is less than 0  
        return result A

    else if (*Current CO2 HPFF Record*.ParamValFuel is not rounded to one decimal place)  
        return result B

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The ParameterValueForFuel reported in the HPFF record for CO2 for FuelCode [fuelcd] is invalid. The value should be greater than or equal to 0.	Critical Error Level 1
B	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAD-44

**Check Name:** Check CO2 Units Of Measure

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

If (*Current CO2 HPFF Record* is not null)

    If (*Current CO2 HPFF Record*.ParameterUOMCode <> "TNHR")

        return result A

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The ParameterUOMCode reported in the HPFF record for CO2 for FuelCode [fuelcd] is missing or invalid. The value should be "TNHR".	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAD-45

**Check Name:** Determine Appendix D Measure Codes

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

```

if (Current Fuel Flow Record.SourceOfDataMassCode in set {4, 5, 6} OR Current Fuel Flow Record.SourceOfDataVolumetricCode in
set {4, 5, 6} OR Monitor Measure Code Array for "FF" == "OTHER")
    set Monitor Measure Code Array for "FF" to "OTHER"
else if (Current Fuel Flow Record.SourceOfDataMassCode in set {1, 3} OR Current Fuel Flow Record.SourceOfDataVolumetricCode in
set {1, 3})
    if (Monitor Measure Code Array for "FF" begins with "MEAS")
        set Monitor Measure Code Array for "FF" to "MEASSUB"
    else
        set Monitor Measure Code Array for "FF" to "SUB"
else if (Current Fuel Flow Record.SourceOfDataMassCode in set {0, 9} OR Current Fuel Flow Record.SourceOfDataVolumetricCode in
set {0, 9}))
    if (Monitor Measure Code Array for "FF" contains "SUB")
        set Monitor Measure Code Array for "FF" to "MEASSUB"
    else
        set Monitor Measure Code Array for "FF" to "MEASURE"

if (Current Sulfur Record is not null)
    if (Current Sulfur Record.SampleTypeCode == 8)
        if (Monitor Measure Code Array for "SULFUR" begins with "MEAS")
            set Monitor Measure Code Array for "SULFUR" to "MEASSUB"
        else
            set Monitor Measure Code Array for "SULFUR" to "SUB"
    else if (Current Sulfur Record.SampleTypeCode in set {0, 1, 2, 4, 5, 6, 7})
        if (Monitor Measure Code Array for "SULFUR" contains "SUB")
            set Monitor Measure Code Array for "SULFUR" to "MEASSUB"
        else
            set Monitor Measure Code Array for "SULFUR" to "MEASURE"

if (Current GC V Record is not null)
    if (Current GC V Record.SampleTypeCode == 8)
        if (Monitor Measure Code Array for "GCV" begins with "MEAS")
            set Monitor Measure Code Array for "GCV" to "MEASSUB"
        else
            set Monitor Measure Code Array for "GCV" to "SUB"
    else if (Current GC V Record.SampleTypeCode in set {0, 1, 2, 3, 4, 5, 6, 7})
        if (Monitor Measure Code Array for "GCV" contains "SUB")
            set Monitor Measure Code Array for "GCV" to "MEASSUB"
        else
            set Monitor Measure Code Array for "GCV" to "MEASURE"

if (Current Density Record is not null)
    if (Current Density Record.SampleTypeCode == 8)
        if (Monitor Measure Code Array for "DENSITY" begins with "MEAS")
            set Monitor Measure Code Array for "DENSITY" to "MEASSUB"
        else
            set Monitor Measure Code Array for "DENSITY" to "SUB"
    else if (Current Density Record.SampleTypeCode in set {1, 2, 5, 6, 7})
        if (Monitor Measure Code Array for "DENSITY" contains "SUB")
            set Monitor Measure Code Array for "DENSITY" to "MEASSUB"

```

else

set *Monitor Measure Code Array* for "DENSITY" to "MEASURE"

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAD-46

**Check Name:** Update System Supplemental Data for Hourly Fuel Flow

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:** Updates the System Operating Supplemental Data for the system reported with the Current Hourly Fuel Flow record.

**Specifications:**

If *DerivedHourlyChecksNeeded* is true AND *CurrentOperatingTime* is greater than 0,

If *CurrentFuelFlowRecord*.MonitoringSystemID is not null,

Set *SupplementalDataDictionary* to the dictionary at *CurrentMonitorPlanLocationPosition* in *SystemOperatingSuppDataDictionaryArray*.

If *SupplementalDataDictionary* contains key *CurrentFuelFlowRecord*.MonitoringSystemID,

Set *SupplementalDataRecord* in *SupplementalDataDictionary* value where key is equal to *CurrentFuelFlowRecord*.MonitoringSystemID.

Else

Create a new *SupplementalDataRecord* with MonitoringSystemID equal to *CurrentFuelFlowRecord*.MonitoringSystemID, and OpDays, OpHours, OsDays and OsHours equal to 0..  
Add *SupplementalDataRecord* to *SupplementalDataDictionary* with a key of *CurrentFuelFlowRecord*.MonitoringSystemID.

Increment *SupplementalDataRecord*.QuarterlyOperatingCounts.OpDays by 1 when:

1) An increment has not already occurred for the date of *CurrentOperatingDatehour*.

Increment *SupplementalDataRecord*.QuarterlyOperatingCounts..OpHours by 1 when:

1) An increment has not already occurred for *CurrentOperatingDatehour*.

Increment *SupplementalDataRecord*.MayAndJuneOperatingCounts.OpDays by 1 when:

1) An increment has not already occurred for the date of *CurrentOperatingDatehour*.  
2) The month of *CurrentOperatingDatehour* is in May, June, July, August or September.

Increment *SupplementalDataRecord*.MayAndJuneOperatingCounts..OpHours by 1 when:

1) An increment has not already occurred for *CurrentOperatingDatehour*.  
2) The month of *CurrentOperatingDatehour* is in May, June, July, August or September.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---



**Check Category:**

**Hourly Appendix E**

**Check Code:** HOURAE-1

**Check Name:** Initialize AE Reporting Method

**Related Former Checks:**

**Applicability:** Appendix E Check

**Description:** Determines whether Appendix E Reporting is from a single fuel source, multiple fuel sources, or a Constant Mix Fuel Source

**Specifications:**

*App E Reporting Method* = null

*App E Op Code* = null

*App E Segment Number* = null

*App E Reported Value* = null

*App E Fuel Code* = null

*App E Calc HI* = null

if (*Current NOx Rate Method Code* == "AE")

*Total Fuel Sources* = *Hourly Fuel Flow Count for Gas* + *Hourly Fuel Flow Count for Oil*

// App E Constant Fuel Mix detected when processing DHV records

if (*Total Fuel Sources* > 1)

*App E Reporting Method* = "MULTIPLE"

else if (*Total Fuel Sources* == 1)

*App E Reporting Method* = "SINGLE"

**Results:**

Result

Response

Severity

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** HOURAE-2

**Check Name:** Validate NOXR Record

**Related Former Checks:**

**Applicability:** Appendix E Check

**Description:** Locates the appropriate NOXR HourlyParamFuelFlow record for current fuel flow record

**Specifications:**

*Current App E NOXR Record* = null

*App E NOXR HPFF Count for Gas* = find matching HourlyParamFuelFlow records where  
 HourlyParamFuelFlow.HourlyFuelFlowID = *Current Fuel Flow Record*.HourlyFuelFlowID AND  
 HourlyParamFuelFlow.ParameterCode = "NOXR"

If (*App E NOXR HPFF Count for Gas* == 0)  
   if (*App E Reporting Method* in set {MULTIPLE, SINGLE})  
     *NOXR App E Accumulator* = -1  
     return result A

else if (If *App E NOXR HPFF Count for Gas* > 1)  
   if (*App E Reporting Method* in set {MULTIPLE, SINGLE})  
     *NOXR App E Accumulator* = -1  
     return result B  
   else  
     return result D

Else if (*App E Reporting Method* in set {MULTIPLE, SINGLE})

*Current App E NOXR Record* = matching record  
*App E Segment Number* = *Current App E NOXR Record*.SegmentNumber  
*App E Reported Value* = *Current App E NOXR Record*.ParamValFuel  
*App E Calc HI* = *HFF Calc HI Rate*  
*App E Fuel Code* = *Current Fuel Flow Record*.FuelCode

if *Current App E NOXR Record*.OperatingConditionCode in set {E, X, Y, Z, U, W, N, M}  
   *App E Op Code* = *Current App E NOXR Record*.OperatingConditionCode  
 else  
   *App E Op Code* = null  
   return result C

else if (*App E Reporting Method* == "CONSTANT")  
   return result D  
 else  
   return result E

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report an HPFF record for NOXR to report the NOx emission rate for individual fuels.	Critical Error Level 1
B	You reported more than one HPFF record for NOXR for FuelCode [fuelcd] for the hour.	Critical Error Level 1
C	The OperatingConditionCode reported in the HPFF record for NOXR for FuelCode [FUELCD] is missing or invalid.	Critical Error Level 1
D	You reported an HPFF record for NOXR, but, according to your monitoring plan, you use an Appendix E mixed fuel curve to determine the NOx emission rate. If this is the case, you should report the NOx emission rate in a NOXR DHV record. The HPFF record will not be evaluated and the NOx emissions rate will not be recalculated.	Critical Error Level 1
E	You reported an HPFF record for NOXR, but you have not defined a NOXR AE method in your monitoring plan that is active during the current hour. The HPFF record will not be evaluated and the NOx emissions rate will not be recalculated.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAE-4

**Check Name:** Check for Extraneous Fields in NOXR Record

**Related Former Checks:**

**Applicability:** Appendix E Check

**Description:**

**Specifications:**

```
Hourly Extraneous Fields = null

if (Current App E NOXR Record is not null)
    if (Current App E NOXR Record.SampleTypeCode is not NULL)
        append "SampleTypeCode" to Hourly Extraneous Fields

    if (Current App E NOXR Record.MonitoringFormulaId is not NULL)
        append "MonitoringFormulaID" to Hourly Extraneous Fields

If (Hourly Extraneous Fields is not null)
    return result A
```

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported [fieldnames] in the HPFF record for NOXR for FuelCode [fuelcd]. This data should be blank.	Non-Critical Error

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAE-5

**Check Name:** Check Monitoring System Data for Appendix E NOXR

**Related Former Checks:**

**Applicability:** Appendix E Check

**Description:** Verifies whether monitoring system reported for Appendix E NOXR meets the reporting requirements

**Specifications:**

if (*Current App E NOXR Record* is not null)

*App E NOXE System ID* = null

*App E NOXE System Identifier* = null

if (*Current App E NOXR Record*.MonitoringSystemId is null)

if (*Current App E NOXR Record*.OperatingConditionCode == "E")

if (*HFF Fuel Indicator Code* <> "E")

return result A

else

return result B

// report Monitoring System in all other cases

else

*Current App E NOXR Mon Sys Record* = find MonitoringSystem record where

MonitoringSystem.MonitoringSystemId = *Current App E NOXR Record*.MonitoringSystemId

if (*Current App E NOXR Mon Sys Record* is null)

return result C

else if (*Current App E NOXR Mon Sys Record*.SystemTypeCode <> "NOXE")

return result D

else if (*Current App E NOXR Mon Sys Record*.FuelCode <> *Current Fuel Flow Record*.FuelCode

return result E

else

*App E NOXE System ID* = *Current App E NOXR Record*.MonitoringSystemId

*App E NOXE System Identifier* = *Current App E NOXR Mon Sys Record*.SystemIdentifier

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The OperatingConditionCode of E reported in the HPFF record for NOXR for FuelCode [fuelcd] indicates that the fuel is an emergency fuel, but this is inconsistent with the IndicatorCode in the UnitFuel record for the fuel.	Critical Error Level 1
B	You did not report a MonitoringSystemID in the HPFF record for NOXR for FuelCode [fuelcd], but you did not report an OperatingConditionCode of E. You must report a NOXE MonitoringSystemID for non-emergency fuels.	Critical Error Level 1
C	You reported MonitoringSystemID [ID] in the HPFF record for NOXR for FuelCode [fuelcd], but there is no MonitorSystem record for this system in your monitoring plan that was active during the hour.	Critical Error Level 1
D	You reported MonitoringSystemID [ID] in the HPFF record for NOXR for FuelCode [fuelcd], but this system is not a NOXE monitoring system.	Critical Error Level 1
E	You reported NOXE MonitoringSystemID [ID] in the HPFF record for NOXR, but the FuelCode of this system is not equal to FuelCode [fuelcd] in the associated HFF record.	Critical Error Level 1

## Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Hourly Fuel Flow

**Check Code:** HOURAE-7

**Check Name:** Retrieve Appendix E Correlation Test Results or Default Value

**Related Former Checks:**

**Applicability:** Appendix E Check

**Description:** Finds most recent successful test results for Appendix E Tests in QASupplementalData or TestSummary Records

**Specifications:**

*Maximum App E Curve NOx Emission Rate* = null

*App E NOx MER* = null

*App E Segment Total* = null

If (*App E Op Code* in set {N, W, X, Y, Z} )

if (*Current Appendix E Status* begins with "IC" or "Undetermined")

*QA Supp Attribute Count Record* = matching record in QASuppAttribute where  
 QASuppAttribute.QASuppDataId = **Prior Appendix E Record**.QASuppDataId  
 QASuppAttribute.AttributeName = "SEGMENT\_COUNT"

if (*QA Supp Attribute Count Record* is not null)

*App E Segment Total* = *QA Supp AttributeCount Record*.AttributeValue  
 Dimension *App E Correlation NOx Rate Array* with *App E Segment Total* elements  
 Dimension *App E Correlation Heat Input Array* with *App E Segment Total* elements

for (X = 1 to *App E Segment Total*)

*QA Supp Attribute Segment NOx Record* = matching record in QASuppAttribute where  
 QASuppAttribute.QASuppDataId = **Prior Appendix E Record**.QASuppDataId  
 QASuppAttribute.AttributeName = "NOX\_RATE\_X" (where X matches the loop variable)

if (*QA Supp Attribute Segment NOx Record* is not null)

if (*QA Supp Attribute Segment NOx Record*.AttributeValue > **Maximum App E Curve NOx Emission Rate**)  
*Maximum App E Curve NOx Emission Rate* = *QA Supp Attribute Segment NOx Record*.AttributeValue

*App E Correlation NOx Rate Array*[X] = *QA Supp Attribute Segment NOx Record*.AttributeValue

*QA Supp Attribute Segment HI Record* = matching record in QASuppAttribute where  
 QASuppAttribute.QASuppDataId = **Prior Appendix E Record**.QASuppDataId  
 QASuppAttribute.AttributeName = "HI\_RATE\_X" (where X matches the loop variable)

if (*QA Supp Attribute Segment HI Record* is not null)

*App E Correlation Heat Input Array*[X] = *QA Supp Attribute Segment HI Record*.AttributeValue

else if (*App E Op Code* in set {E, M, U} )

Count active MonitoringDefault record for location where  
 ParameterCode = "NORX" AND  
 DefaultPurpose = "MD" AND  
 FuelCode = *App E Fuel Code*

if (*Count* <> 1)

return result A

else

*App E NOx MER Default Record* = matching record

```
If (App E NOx MER Default Record.DefaultValue > 0
  App E NOx MER = App E NOx MER Default Record.DefaultValue
else
  return result B
```

Results:

Result	Response	Severity
A	The NOx emission rate could not be determined, because you did not report one and only one missing data default record for NORX for FuelCode [fuelcd] in your monitoring plan that was active during current hour.	Critical Error Level 1
B	The NOx emission rate could not be determined, because the DefaultValue in the NORX default record for FuelCode [fuelcd] is invalid.	Critical Error Level 1

Usage:

1	Process/Category:	Emissions Data Evaluation Report --- Hourly Configuration Evaluation
	Conditions:	App E Checks Needed Equals true
2	Process/Category:	Emissions Data Evaluation Report ----- NOx Emissions Rate Calculation Verification
	Conditions:	App E Constant Fuel Mix Equals true
3	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
	Conditions:	App E Constant Fuel Mix Equals false



**Check Code:** HOURAE-8

**Check Name:** Determine Appendix E Curve Segment

**Related Former Checks:**

**Applicability:** Appendix E Check

**Description:**

**Specifications:**

*App E Calc Segment Num* = null

if (*App E Op Code* is not null)

switch (*App E Op Code*)

case "E" or "U" or "M" or "W":

if *App E Segment Number* is not null

return result A

case "N" or "X":

If (*App E Segment Total* is not null)

if *App E Segment Number* is not null

if [*App E Segment Number* > number of elements in the *App E Correlation NOx Rate Array*]  
return result B

else if (*App E Correlation NOx Rate Array* [*App E Segment Number*] < *Maximum App E Curve NOx Emission Rate*)  
return result B

else

if (*Legacy Data Evaluation* == false)  
return result G

case "Y" OR "Z":

If (*App E Calc HI* is not null) and (*App E Segment Total* is not null)

*i* = 1

while (*i* <= *App E Segment Total* AND *App E Calc HI* > *App E Correlation Heat Input Rate Array*[*i*])  
*i* = *i* + 1

if (*i* <= *App E Segment Total* AND *App E Calc HI* <= *App E Correlation Heat Input Array*[*i*])  
*App E Calc Segment Num* = *i*

if (*App E Op Code* == "Z")

if (*App E Calc Segment Num* < 1)  
return result C

else if *App E Segment Number* is null  
if (*Legacy Data Evaluation* == false)  
return result G

else if (*App E Segment Number* < 1)  
return result D

else if *App E Segment Number* is null

if (*Legacy Data Evaluation* == false)  
return result G

```

else if (App E Calc HI == App E Correlation Heat Input Array[i])
    if (App E Segment Number <> App E Calc Segment Num AND App E Segment
        Number <> App E Calc Segment Num + 1)
        return result E
    else
        if (App E Segment Number <> App E Calc Segment Num)
            return result E
else
    return result F

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported a SegmentNumber in the HPFF or DHV record for NOXR for FuelCode [fuelcd]. This field should be blank when OperatingConditionCode is [OpCode].	Critical Error Level 1
B	You reported an OperatingConditionCode of [OpCode] in the DHV or HPFF record for NOXR for FuelCode [fuelcd], but the reported SegmentNumber does not represent the segment on the Appendix E curve with the maximum NOx emission rate.	Non-Critical Error
C	You reported an OperatingConditionCode of Z in the DHV or HPFF record for NOXR for FuelCode [fuelcd], but the calculated heat input rate is not below the lowest point on the Appendix E curve.	Critical Error Level 1
D	You reported an OperatingConditionCode of Z in the DHV or HPFF record for NOXR for FuelCode [fuelcd], but you did not report a SegmentNumber of 1.	Critical Error Level 1
E	The SegmentNumber reported in the HPFF or DHV record for NOXR for FuelCode [fuelcd] is inconsistent with the calculated heat input.	Critical Error Level 1
F	You reported an OperatingConditionCode of [OpCode] in the DHV or HPFF record for NOXR for FuelCode [fuelcd], but the calculated heat input rate is higher than the maximum heat input rate on the Appendix E curve. You should report an OperatingConditionCode of W, and use the appropriate substitute data algorithm to calculate the NOx emission rate.	Critical Error Level 1
G	You did not report a SegmentNumber in the HPFF or DHV record for NOXR for FuelCode [fuelcd].	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report --- Hourly Configuration Evaluation
	Conditions:	App E Checks Needed Equals true
2	Process/Category:	Emissions Data Evaluation Report ----- NOx Emissions Rate Calculation Verification
	Conditions:	App E Constant Fuel Mix Equals true
3	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
	Conditions:	App E Constant Fuel Mix Equals false

**Check Code:** HOURAE-9

**Check Name:** Calculate Appendix E NOx Rate

**Related Former Checks:**

**Applicability:** Appendix E Check

**Description:** For Appendix E data that was extrapolated to the piecewise linear curve under conditions where the Operating Condition Code was reported as ""Y", this check ensures that the reported value matches the calculated value based on heat input.

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

*App E Calculated NOx Rate for Source* = null

if (*App E Op Code* in set {Y, Z})

    If (*App E Calc Segment Num* is not null)

        if (*App E Calc Segment Num* == 1)

*App E Calculated NOx Rate for Source* = *App E Correlation NOx Rate Array*[1]

        else

$y2 = \text{App E Correlation NOx Rate Array}[\text{App E Calc Segment Num}]$

$x2 = \text{App E Correlation Heat Input Array}[\text{App E Calc Segment Num}]$

$y1 = \text{App E Correlation NOx Rate Array}[\text{App E Calc Segment Num} - 1]$

$x1 = \text{App E Correlation Heat Input Array}[\text{App E Calc Segment Num} - 1]$

$slope = (y2 - y1) / (x2 - x1)$

*App E Calculated NOx Rate for Source* =  $slope * (\text{App E Calc HI} - x1) + y1$ , and round the result to 3 decimal places.

    else if (*App E Op Code* in set {N, X})

*App E Calculated NOx Rate for Source* = *Maximum App E Curve NOx Emission Rate*

    else if (*App E Op Code* in set {E, M, U})

*App E Calculated NOx Rate for Source* = *App E NOx MER*

    else if (*App E Op Code* == "W" AND *Maximum App E Curve NOx Emission Rate* is not null AND *App E Reported Value* >= 0 AND *App E Reported Value* is rounded to three decimal places)

        If (*App E Reported Value* >= *Maximum App E Curve NOx Emission Rate* \* 1.25 (rounded to 3 decimal places))

*App E Calculated NOx Rate for Source* = *App E Reported Value*

    else

        Count active MonitoringDefault record for location where

            ParameterCode = "NORX" AND

            DefaultPurpose = "MD" AND

            FuelCode = *App E Fuel Code*

        if (*Count* < 1)

            return result A

        else

*NOx MER Default Record* = matching record

            If (*NOx MER Default Record.DefaultValue* > 0)

```

    If (App E Reported Value >= NOx MER Default Record.DefaultValue)
        App E Calculated NOx Rate for Source = App E Reported Value
    else
        if (App E Reporting Method == "CONSTANT" or "APPORTIONED")
            return result B
        else
            NOXR App E Accumulator = -1
            return result C
    else
        if (App E Reporting Method == "CONSTANT" or "APPORTIONED")
            return result D
        else
            NOXR App E Accumulator = -1
            return result D

if (App E Calculated NOx Rate for Source is not null)

    NOXR HPFF Tolerance = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where
        Parameter = "NOXR" AND
        UOM = "LBMMBTU"

    if (App E Reporting Method == "CONSTANT")

        if (App E Reported Value >= 0 AND ABS(App E Calculated NOx Rate for Source - App E Reported Value) > NOXR HPFF Tolerance)
            return result E

    if (App E Reporting Method == "APPORTIONED")

        Apportionment Calc NOXR Array at this Location = App E Calculated NOx Rate for Source

        if (Rpt Period NOx Rate Calculated Accumulator Array for this location is not null)
            if (Rpt Period NOx Rate Calculated Accumulator Array for this location >= 0)
                Rpt Period NOx Rate Calculated Accumulator Array for this location = Rpt Period NOx Rate Calculated Accumulator Array for this location + App E Calculated NOx Rate for Source
            else
                Rpt Period NOx Rate Calculated Accumulator Array for this location = App E Calculated NOx Rate for Source

        Rpt Period NOx Rate Hours Accumulator Array for this location = Rpt Period NOx Rate Hours Accumulator Array for this location + 1
        Set Current Measure Code to the Monitor Measure Code Array for "NOXR".

        if (App E Reported Value >= 0 AND ABS(App E Calculated NOx Rate for Source - App E Reported Value) > NOXR HPFF Tolerance)
            return result E

    else

        If Current Fuel Flow Record.FuelUsageTime > 0 AND Current Fuel Flow Record.FuelUsageTime <= 1 AND NOXR App E Accumulator >= 0 AND App E Calc HI is not null)
            NOXR App E Accumulator = NOXR App E Accumulator + (App E Calculated NOx Rate for Source * Current Fuel Flow Record.FuelUsageTime * App E Calc HI)
        else
            NOXR App E Accumulator = -1

        if (App E Reported Value >= 0 AND ABS(App E Calculated NOx Rate for Source - App E Reported Value) > NOXR HPFF Tolerance)
            return result F

```

```

else
  if (App E Reporting Method == "CONSTANT")
    return result G

  else if (App E Reporting Method == "APPORTIONED")
    Apportionment Calc NOXR Array at this Location = -1
    Rpt Period NOX Rate Calculated Accumulator Array for this location = -1
    return result G

  else if (App E Op Code is not null)
    NOXR App E Accumulator = -1
    return result H

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The NOx emission rate could not be determined, because you did not report one and only one missing data default record for NORX for FuelCode [fuelcd] in your monitoring plan that was active during current hour.	Critical Error Level 1
B	You reported an OperatingConditionCode of W in the DHV record for NOXR for FuelCode [fuelcd], but the AdjustedHourlyValue is less than the minimum allowable substitute data value according to Appendix E sec. 2.5.2.1.	Critical Error Level 1
C	You reported an OperatingConditionCode of W in the HPFF record for NOXR for FuelCode [fuelcd], but the ParameterValueForFuel is less than the minimum allowable substitute data value according to Appendix E sec. 2.5.2.1.	Critical Error Level 1
D	The NOx emission rate could not be determined, because the DefaultValue in the NORX default record for FuelCode [fuelcd] is invalid.	Critical Error Level 1
E	The AdjustedHourlyValue reported in the DHV record for [param] is inconsistent with the recalculated value.	Critical Error Level 1
F	The ParameterValueForFuel reported in the HPFF record for NOXR for FuelCode [fuelcd] is inconsistent with the value recalculated from the Appendix E curve.	Critical Error Level 1
G	The AdjustedHourlyValue in the DHV record for [param] could not be recalculated due to errors listed above.	Informational Message
H	The ParameterValueForFuel in the HPFF record for [parameter] for FuelCode [fuelcd] could not be recalculated due to errors listed above.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report --- Hourly Configuration Evaluation
	Conditions:	App E Checks Needed Equals true
2	Process/Category:	Emissions Data Evaluation Report ----- NOx Emissions Rate Calculation Verification
	Conditions:	App E Constant Fuel Mix Equals true
3	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
	Conditions:	App E Constant Fuel Mix Equals false

**Check Code:** HOURAE-13

**Check Name:** Check Reported NOx Emission Rate

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

If (*Current App E NOXR Record* is not null)

    If (*Current App E NOXR Record*.ParamValFuel is null or is less than 0

        return result A

    else if (*Current App E NOXR Record*.ParamValFuel is not rounded to three decimal places)

        return result B

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The ParameterValueforFuel reported in the HPFF record for NOXR for FuelCode [fuelcd] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
B	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAE-14

**Check Name:** Check NOXR Units Of Measure

**Related Former Checks:**

**Applicability:** Appendix D Check

**Description:**

**Specifications:**

If (*Current App E NOXR Record* is not null)

    If (*Current App E NOXR Record*.ParameterUOMCode <> "LBMMBTU")

        return result A

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The ParameterUOMCode reported in the HPFF record for NOXR for FuelCode [fuelcd] is missing or invalid. The value should be "LBMMBTU".	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Code:** HOURAE-15

**Check Name:** Determine Appendix E Measure Code

**Related Former Checks:**

**Applicability:** Appendix E Check

**Description:**

**Specifications:**

if (*App E Op Code* is not null)

    If (*App E Op Code* = "E" or *Monitor Measure Code Array* for "NOXR" == "OTHER")

        set *Monitor Measure Code Array* for "NOXR" to "OTHER"

    else if (*App E Op Code* in set {M, U, N})

        if (*Monitor Measure Code Array* for "NOXR" begins with "MEAS")

            set *Monitor Measure Code Array* for "NOXR" to "MEASSUB"

        else

            set *Monitor Measure Code Array* for "NOXR" to "SUB"

    else if (*App E Op Code* in set {W, X, Y, Z})

        if (*Monitor Measure Code Array* for "NOXR" contains "SUB")

            set *Monitor Measure Code Array* for "NOXR" to "MEASSUB"

        else

            set *Monitor Measure Code Array* for "NOXR" to "MEASURE"

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report --- Hourly Configuration Evaluation
	Conditions:	App E Checks Needed Equals true
2	Process/Category:	Emissions Data Evaluation Report ----- NOx Emissions Rate Calculation Verification
	Conditions:	App E Constant Fuel Mix Equals true
3	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
	Conditions:	App E Constant Fuel Mix Equals false



**Check Code:** HOURAE-16

**Check Name:** Update System Supplemental Data for Appendix E NOXE Hourly Param Fuel Flow System

**Related Former Checks:**

**Applicability:** Appendix E Check

**Description:**

**Specifications:**

If *DerivedHourlyChecksNeeded* is true AND *CurrentOperatingTime* is greater than 0,

If *CurrentAppENoxrRecord*.MonitoringSystemID is not null,

Set *SupplementalDataDictionary* to the dictionary at *CurrentMonitorPlanLocationPosition* in *SystemOperatingSuppDataDictionaryArray*.

If *SupplementalDataDictionary* contains key *CurrentAppENoxrRecord*.MonitoringSystemID,

Set *SupplementalDataRecord* in *SupplementalDataDictionary* value where key is equal to *CurrentAppENoxrRecord*.MonitoringSystemID.

Else

Create a new *SupplementalDataRecord* with MonitoringSystemID equal to *CurrentAppENoxrRecord*.MonitoringSystemID, and OpDays, OpHours, OsDays and OsHours equal to 0..  
Add *SupplementalDataRecord* to *SupplementalDataDictionary* with a key of *CurrentAppENoxrRecord*.MonitoringSystemID.

Increment *SupplementalDataRecord*.QuarterlyOperatingCounts.OpDays by 1 when:

1) An increment has not already occurred for the date of *CurrentOperatingDatehour*.

Increment *SupplementalDataRecord*.QuarterlyOperatingCounts..OpHours by 1 when:

1) An increment has not already occurred for *CurrentOperatingDatehour*.

Increment *SupplementalDataRecord*.MayAndJuneOperatingCounts.OpDays by 1 when:

1) An increment has not already occurred for the date of *CurrentOperatingDatehour*.  
2) The month of *CurrentOperatingDatehour* is in May, June, July, August or September.

Increment *SupplementalDataRecord*.MayAndJuneOperatingCounts..OpHours by 1 when:

1) An increment has not already occurred for *CurrentOperatingDatehour*.  
2) The month of *CurrentOperatingDatehour* is in May, June, July, August or September.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Hourly Fuel Flow
---	-------------------	---

**Check Category:**

**Hourly Apportionment**

**Check Code:** HOURAPP-1

**Check Name:** Determine Monitoring Plan Configuration

**Related Former Checks:** HOUROP-28

**Applicability:** CEM Check

**Description:** Determines whether the current MP is a Common Stack, Multistack, or simple Unit

**Specifications:**

*MP Stack Config for Hourly Checks* = null  
*MP Pipe Config for Hourly Checks* = null  
*MP Load UOM* = null  
*MP Unit Load* = null  
*Stack OpTime Accumulator* = 0  
*Stack LoadTimesOpTime Accumulator* = 0  
*Stack HeatInputTimesOpTime Accumulator* = 0  
*Pipe LoadTimesOpTime Accumulator* = 0  
*Config HeatInputTimesOpTime Accumulator* = 0  
*Config NOxRateTimesHeatInput Accumulator* = 0  
*Config NOxRateTimesOpTime Accumulator* = 0  
*Config OpTime Accumulator* = 0  
*Config HeatInput Accumulator* = 0  
*Max Stack OpTime* = 0  
*Unit OpTime Accumulator* = 0  
*Unit LoadTimesOpTime Accumulator* = 0  
*Unit HeatInputTimesOpTime Accumulator* = 0  
*Max Unit OpTime* = 0  
*CP Fuel Count* = 0  
*Current Month* = month from *Current Date*  
*App E Reporting Method* = null  
*App E Op Code* = null  
*App E Segment Number* = null  
*App E Reported Value* = null  
*App E Fuel Code* = null  
*App E Calc HI* = null  
*App E NOXE System ID* = null  
*App E NOXE System Identifier* = null  
*CurrentAppendixEStatus* = null  
*EarliestLocationReportDate* = null  
*Current Measure Code* = null  
*MATS MS1 Hg DHV ID* = null  
*MATS MS1 HCL DHV ID* = null  
*MATS MS1 HF DHV ID* = null  
*MATS MS1 SO2 DHV ID* = null  
*MATS Parameter Plugin Hg* = null  
*MATS Parameter Plugin HCL* = null  
*MATS Parameter Plugin HF* = null  
*MATS Parameter Plugin SO2* = null  
*MATS MS1 Hg Unadjusted Hourly Value* = null  
*MATS MS1 HCL Unadjusted Hourly Value* = null  
*MATS MS1 HF Unadjusted Hourly Value* = null  
*MATS MS1 SO2 Unadjusted Hourly Value* = null  
Set *Monitor Measure Code Array* to null for each parameter.

For each array below, initialize each array with *Current Location Count* entries and the values as described

*Apportionment OpTime Array* - set each element in array to 0.0  
*Apportionment Load Array* - set each element in array to 0  
*Apportionment Calc HI Array* - set each element in array to 0.0

*Apportionment Calc NOXR Array* - set each element in array to 0.0  
*Apportionment HI Method Array* - set each element in array to null  
*Apportionment NOX Method Array* - set each element in array to null  
*Apportionment HI Measure Code Array* - set each element in array to null  
*Apportionment NOXR Measure Code Array* - set each element in array to null  
*Apportionment Stack Unit List* - set each element in array to null  
*Apportionment NOXR Method Array* - set each element in array to null  
*Apportionment Stack Flow Array* - set each element in array to null  
*Apportionment MATS Load Array* - set each element in array to null  
*Apportionment Hg Rate Array* - set each element in array to null  
*Apportionment HCL Rate Array* - set each element in array to null  
*Apportionment HF Rate Array* - set each element in array to null  
*Apportionment SO2 Rate Array* - set each element in array to null  
*MATS MS1 Hg MODC Code Array* - set each element in array to null  
*MATS MS1 HCL MODC Code Array* - set each element in array to null  
*MATS MS1 HF MODC Code Array* - set each element in array to null  
*MATS MS1 SO2 MODC Code Array* - set each element in array to null

If *Current Location Count* > 1

Find *List* of MonitorLocationIds in **MonitorPlanLocation** Table that match Current Monitoring Plan Id

For each MonitorLocationId in list, lookup record in **MonitorLocation** table  
     if StackPipeId is not null, add StackPipeId to *StackPipe list*  
     if UnitId is not null, add UnitId to *Unit list*

*MS Count* = 0  
*MP Count* = 0  
*CS Count* = 0  
*CP Count* = 0  
*Unit Count* = 0  
*CS Unit Count* = 0  
*CP Unit Count* = 0  
*Unit MS Count* = 0

For each MonitorLocationId in list, lookup record in **MonitorLocation** table

    if *MonitorLocation.StackPipeID* is not null,

        set *Stack Unit Count* to 0

        for each **UnitStackConfiguration** record where

            BeginDate <= **Current Date** AND EndDate >= **Current Date** AND  
     StackPipeId = *MonitorLocation.StackPipeId*

            add 1 to *Stack Unit Count*

            append MonitorLocationID of the unit to **Apportionment Stack Unit List** for the stack location

        if (*StackPipeUnit Count* > 0)

            if (*MonitorLocation.StackPipeName* begins with "MS")  
         add 1 to *MS Count*

        else if (*MonitorLocation.StackPipeName* begins with "MP")  
         add 1 to *MP Count*

        else if (*MonitorLocation.StackPipeName* begins with "CS")  
         add 1 to *CS Count*

```

    if (CS Count == 1)
        CS Unit Count = Stack Unit Count

    else if (MonitorLocation.StackPipeName begins with "CP")
        add 1 to CP Count

        if (CP Count == 1)
            CP Unit Count = Stack Unit Count

    else if UnitId is not null
        add 1 to Unit Count

        if (Unit Count == 1)
            Unit MS Count = number of UnitStackConfiguration records where
                UnitStackConfiguration.BeginDate <= Current Date AND
                UnitStackConfiguration.EndDate >= Current Date AND
                UnitStackConfiguration.UnitID = MonitorLocation.UnitId
                UnitStackConfiguration.StackPipeName begins with "MS"

    if (MS Count > 1 AND CS Count == 0 AND Unit Count == 1 AND MS Count == Unit MS Count)
        MP Stack Config for Hourly Checks = "MS"
        Multiple Stack Configuration = true
    else if (CS Count == 1 AND MS Count == 0 AND Unit Count > 1 AND Unit Count == CS Unit Count)
        MP Stack Config for Hourly Checks = "CS"
    else if (CS Count == 1 AND MS Count > 0)
        MP Stack Config for Hourly Checks = "CSMS"
    else if (CS Count + MS Count > 0)
        MP Stack Config for Hourly Checks = "COMPLEX"

    If (CP Count == 1 AND MP Count == 0 AND Unit Count > 1 AND Unit Count == CP Unit Count)
        MP Pipe Config for Hourly Checks = "CP"
    else if (CP Count + MP Count > 0)
        MP Pipe Config for Hourly Checks = "MULTIPLE"
```

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

Usage:

1	Process/Category:	Emissions Data Evaluation Report --- Hourly Configuration Initialization
---	-------------------	--

**Check Code:** HOURAPP-2

**Check Name:** Pre-Validate Heat Input Calculation

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Specifications:**

*Calculate Apportioned HI* = false

*Calculate NOXM From Apportioned HI* = false

if *Current Monitor Plan Location Record*.StackPipeID is not null

    If the StackPipeID of the monitoring location begins with "CS",  
        set *Current HI Entity Type* = "CS"

    If the StackPipeID of the monitoring location begins with "CP",  
        set *Current HI Entity Type* = "CP"

    If the StackPipeID of the monitoring location begins with "MS",  
        set *Current HI Entity Type* = "MS"

    If the StackPipeID of the monitoring location begins with "MP",  
        set *Current HI Entity Type* = "MP"

else if the UnitID of the monitoring location is not null  
    set *Current HI Entity Type* = "Unit"

If (*Apportionment HI Method Array* for the location contains "CALC") OR (*Apportionment HI Method Array* for the location == "COMPLEX")

    If (*MP Pipe Config for Hourly Checks* == "CP" AND *CP Fuel Count* > 1)  
        *Apportionment HI Method Array* for the location == "NOCALC"

    If (*Apportionment OpTime Array* for the location > 0 AND *Apportionment OpTime Array* for the location <= 1)

        // F-25

        If (*MP Stack Config for Hourly Checks* == "CS" AND *Current HI Entity Type* = "CS")

            if (*Apportionment NOX Method Array* == "NOXR")  
                *Calculate NOXM From Apportioned HI* = true

        If *Apportionment OpTime Array* for the location < *Max Unit OpTime*  
            return result A

        else if *Apportionment OpTime Array* for the location > *Unit OpTime Accumulator* + (the number of units in the monitoring plan \* .005)  
            return result B

        else

            If (*Config HeatInputTimesOpTime Accumulator* > 0)  
                *Calculate Apportioned HI* = true

            if (*MP Load UOM* <> "INVALID" AND *Stack LoadTimesOpTime Accumulator* > 0 AND *Unit LoadTimesOpTime Accumulator* > 0 AND abs(*Stack LoadTimesOpTime Accumulator* - *Unit LoadTimesOpTime Accumulator*) >= number of items in the *Apportionment OpTime Array*)  
                return result C

        // F-21A/B

        else if ((*MP Stack Config for Hourly Checks* == "CS" OR *MP Pipe Config for Hourly Checks* == "CP") AND *Apportionment HI Method Array* for the location not in set {NOCALC, COMPLEX})

```

    if (Apportionment NOX Method Array == "NOXR")
        Calculate NOXM From Apportioned HI = true

    If Max Stack OpTime < Max Unit OpTime AND MP Pipe Config for Hourly Checks is null
        return result A
    else if Max Stack OpTime > Unit OpTime Accumulator + (the number of units in the monitoring plan * .005)
        AND MP Pipe Config for Hourly Checks is null
        return result B
    else if MP Load UOM <> "INVALID"

        if ((MP Pipe Config for Hourly Checks <> "CP" AND MP Stack Config for Hourly Checks == "CS"
            AND Stack LoadTimesOpTime Accumulator > 0 AND Unit LoadTimesOpTime Accumulator > 0 AND
            (Stack LoadTimesOpTime Accumulator - Unit LoadTimesOpTime Accumulator) > number of items in
            the Apportionment OpTime Array)
            return result C

        else if (Config HeatInputTimesOpTime Accumulator >= 0 AND Apportionment Load Array for this
            Location >= 0 AND Unit LoadTimesOpTime Accumulator >= 0 AND Apportionment Calc HI Array for
            this Location >= 0)
            Calculate Apportioned HI = true
            If (Unit LoadTimesOpTime Accumulator == 0)
                Apportionment HI Method Array for the location == "NOCALC"

// Cannot apportionment but will validate total configuration
else if ((MP Stack Config for Hourly Checks begins with "CS" OR MP Pipe Config for Hourly Checks == "CP" OR MP
Pipe Config for Hourly Checks == "MULTIPLE") AND Apportionment HI Method Array for the location <>
"COMPLEX")

    if (Apportionment NOX Method Array == "NOXR")
        Calculate NOXM From Apportioned HI = true

    If Max Stack OpTime > Unit OpTime Accumulator + (the number of units in the monitoring plan * .005) AND
    MP Pipe Config for Hourly Checks is null
        return result B
    else if (Config HeatInputTimesOpTime Accumulator > 0 and Unit HeatInputTimesOpTime Accumulator == 0)
        OR (Config HeatInputTimesOpTime Accumulator == 0 AND Unit HeatInputTimesOpTime Accumulator > 0)
        return result G
    else if (Config HeatInputTimesOpTime Accumulator >= 0 AND Unit HeatInputTimesOpTime Accumulator >=
        0)
        Calculate Apportioned HI = true

// COMPLEX
else if (MP Stack Config for Hourly Checks == "COMPLEX" OR Apportionment HI Method Array for the location ==
"COMPLEX")
    if (Apportionment NOX Method Array == "NOXR")
        Calculate NOXM From Apportioned HI = true

    if (Config HeatInputTimesOpTime Accumulator > 0 and Unit HeatInputTimesOpTime Accumulator == 0) OR
    (Config HeatInputTimesOpTime Accumulator == 0 AND Unit HeatInputTimesOpTime Accumulator > 0)
        return result G

    else if (Config HeatInputTimesOpTime Accumulator >= 0 AND Unit HeatInputTimesOpTime Accumulator >=
        0)
        Calculate Apportioned HI = true

// F-21C

```

```

else if (MP Stack Config for Hourly Checks == "MS")
    if (Apportionment NOX Method Array == "NOXR")
        Calculate NOXM From Apportioned HI = true

    if (Config HeatInputTimesOpTime Accumulator >= 0)
        Calculate Apportioned HI = true

    If Apportionment OpTime Array for the location < Max Stack OpTime
        return result D
    else if Apportionment OpTime Array for the location > Stack OpTime Accumulator
        return result E

```

```

else if (Current Entity Type <> "Unit" AND Apportionment OpTime Array for the location > 0 AND the sum of Apportionment OpTime Array for all units in the Apportionment Stack Unit List for the location == 0)
    if (Current Entity Type starts with "C")
        return result B
    else
        return result D

else if (Current Entity Type == "MS" AND MP Load UOM <> "INVALID" and MP Unit Load > 0 AND Apportionment Load Array for the location > 0)
    if (MP Unit Load <> Apportionment Load Array for the location)
        return result F

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The OperatingTime reported at the common stack/pipe is less than the OperatingTime reported for one or more units linked to the stack/pipe.	Critical Error Level 1
B	The OperatingTime reported for one (or more) stacks/pipes is greater than the sum of the operating times reported for the units for the hour.	Critical Error Level 1
C	The HourLoad reported at the common stack/pipe is inconsistent with the load and operating time values reported at the units linked to the stack/pipe.	Critical Error Level 1
D	The OperatingTime reported for the unit is less than the OperatingTime reported for one or more multiple stacks linked to the unit.	Critical Error Level 1
E	The OperatingTime reported for the unit is greater than the sum of operating times at the multiple stacks linked to the unit.	Critical Error Level 1
F	The HourLoad in the Hourly Operating record for all multiple stacks linked to this unit are not equal.	Critical Error Level 1
G	The Heat Input Rate and Operating Time reported for the unit is inconsistent with the Heat Input Rates and Operating Times for the configuration.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report --- Hourly Configuration Evaluation



**Check Code:** HOURAPP-3  
**Check Name:** Calculate Apportioned or Summed Heat Input Rate  
**Related Former Checks:** HOUROP-29  
**Applicability:** CEM Check

**Description:****Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

*Current HI Apportionment Record* = null  
*HI Calculated Apportioned Value* = null  
*App E Checks Needed* = false

If (*Apportionment HI Method Array* for the location contains "CALC" OR *Apportionment HI Method Array* for the location equals "COMPLEX")

If (*Calculate Apportioned HI* = true)

Count active DerivedHourlyValueData records for location  
WHERE ParameterCode = "HI"

If (*Count* == 1)

*Current HI Apportionment Record* = matching record

*Heat Input Tolerance* = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
Parameter = "HI" AND  
UOM = "MMBTUHR"

else

*Calculate Apportioned HI* = false

// F-25

If (*MP Stack Config for Hourly Checks* == "CS" AND *Current HI Entity Type* = "CS")

If (*Calculate Apportioned HI* == true)

*HI Calculated Apportioned Value* = *Config HeatInputTimesOpTime Accumulator* / *Apportionment OpTime Array* for this Location, rounded to one decimal place.

if (*Current Month* is not April OR *Annual Reporting Requirement* == true)

If (*Rpt Period HI Calculated Accumulator* for this location >= 0)

*Rpt Period HI Calculated Accumulator* for this location = *Rpt Period HI Calculated Accumulator* for this location + (*HI Calculated Apportioned Value* \* *Apportionment OpTime Array* for this Location)

if (*Current Month* is April)

*April HI Calculated Accumulator* for this location = *April HI Calculated Accumulator* for this location + (*HI Calculated Apportioned Value* \* *Apportionment OpTime Array* for this Location)

if ( *OS Reporting Requirement* is true ) AND ( *Current Month* is May, June, July, August or September ) AND ( *Current Operating Date* is on or after *OS Reporting Period Begin Date* )

*OS HIT Calculated Accumulator Array* for this location = *OS HIT Calculated Accumulator Array* for this location + ( *HI Calculated Apportioned Value* \* *Apportionment OpTime Array* for this Location )

if (*Current HI Apportionment Record*.AdjustedHourlyValue >= 0 AND ABS(*Current HI Apportionment Record*.AdjustedHourlyValue - *HI Calculated Apportioned Value*) > *Heat Input Tolerance*)

return result A

else if (*Apportionment OpTime Array* for the location  $\leq 0$ )  
 if (*Current Month* is not April OR *Annual Reporting Requirement* == true)  
   *Rpt Period HI Calculated Accumulator* for this location = -1  
 return result B

// other complex situations

else if (*Current HI Entity Type*  $\leq$  "Unit")

If (*Calculate Apportioned HI* == true AND *Current HI Apportionment Record*.AdjustedHourlyValue  $\geq 0$ )

*HI Calculated Apportioned Value* = *Current HI Apportionment Record*.AdjustedHourlyValue

if (*Current Month* is not April OR *Annual Reporting Requirement* == true)  
 If (*Rpt Period HI Calculated Accumulator* for this location  $\geq 0$ )  
   *Rpt Period HI Calculated Accumulator* for this location = *Rpt Period HI Calculated Accumulator* for this location + (*HI Calculated Apportioned Value* \* *Apportionment OpTime Array* for this Location)  
  
 if (*Current Month* is April)  
   *April HI Calculated Accumulator* for this location = *April HI Calculated Accumulator* for this location + (*HI Calculated Apportioned Value* \* *Apportionment OpTime Array* for this Location)  
  
 if ( *OS Reporting Requirement* is true ) AND ( *Current Month* is May, June, July, August or September ) AND ( *Current Operating Date* is on or after *OS Reporting Period Begin Date* )

*OS HIT Calculated Accumulator Array* for this location = *OS HIT Calculated Accumulator Array* for this location + ( *HI Calculated Apportioned Value* \* *Apportionment OpTime Array* for this Location )

else if (*Apportionment OpTime Array* for the location  $\leq 0$ )  
 if (*Current Month* is not April OR *Annual Reporting Requirement* == true)  
   *Rpt Period HI Calculated Accumulator* for this location = -1  
 return result B

// F-21A/B

else if ((*MP Stack Config for Hourly Checks* == "CS" OR *MP Pipe Config for Hourly Checks* == "CP") AND (*Apportionment HI Method Array* for the location not in set {NOCALC, COMPLEX}))

If (*Apportionment NOXR Method Array* for the location = "AE")  
   *App E Checks Needed* = true

If (*Calculate Apportioned HI* == true)

if (*Unit LoadTimesOpTime Accumulator*  $> 0$  OR *Current HI Apportionment Record*.AdjustedHourlyValue  $\geq 0$ )

if (*Unit LoadTimesOpTime Accumulator*  $> 0$ )

*HI Calculated Apportioned Value* = (*Config HeatInputTimesOpTime Accumulator* \* *Apportionment OpTime Array* for this Location \* *Apportionment Load Array* for this Location / *Unit LoadTimesOpTime Accumulator* ) / *Apportionment OpTime Array* for this Location), rounded to one decimal place.

else

*HI Calculated Apportioned Value* = *Current HI Apportionment Record*.AdjustedHourlyValue

***HI Calculated Apportioned Value = HI Calculated Apportioned Value + Apportionment Calc HI Array***  
for this Location

if (***Current Month*** is not April OR ***Annual Reporting Requirement*** == true)

  If (***Rpt Period HI Calculated Accumulator*** for this location >= 0)

***Rpt Period HI Calculated Accumulator*** for this location = ***Rpt Period HI Calculated Accumulator*** for this location + (***HI Calculated Apportioned Value*** \* ***Apportionment OpTime Array*** for this Location)

  if (***Current Month*** is April)

***April HI Calculated Accumulator*** for this location = ***April HI Calculated Accumulator*** for this location + (***HI Calculated Apportioned Value*** \* ***Apportionment OpTime Array*** for this Location)

if ( ***OS Reporting Requirement*** is true ) AND ( ***Current Month*** is May, June, July, August or September )  
AND ( ***Current Operating Date*** is on or after ***OS Reporting Period Begin Date*** )

***OS HIT Calculated Accumulator Array*** for this location = ***OS HIT Calculated Accumulator Array*** for this location + ( ***HI Calculated Apportioned Value*** \* ***Apportionment OpTime Array*** for this Location )

if ( ***Current HI Apportionment Record***.AdjustedHourlyValue >= 0 AND ABS(***Current HI Apportionment Record***.AdjustedHourlyValue - ***HI Calculated Apportioned Value***) > ***Heat Input Tolerance***)

  return result A

else if (***Apportionment OpTime Array*** for the location < 0)

  if (***Current Month*** is not April OR ***Annual Reporting Requirement*** == true)

***Rpt Period HI Calculated Accumulator*** for this location = -1

  return result B

else if (***Apportionment OpTime Array*** for the location < 0)

  if (***Current Month*** is not April OR ***Annual Reporting Requirement*** == true)

***Rpt Period HI Calculated Accumulator*** for this location = -1

  return result B

// Cannot apportion or Complex configuration

else if (***MP Stack Config for Hourly Checks*** begins with "CS" OR ***MP Stack Config for Hourly Checks*** == "COMPLEX" OR ***MP Pipe Config for Hourly Checks*** in set {CP, MULTIPLE})

  If (***Apportionment NOXR Method Array*** for the location = "AE")

***App E Checks Needed*** = true

  If (***Calculate Apportioned HI*** == true)

    If (ABS(***Config HeatInputTimesOpTime Accumulator*** - ***Unit HeatInputTimesOpTime Accumulator***) <= ***Heat Input Tolerance*** OR ***Apportionment HI Method Array*** for the location == "COMPLEX" OR (***MP Stack Config for Hourly Checks*** == "COMPLEX" and ***MP Pipe Config for Hourly Checks*** is null))

***HI Calculated Apportioned Value*** = ***Current HI Apportionment Record***.AdjustedHourlyValue

    if (***Current Month*** is not April OR ***Annual Reporting Requirement*** == true)

      If (***Rpt Period HI Calculated Accumulator*** for this location >= 0)

***Rpt Period HI Calculated Accumulator*** for this location = ***Rpt Period HI Calculated Accumulator*** for this location + (***HI Calculated Apportioned Value*** \* ***Apportionment OpTime Array*** for this Location)

```

        if ( Current Month is April)
            April HI Calculated Accumulator for this location = April HI Calculated Accumulator
            for this location + ( HI Calculated Apportioned Value * Apportionment OpTime Array
            for this Location)

        if ( OS Reporting Requirement is true ) AND ( Current Month is May, June, July, August or September )
        AND ( Current Operating Date is on or after OS Reporting Period Begin Date )

            OS HIT Calculated Accumulator Array for this location = OS HIT Calculated Accumulator
            Array for this location + ( HI Calculated Apportioned Value * Apportionment OpTime Array for
            this Location )

        else
            if ( Current Month is not April OR Annual Reporting Requirement == true)
                Rpt Period HI Calculated Accumulator for this location = -1
            return result C

    else if ( Apportionment OpTime Array for the location < 0)
        if ( Current Month is not April OR Annual Reporting Requirement == true)
            Rpt Period HI Calculated Accumulator for this location = -1

        Count active DerivedHourlyValueData records for location
        WHERE ParameterCode = "HI"

        If ( Count == 1)
            Current HI Apportionment Record = matching record
            if ( Current HI Apportionment Record.AdjustedHourlyValue > 0 AND Config HeatInputTimesOpTime
            Accumulator == 0)
                return result D
            else
                return result B
        else
            return result B

// F-21C
else if ( MP Stack Config for Hourly Checks == "MS")

    If ( Calculate Apportioned HI == true)

        HI Calculated Apportioned Value = Config HeatInputTimesOpTime Accumulator / Unit OpTime Accumulator,
        rounded to one decimal place.

        if ( Current Month is not April OR Annual Reporting Requirement == true)
            If ( Rpt Period HI Calculated Accumulator for this location >= 0)
                Rpt Period HI Calculated Accumulator for this location = Rpt Period HI Calculated
                Accumulator for this location + ( HI Calculated Apportioned Value * Unit OpTime Accumulator )

            if ( Current Month is April)
                April HI Calculated Accumulator for this location = April HI Calculated Accumulator for this
                location + ( HI Calculated Apportioned Value * Apportionment OpTime Array for this Location)

            if ( OS Reporting Requirement is true ) AND ( Current Month is May, June, July, August or September ) AND (
            Current Operating Date is on or after OS Reporting Period Begin Date )

                OS HIT Calculated Accumulator Array for this location = OS HIT Calculated Accumulator Array for
                this location + ( HI Calculated Apportioned Value * Apportionment OpTime Array for this Location )

            if ( Current HI Apportionment Record.AdjustedHourlyValue >= 0 AND ABS(Current HI Apportionment
            Record.AdjustedHourlyValue - HI Calculated Apportioned Value) > Heat Input Tolerance)

```

return result A

else if (*Apportionment OpTime Array* for the location  $\diamond$  0)  
if (*Current Month* is not April OR *Annual Reporting Requirement* == true)  
    *Rpt Period HI Calculated Accumulator* for this location = -1  
return result B

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The AdjustedHourlyValue reported in the DHV record for HI is inconsistent with the recalculated apportioned or summed value.	Critical Error Level 1
B	The AdjustedHourlyValue in the DHV record for [param] could not be recalculated due to other errors listed in this report.	Informational Message
C	The heat input calculated for the configuration is inconsistent with the sum of the reported heat input at the units in this configuration.	Critical Error Level 1
D	You reported heat input at the unit, but there was no heat input at any of the locations where heat input was measured.	Critical Error Level 1

Usage:

1	Process/Category:	Emissions Data Evaluation Report --- Hourly Configuration Evaluation
---	-------------------	--

**Check Code:** HOURAPP-4

**Check Name:** Calculate NOx Mass Rate from Apportioned or Summed Heat Input Rate

**Related Former Checks:**

**Applicability:** CEM Check

**Description:**

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

*Current NOX Apportionment Based Record* = null  
*NOX Calculated Apportionment Based Value* = null

If (*Calculate NOXM From Apportioned HI* == true)

If (*HI Calculated Apportioned Value* is not null AND *Apportionment Calc NOXR Array* for this location >= 0)

Count active DerivedHourlyValueData records for location and hour  
 WHERE ParameterCode = "NOX"

If (*Count* == 1)

*Current NOX Apportionment Based Record* = matching record

*NOX Tolerance* = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
 Parameter = "NOX" AND  
 UOM = "LBHR"

*NOX Calculated Apportionment Based Value* = *HI Calculated Apportioned Value* \* *Apportionment Calc NOXR Array*, rounded to one decimal place.

if (*Current Month* is not April OR *Annual Reporting Requirement* == true

if (*Apportionment OpTime Array* for this location is between 0 and 1 (inclusive))

If (*Rpt Period NOX Mass Calculated Accumulator* for this location) >= 0)

*Rpt Period NOX Mass Calculated Accumulator* for this location = *Rpt Period NOX Mass Calculated Accumulator* for this location + (*NOX Calculated Apportionment Based Value* \* *Apportionment OpTime Array* for this location)

if (*Current Month* is April)

*April NOX Mass Calculated Accumulator* for this location = *April NOX Mass Calculated Accumulator* for this location + (*NOX Calculated Apportionment Based Value* \* *Apportionment OpTime Array* for this location)

else

*Rpt Period NOX Mass Calculated Accumulator* for this location = -1

if ( *OS Reporting Requirement* is true ) AND ( *Current Month* is May, June, July, August or September ) AND ( *Current Operating Date* is on or after *OS Reporting Period Begin Date* )

*OS NOXM Calculated Accumulator Array* for this location = *OS NOXM Calculated Accumulator Array* for this location + ( *NOX Calculated Apportionment Based Value* \* *Apportionment OpTime Array* for this Location )

if ( *Current NOX Apportionment Record*.AdjustedHourlyValue >= 0)

If (ABS(*Current HI Apportionment Record*.AdjustedHourlyValue - *NOX Calculated Apportionment*

***Based Value***) > ***NOX Tolerance***)

If (***Legacy Data Evaluation*** == false)

return result A

else if (***Apportionment OpTime Array*** for this Location is greater than 0 and less than or equal to 1)

If (ABS(***Current HI Apportionment Record***.AdjustedHourlyValue - ***NOX Calculated Apportionment Based Value***) > ***NOX Tolerance*** / ***Apportionment OpTime Array*** for this Location)

return result A

else

if (***Current Month*** is not April OR ***Annual Reporting Requirement*** == true)

***Rpt Period NOX Mass Calculated Accumulator*** for this location = -1

return result B

else

if (***Current Month*** is not April OR ***Annual Reporting Requirement*** == true)

***Rpt Period NOX Mass Calculated Accumulator*** for this location = -1

return result B

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The AdjustedHourlyValue reported in the DHV record for [param] is inconsistent with the recalculated value.	Critical Error Level 1
B	The AdjustedHourlyValue in the DHV record for [param] could not be recalculated due to other errors listed in this report.	Informational Message

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report --- Hourly Configuration Evaluation
---	-------------------	--

**Check Code:** HOURAPP-5

**Check Name:** Sum Weighted NOx Emission Rate from Multiple Stacks

**Related Former Checks:**

**Applicability:** CEM Check

**Description:**

**Specifications:**

If (*MP Stack Config for Hourly Checks* == "MS" AND *Current HI Entity Type* == "Unit")

If (*Config NOxRateTimesHeatInput Accumulator* < 0 OR *Config NOxRateTimesOpTime Accumulator* < 0)

*Expected Summary Value NOx Rate Array* for this location = true

If (*Config NOxRateTimesHeatInput Accumulator* > 0 AND *Config HeatInput Accumulator* > 0 AND *Rpt Period NOX Rate Calculated Accumulator Array* for this location >= 0)

*Rpt Period NOX Rate Calculated Accumulator Array* for this location = *Rpt Period NOX Rate Calculated Accumulator* for this location + (*Config NOxRateTimesHeatInput Accumulator* / *Config HeatInput Accumulator*, rounded to 3 decimal places.)

*Rpt Period NOX Rate Hours Accumulator Array* for this location = *Rpt Period NOX Rate Hours Accumulator* for this location + 1

else if (*Config NOxRateTimesOpTime Accumulator* > 0 AND *Config OpTime Accumulator* > 0 AND *Rpt Period NOX Rate Calculated Accumulator Array* for this location >= 0)

*Rpt Period NOX Rate Calculated Accumulator Array* for this location = *Rpt Period NOX Rate Calculated Accumulator* for this location + (*Config NOxRateTimesOpTime Accumulator* / *Config OpTime Accumulator*, rounded to 3 decimal places.)

*Rpt Period NOX Rate Hours Accumulator Array* for this location = *Rpt Period NOX Rate Hours Accumulator* for this location + 1

else

*Rpt Period NOX Rate Calculated Accumulator Array* for this location = -1

## Results:

Result

Response

Severity

## Usage:

1 Process/Category: Emissions Data Evaluation Report --- Hourly Configuration Evaluation



**Check Code:** HOURAPP-6

**Check Name:** Initialize Variable for Calculating Appendix E NOx Rate via Apportionment

**Related Former Checks:**

**Applicability:** Appendix E Check

**Description:**

**Specifications:**

If (*App E Checks Needed* == true)

*App E Op Code* = null

*App E Reporting Method* = "APPORTIONED"

Count active DerivedHourlyValueData records for location and hour

WHERE ParameterCode = "NOX"

If (*Count* == 1)

*Current NOXR Apportionment Based Record* = matching record

if (*Current NOXR Apportionment Based Record*.MonitoringSystemID is not null)

*Mon Sys Record* = find active MonitoringSystemData record for location where

MonitoringSystemData.MonitoringSystemID = *Current NOXR Apportionment Based*

*Record*.MonitoringSystemID

if (found AND *Mon Sys Record*.SystemTypeCode == "NOXE" AND *Mon Sys Record*.FuelTypeCode is not null)

if (*Current NOXR Apportionment Based Record*.OperatingConditionCode in set {X, Y, Z, U, W, N, M})

*App E Op Code* = *Current NOXR Apportionment Based Record*.OperatingConditionCode

*App E Calc HI = HI Calculated Apportioned Value*

*App E Reported Value* = *Current NOXR Apportionment Based Record*.AdjustedHourlyValue

*App E Segment Number* = *Current NOXR Apportionment Based Record*.SegmentNumber

*App E NOXE System ID* = *Current NOXR Apportionment Based Record*.MonitoringSystemID

*App E NOXE System Identifier* = *Current NOXR Apportionment Based*

*Record*.SystemIdentifier

*App E Fuel Code* = *Mon Sys Record*.Fuel Type Code

*EarliestLocationReportDate* = *CurrentMonitorPlanLocationRecord*.EarliestReportDate

else if (*Current NOXR Apportionment Based Record*.OperatingConditionCode == "E")

return result A

else

return result B

else

return result C

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an OperatingConditionCode of E in the DHV record for NOXR. You should report the NOx emission rate for emergency fuels in an HPFF record, not a DHV record.	Critical Error Level 1
B	The OperatingConditionCode reported in the DHV record for NOXR is missing or invalid.	Critical Error Level 1
C	According to your monitoring plan, your reported that you are determining NOx emission rate using the Appendix E methodology, but you did not report a MonitoringSystemID in this record. You should report the MonitoringSystemID of the NOXE system associated with the Appendix E fuel curve.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report --- Hourly Configuration Evaluation
---	-------------------	--

**Check Code:** HOURAPP-7

**Check Name:** Handle NOx Rate Summary Expected for ARP

**Related Former Checks:**

**Applicability:**

**Description:** Sets Expected Summary Value NOx Rate Array value for a location to true when the location is a unit and the unit is affected by ARP.

**Specifications:**

If *CurrentHIEntityType* is equal to "Unit", *MPStackConfigForHourlyChecks* is equal to "MS", and the *ExpectedSummaryValueNOxRateArray* value for this location is equal to false,

Locate a record in *LocationProgramRecordsByHourAndLocation* where:

- 1) ProgramCode is equal to 'ARP', and
- 2) Class is equal to 'P1' or 'P2'.

if found,

Set *ExpectedSummaryValueNOxRateArray* for this location to true

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report --- Hourly Configuration Evaluation
---	-------------------	--

**Check Code:** HOURAPP-9

**Check Name:** Check MATS Load Value

**Related Former Checks:**

**Applicability:** General Check

**Description:** This checks the apportionment of load value to MS in MS configurations. The load is apportioned based on stack flow. The check calculates the apportioned value and compares it to the reported value with a tolerance determine by HourlyEmissionsTolerances's LOAD-MW entry.

**Specifications:**

Set *CalculatedMatsMsLoad* to null.

If *MpStackConfigForHourlyChecks* is equal to "MS", AND *CurrentMonitorPlanLocationRecord.StackPipeID* is not null,

Set *CurrentMsLoad* to *ApportionmentMatsLoadArray* value for the current location.

If *CurrentMsLoad* is NOT null,

If the *ApportionmentStackFlowArray* value for every MS location is NOT null,

Set *MsStackFlowSum* to the sum of *ApportionmentStackFlowArray* \* *ApportionmentOpTimeArray* for MS locations .

Set *CurrentMsFlow* to *ApportionmentStackFlowArray* \* *ApportionmentOpTimeArray* for the current location.

Set *UnitLoad* to *ApportionmentMatsLoadArray* value for the unit.

If *MsStackFlowSum* is greater than 0, AND *UnitLoad* is NOT null and is greater than 0,

Set *CalculatedMatsMsLoad* to  $UnitLoad * CurrentMsFlow / MsStackFlowSum$ , rounded to an integer.

If  $ABS(CurrentMsLoad - CalculatedMatsMsLoad)$  is greater than *MwLoadHourlyTolerance*,

Return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The reported MATS Load value does not match the value of [CALCVALUE] calculated using stack flow apportionment.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report --- Hourly Configuration Evaluation
---	-------------------	--

**Check Code:** HOURAPP-10

**Check Name:** MATS Hg: Calculate and check MATS MS1 Flow Weighted value

**Related Former Checks:**

**Applicability:** General Check

**Description:** Calculates and checks the MATS rate when the source is using the MS-1 formula.

**Specifications:**

Set *CalculatedFlowWeightedHg* to null.

Set *MATSReportedPluginHg* to null.

If *MpStackConfigForHourlyChecks* is equal to "MS", AND *CurrentMonitorPlanLocationRecord*.UnitID is not null, AND *MatsHgDhvId* is not null,

Set *Modc38Used* to false.

Set *StackOperated* to false.

Set *StackMissingData* to false.

Set *NumOperatingStacks* to 0.

Set *SingleStackHgRate* to 0.

For each MS Location

If *MatsMs1HgModcCodeArray* is 38

Set *Modc38Used* to true

If *ApportionmentOpTimeArray* is > 0

Set *StackOperated* to true

Increment *NumOperatingStacks*

Set *SingleStackHgRate* to *ApportionmentHgRateArray*

If *ApportionmentOpTimeArray* is > 0 and (*ApportionmentStackFlowArray* is null or *ApportionmentHgRateArray* is null),

Set *StackMissingData* to true

If the *ApportionmentStackFlowArray* value for MS location is NOT null,

Set *MsStackFlowSum* to the sum of *ApportionmentStackFlowArray* for MS location.

Set *MsStackEmissionRateFlow* to the sum of *ApportionmentHgRateArray* \* *ApportionmentStackFlowArray* for MS location.

If *Modc38Used* is false and *StackOperated* is true and *MatsMs1HgUnadjustedHourlyValue* is null  
return result B

Else If *NumOperatingStacks* is 1

Set *CalculatedFlowWeightedHg* to *SingleStackHgRate*, converted to Scientific Notation with the number of significant digits matching the following:

- 1) When *CurrentOperatingDate* is on or after September 9, 2020 AND *MatsMs1HgUnadjustedHourlyValue* is NOT null, then the significant digits in *MatsMs1HgUnadjustedHourlyValue*.
- 2) Otherwise 3 significant digits.

If *SingleStackHgRate* not equal *MatsMs1HgUnadjustedHourlyValue*  
return result A

Else If *StackMissingData* is true and *MatsMs1HgUnadjustedHourlyValue* is not null  
return result C

Else If *MsStackFlowSum* is greater than 0 and *MatsMs1HgUnadjustedHourlyValue* is not null

Set *CalculatedFlowWeightedHg* to *MsStackEmissionRateFlow* / *MsStackFlowSum*, converted to Scientific Notation with

the number of significant digits matching the following:

- 1) When **CurrentOperatingDate** is on or after September 9, 2020 AND **MatsMsIHgUnadjustedHourlyValue** is NOT null, then the significant digits in **MatsMsIHgUnadjustedHourlyValue**.
- 2) Otherwise 3 significant digits.

Set **MATSReportedPluginHg** to **MatsMsIHgUnadjustedHourlyValue**

If (**MatsMsIHgUnadjustedHourlyValue** + **CalculatedFlowWeightedHg**) is NOT equal to 0

Set **PercentDifference** =  $100 * \text{ABS}(\text{MatsMsIHgUnadjustedHourlyValue} - \text{CalculatedFlowWeightedHg}) / ((\text{MatsMsIHgUnadjustedHourlyValue} + \text{CalculatedFlowWeightedHg}) / 2)$ , rounded to 1 decimal place.

If (**PercentDifference** > 5)

return result A

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The reported [MATS Parameter] Calculated Flow Weighted value of [Reported] does not match the recalculated value of [Calculated] calculated using stack flow apportionment.	Informational Message
B	You did not report a [MATS Parameter] unit-level emission rate, but did report a [MATS Parameter] emission rate at each operating stack.	Informational Message
C	You reported a [MATS Parameter] unit-level emission rate, but did not report a [MATS Parameter] emission rate or unadjusted flow rate from one or both stacks.	Informational Message

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report --- Hourly Configuration Evaluation
---	-------------------	--

**Check Code:** HOURAPP-11

**Check Name:** MATS HCL: Calculate and check MATS MS1 Flow Weighted value

**Related Former Checks:**

**Applicability:** General Check

**Description:** Calculates and checks the MATS rate when the source is using the MS-1 formula.

**Specifications:**

Set *CalculatedFlowWeightedHcl* to null.

Set *MATSReportedPluginHcl* to null.

If *MpStackConfigForHourlyChecks* is equal to "MS", AND *CurrentMonitorPlanLocationRecord*.UnitID is not null, AND *MatsHclDhvId* is not null,

Set *Modc38Used* to false.

Set *StackOperated* to false.

Set *StackMissingData* to false.

Set *NumOperatingStacks* to 0.

Set *SingleStackHclRate* to 0.

For each MS Location

If *MatsMs1HclUnadjustedHourlyValue* is 38

Set *Modc38Used* to true

If *ApportionmentOpTimeArray* is > 0

Set *StackOperated* to true

Increment *NumOperatingStacks*

Set *SingleStackHclRate* to *ApportionmentHclRateArray*

If *ApportionmentOpTimeArray* is > 0 and (*MatsMs1HclUnadjustedHourlyValue* is null or *MatsMs1HclUnadjustedHourlyValue* is null),

Set *StackMissingData* to true

If the *ApportionmentStackFlowArray* value for MS location is NOT null,

Set *MsStackFlowSum* to the sum of *ApportionmentStackFlowArray* for MS location.

Set *MsStackEmissionRateFlow* to the sum of *ApportionmentHclRateArray* \* *ApportionmentStackFlowArray* for MS location.

If *Modc38Used* is false and *StackOperated* is true and *MatsMs1HclUnadjustedHourlyValue* is null  
return result B

Else If *NumOperatingStacks* is 1

Set *CalculatedFlowWeightedHcl* to *SingleStackHclRate*, converted to Scientific Notation with the number of significant digits matching the following:

- 1) When *CurrentOperatingDate* is on or after September 9, 2020 AND *MatsMs1HclUnadjustedHourlyValue* is NOT null, then the significant digits in *MatsMs1HclUnadjustedHourlyValue*.
- 2) Otherwise 3 significant digits.

If *SingleStackHclRate* not equal *MatsMs1HclUnadjustedHourlyValue*  
return result A

Else If *StackMissingData* is true and *MatsMs1HclUnadjustedHourlyValue* is not null  
return result C

If *MsStackFlowSum* is greater than 0 and *MatsMs1HclUnadjustedHourlyValue* is not null

Set *CalculatedFlowWeightedHcl* to *MsStackEmissionRateFlow* / *MsStackFlowSum*, converted to Scientific Notation with

the number of significant digits matching the following:

- 1) When **CurrentOperatingDate** is on or after September 9, 2020 AND **MatsMsIHclUnadjustedHourlyValue** is NOT null, then the significant digits in **MatsMsIHclUnadjustedHourlyValue** .
- 2) Otherwise 3 significant digits.

Set **MATSReportedPluginHcl** to **MatsMsIHclUnadjustedHourlyValue**

If (**MatsMsIHclUnadjustedHourlyValue** + **CalculatedFlowWeightedHcl**) is NOT equal to 0

Set **PercentDifference** =  $100 * \text{ABS}(\text{MatsMsIHclUnadjustedHourlyValue} - \text{CalculatedFlowWeightedHcl}) / ((\text{MatsMsIHclUnadjustedHourlyValue} + \text{CalculatedFlowWeightedHcl}) / 2)$ , rounded to 1 decimal place.

If (**PercentDifference** > 5)

return result A

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The reported [MATS Parameter] Calculated Flow Weighted value of [Reported] does not match the recalculated value of [Calculated] calculated using stack flow apportionment.	Informational Message
B	You did not report a [MATS Parameter] unit-level emission rate, but did report a [MATS Parameter] emission rate at each operating stack.	Informational Message
C	You reported a [MATS Parameter] unit-level emission rate, but did not report a [MATS Parameter] emission rate or unadjusted flow rate from one or both stacks.	Informational Message

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report --- Hourly Configuration Evaluation
---	-------------------	--



**Check Code:** HOURAPP-12

**Check Name:** MATS HF: Calculate and check MATS MS1 Flow Weighted value

**Related Former Checks:**

**Applicability:** General Check

**Description:** Calculates and checks the MATS rate when the source is using the MS-1 formula.

**Specifications:**

Set *CalculatedFlowWeightedHf* to null.

Set *MATSReportedPluginHf* to null.

If *MpStackConfigForHourlyChecks* is equal to "MS", AND *CurrentMonitorPlanLocationRecord*.UnitID is not null, AND *MatsHfDhvId* is not null,

Set *Modc38Used* to false.

Set *StackOperated* to false.

Set *StackMissingData* to false.

Set *NumOperatingStacks* to 0.

Set *SingleStackHfRate* to 0.

For each MS Location

If *MatsMS1HgModcCodeArray* is 38

Set *Modc38Used* to true

If *ApportionmentOpTimeArray* is > 0

Set *StackOperated* to true

Increment *NumOperatingStacks*

Set *SingleStackHfRate* to *ApportionmentHfRateArray*

If *ApportionmentOpTimeArray* is > 0 and (*ApportionmentStackFlowArray* is null or *ApportionmentHfRateArray* is null),

Set *StackMissingData* to true

If the *ApportionmentStackFlowArray* value for MS location is NOT null,

Set *MsStackFlowSum* to the sum of *ApportionmentStackFlowArray* for MS location.

Set *MsStackEmissionRateFlow* to the sum of *ApportionmentHfRateArray* \* *ApportionmentStackFlowArray* for MS location

If *Modc38Used* is false and *StackOperated* is true and *MatsMs1HfUnadjustedHourlyValue* is null

return result B

Else If *NumOperatingStacks* is 1

Set *CalculatedFlowWeightedHf* to *SingleStackHfRate*, converted to Scientific Notation with the number of significant digits matching the following:

1) When *CurrentOperatingDate* is on or after September 9, 2020 AND *MatsMs1HfUnadjustedHourlyValue* is NOT null, then the significant digits in *MatsMs1HfUnadjustedHourlyValue*.

2) Otherwise 3 significant digits.

If *SingleStackHfRate* not equal *MatsMs1HfUnadjustedHourlyValue*

return result A

Else If *StackMissingData* is true and *MatsMs1HfUnadjustedHourlyValue* is not null

return result C

Else If *MsStackFlowSum* is greater than 0 and *MatsMs1HfUnadjustedHourlyValue* is not null

Set *CalculatedFlowWeightedHf* to *MsStackEmissionRateFlow* / *MsStackFlowSum*, converted to Scientific Notation with the number of significant digits matching the following:

- 1) When **CurrentOperatingDate** is on or after September 9, 2020 AND **MatsMsIHfUnadjustedHourlyValue** is NOT null, then the significant digits in **MatsMsIHfUnadjustedHourlyValue**.
- 2) Otherwise 3 significant digits.

Set **MATSReportedPluginHf** to **MatsMsIHfUnadjustedHourlyValue**

If (**MatsMsIHfUnadjustedHourlyValue** + **CalculatedFlowWeightedHf**) is NOT equal to 0

Set **PercentDifference** =  $100 * \text{ABS}(\text{MatsMsIHfUnadjustedHourlyValue} - \text{CalculatedFlowWeightedHf}) / ((\text{MatsMsIHfUnadjustedHourlyValue} + \text{CalculatedFlowWeightedHf}) / 2)$ , rounded to 1 decimal place.

If (**PercentDifference** > 5)

return result A

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The reported [MATS Parameter] Calculated Flow Weighted value of [Reported] does not match the recalculated value of [Calculated] calculated using stack flow apportionment.	Informational Message
B	You did not report a [MATS Parameter] unit-level emission rate, but did report a [MATS Parameter] emission rate at each operating stack.	Informational Message
C	You reported a [MATS Parameter] unit-level emission rate, but did not report a [MATS Parameter] emission rate or unadjusted flow rate from one or both stacks.	Informational Message

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report --- Hourly Configuration Evaluation
---	-------------------	--

**Check Code:** HOURAPP-13

**Check Name:** MATS SO2: Calculate and check MATS MS1 Flow Weighted value

**Related Former Checks:**

**Applicability:** General Check

**Description:** Calculates and checks the MATS rate when the source is using the MS-1 formula.

**Specifications:**

Set *CalculatedFlowWeightedSo2* to null.

Set *MATSReportedPluginSo2* to null.

If *MpStackConfigForHourlyChecks* is equal to "MS", AND *CurrentMonitorPlanLocationRecord*.UnitID is not null, AND *MatsSo2DhvId* is not null,

Set *Modc38Used* to false.

Set *StackOperated* to false.

Set *StackMissingData* to false.

Set *NumOperatingStacks* to 0.

Set *SingleStackSo2Rate* to 0.

For each MS Location

If *MatsMS1HgModcCodeArray* is 38

Set *Modc38Used* to true

If *ApportionmentOpTimeArray* is > 0

Set *StackOperated* to true

Increment *NumOperatingStacks*

Set *SingleStackSo2Rate* to *ApportionmentSo2RateArray*

If *ApportionmentOpTimeArray* is > 0 and (*ApportionmentStackFlowArray* is null or *ApportionmentSo2RateArray* is null),

Set *StackMissingData* to true

If the *ApportionmentStackFlowArray* value for MS location is NOT null,

Set *MsStackFlowSum* to the sum of *ApportionmentStackFlowArray* for MS location.

Set *MsStackEmissionRateFlow* to the sum of *ApportionmentSo2RateArray* \* *ApportionmentStackFlowArray* for MS location.

If *Modc38Used* is false and *StackOperated* is true and *MatsMs1So2UnadjustedHourlyValue* is null  
return result B

Else If *NumOperatingStacks* is 1

Set *CalculatedFlowWeightedSo2* to *SingleStackSo2Rate*, converted to Scientific Notation with the number of significant digits matching the following:

- 1) When *CurrentOperatingDate* is on or after September 9, 2020 AND *MatsMs1So2UnadjustedHourlyValue* is NOT null, then the significant digits in *MatsMs1So2UnadjustedHourlyValue*.
- 2) Otherwise 3 significant digits.

If *SingleStackSo2Rate* not equal *MatsMs1So2UnadjustedHourlyValue*  
return result A

Else If *StackMissingData* is true and *MatsMs1So2UnadjustedHourlyValue* is not null  
return result C

Else If *MsStackFlowSum* is greater than 0 and *MatsMs1So2UnadjustedHourlyValue* is not null

Set *CalculatedFlowWeightedSo2* to *MsStackEmissionRateFlow* / *MsStackFlowSum*, converted to Scientific Notation with

the number of significant digits matching the following:

- 1) When **CurrentOperatingDate** is on or after September 9, 2020 AND **MatsMs1So2UnadjustedHourlyValue** is NOT null, then the significant digits in **MatsMs1So2UnadjustedHourlyValue**.
- 2) Otherwise 3 significant digits.

Set **MATSReportedPluginSo2** to **MatsMs1So2UnadjustedHourlyValue**

If (**MatsMs1So2UnadjustedHourlyValue** + **CalculatedFlowWeightedSo2**) is NOT equal to 0

Set **PercentDifference** =  $100 * \text{ABS}(\text{MatsMs1So2UnadjustedHourlyValue} - \text{CalculatedFlowWeightedSo2}) / ((\text{MatsMs1So2UnadjustedHourlyValue} + \text{CalculatedFlowWeightedSo2}) / 2)$ , rounded to 1 decimal place.

If (**PercentDifference** > 5)

return result A

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The reported [MATS Parameter] Calculated Flow Weighted value of [Reported] does not match the recalculated value of [Calculated] calculated using stack flow apportionment.	Informational Message
B	You did not report a [MATS Parameter] unit-level emission rate, but did report a [MATS Parameter] emission rate at each operating stack.	Informational Message
C	You reported a [MATS Parameter] unit-level emission rate, but did not report a [MATS Parameter] emission rate or unadjusted flow rate from one or both stacks.	Informational Message

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report --- Hourly Configuration Evaluation
---	-------------------	--

**Check Code:** HOURAPP-14

**Check Name:** Validate Complex Configuration HI

**Related Former Checks:**

**Applicability:** General Check

**Description:** Ensures that the heat input reported at the stacks for a complex configuration with stacks are consistent by ensuring that the total heat input reported at the units equals the total reported at the stacks for each hour.

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

If ( *MpStackConfigForHourlyChecks* == "COMPLEX" or "CSMS" ) AND ( *ConfigurationChangeOccurredDuringQuarter* is NOT true )

If ( *StackHeatInputTimesOpTimeAccumulator* >= 0 ) AND ( *UnitHeatInputTimesOpTimeAccumulator* >= 0 )

*HeatInputTolerance* = Tolerance from *HourlyEmissionsToleranceCrossCheckTable* where Parameter == "HI" and Uom == "MMBTUHR".

If ( ABS( *StackHeatInputTimesOpTimeAccumulator* - *UnitHeatInputTimesOpTimeAccumulator* ) > ( *HeatInputTolerance* \* *CurrentLocationCount* ) )

return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The heat input reported at the units is not consistent with the heat input reported at the stacks in this configuration.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report --- Hourly Apportionment Verification

**Check Category:**

**Hourly Calculated Data**

**Check Code:** HOURCV-1

**Check Name:** Calculate Percent H2O

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** If there was a valid equation code reported for a Derived H2O record and O2 monitored values were available, this check reproduces the formula for calculating H2O and compares it to the reported H2O Percentage

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

if (*H2O Method Code* = "MWD" AND *Current DHV Record*.ModcCode in set {01, 02, 03, 04, 53, 54})

if (*H2O CEM Equation Code* == "F-31")

if (*Current DHV Record Valid* == true AND *O2 Wet Calculated Adjusted Value* is not null AND *O2 Dry Calculated Adjusted Value* is not null)

*H2O DHV Calculated Adjusted Value* = ((*O2 Dry Calculated Adjusted Value* - *O2 Wet Calculated Adjusted Value*) \* 100.0 ) / *O2 Dry Calculated Adjusted Value*, ROUNDED to one decimal place.

H2O Conc Tolerance = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
Parameter = "H2O" AND  
UOM = "PCT"

If (*Derived Hourly Adjusted Value Status* == true AND ABS(*H2O DHV Calculated Adjusted Value* - *Current DHV Record*.AdjustedHourlyValue) > H2O Conc Tolerance)  
return result A

else

return result B

else if (*H2O CEM Equation Code* == "M-1K")

if (*Derived Hourly Adjusted Value Status* == true)

*H2O DHV Calculated Adjusted Value* = *Current DHV Record*.AdjustedHourlyValue

else

return result B

else if (*H2O Method Code* = "MDF" AND *Current DHV Record*.ModcCode == "40")

*H2O DHV Calculated Adjusted Value* = *H2O Default Value*

else

*H2O DHV Calculated Adjusted Value* = *Current DHV Calculated Adjusted Value*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The AdjustedHourlyValue reported in the DHV record for [param] is inconsistent with the recalculated value.	Critical Error Level 1
B	The AdjustedHourlyValue in the DHV record for [param] could not be recalculated due to errors listed above.	Informational Message

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- H2O Calculation Verification

**Check Code:** HOURCV-3

**Check Name:** Determine Diluent Cap and Moisture for CO2 Concentration Calculation Verification

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Determines the moisture and diluent values used in the CO2C calculation.

**Specifications:**

```

if (CO2 Conc CEM Equation Code == "F-14B")
    If (H2O Method Code == "MWD" AND H2O Derived Hourly Checks Needed == true AND H2O DHV Calculated Adjusted Value is not null)
        Calculated Moisture for CO2C = H2O DHV Calculated Adjusted Value
    else if (H2O Method Code in set {MMS, MTB} AND H2O Monitor Hourly Checks Needed == true AND H2O MHV Calculated Adjusted Value is not null)
        Calculated Moisture for CO2C = H2O MHV Calculated Adjusted Value
    else if (H2O Method Code == "MDF" AND H2O Derived Hourly Checks Needed == true AND H2O DHV Calculated Adjusted Value is not null)
        Calculated Moisture for CO2C = H2O DHV Calculated Adjusted Value
    else if (H2O Method Code == "MDF" AND H2O Derived Hourly Checks Needed == false AND H2O Default Value is not null)
        Calculated Moisture for CO2C = H2O Default Value

if (Use O2 Diluent Cap for Co2 Conc Calc == true)
    O2X Count = # of active MonitoringDefault records for location where
        ParameterCode = 'O2X' AND DefaultPurposeCode = 'DC' AND
        FuelCode = 'NFS'
    if (O2X Count > 1)
        return result A
    else if (O2X Count == 0)
        return result B
    else if MonitoringDefault.DefaultValue <= 0
        return result C
    else
        Calculated Diluent for CO2C = MonitoringDefault.DefaultValue

else

case (CO2 Conc CEM Equation Code)
    "F-14A":
        Calculated Diluent for CO2C = O2 Dry Calculated Adjusted Value
    "F-14B":
        Calculated Diluent for CO2C = O2 Wet Calculated Adjusted Value

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one diluent cap default record for O2X in your monitoring plan that was active during current hour.	Critical Error Level 1
B	You did not report a default record for O2X in your monitoring plan that was active during the current hour. Please note that the use of a diluent cap to calculate CO2 concentration is only applicable to legacy data.	Critical Error Level 1
C	The DefaultValue reported in the active Default record for O2X in your monitoring plan is invalid. The value must be greater than 0.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- CO2 Concentration Calculation Verification



**Check Code:** HOURCV-4

**Check Name:** Calculate CO2 Concentration

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Based on equation code in CO2 Concentration record and reported values, calculate the CO2 Concentration

**Specifications:**

If (*Current DHV Record*.ModeCode in set {01, 02, 03, 04, 53, 54})

CO2 Conc Tolerance = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerance" where  
Parameter = "CO2C" AND  
UOM = "PCT"

case (*CO2 Conc CEM Equation Code*)  
"F-14A":

If (*Current DHV Record Valid* == true AND *Calculated Diluent for CO2C* is not null AND *Valid FC Factor Exists* == true AND *Valid FD Factor* == true)

*CO2C DHV Calculated Adjusted Value* = 100 \* (*Current Hourly Op Record*.FcFactor / *Current Hourly Op Record*.FdFactor) \* [(20.9 - *Calculated Diluent for CO2C*) / 20.9 ], and round the result to 1 decimal place.

If (*CO2C DHV Calculated Adjusted Value* < 0)  
*CO2C DHV Calculated Adjusted Value* = 0

If (*Derived Hourly Adjusted Value Status* == true AND ABS(*CO2C DHV Calculated Adjusted Value* - *Current DHV Record*.AdjustedHourlyValue) > CO2 Conc Tolerance)  
return result A

else  
return result B

"F-14B":

If (*Current DHV Record Valid* == true AND *Calculated Diluent for CO2C* is not null AND *Valid FC Factor Exists* == true AND *Valid FD Factor Exists* == true AND *Calculated Moisture for CO2C* is not null)

*CO2C DHV Calculated Adjusted Value* = [100/20.9] \* (*Current Hourly Op Record*.FcFactor / *Current Hourly Op Record*.FdFactor) \* [20.9 \* ((100 - *Calculated Moisture for CO2C*)/100) - *Calculated Diluent for CO2C* ], and round the result to 1 decimal place.

If (*CO2C DHV Calculated Adjusted Value* < 0)  
*CO2C DHV Calculated Adjusted Value* = 0

If (*Derived Hourly Adjusted Value Status* == true AND ABS(*CO2C DHV Calculated Adjusted Value* - *Current DHV Record*.AdjustedHourlyValue) > CO2 Conc Tolerance)  
return result A

else  
return result B

Otherwise  
return result B

else  
*CO2C DHV Calculated Adjusted Value* = *Current DHV Calculated Adjusted Value*

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The AdjustedHourlyValue reported in the DHV record for [param] is inconsistent with the recalculated value.	Critical Error Level 1
B	The AdjustedHourlyValue in the DHV record for [param] could not be recalculated due to errors listed above.	Informational Message

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Calculation Verification
---	-------------------	---

**Check Code:** HOURCV-6

**Check Name:** Determine Diluent Cap and Moisture for Heat Input Calculation Verification

**Related Former Checks:**

**Applicability:** General Check

**Description:** Ensures that all inputs are available for each equation type prior to performing the actual calculations

**Specifications:**

```

If (Heat Input Method Code == "CEM")
    if (Heat Input Equation Code in set {F-16, F-17, F-18})
        If (H2O Method Code == "MWD" AND H2O Derived Hourly Checks Needed == true AND H2O DHV Calculated Adjusted Value is not null)
            Calculated Moisture for HI = H2O DHV Calculated Adjusted Value
        else if (H2O Method Code in set {MMS, MTB} AND H2O Monitor Hourly Checks Needed == true AND H2O MHV Calculated Adjusted Value is not null)
            Calculated Moisture for HI = H2O MHV Calculated Adjusted Value
        else if (H2O Method Code == "MDF" AND H2O Derived Hourly Checks Needed == true AND H2O DHV Calculated Adjusted Value is not null)
            Calculated Moisture for HI = H2O DHV Calculated Adjusted Value
        else if (H2O Method Code == "MDF" AND H2O Derived Hourly Checks Needed == false AND H2O Default Value is not null)
            Calculated Moisture for HI = H2O Default Value

    if (Heat Input Equation Code = "F-15" OR Heat Input Equation Code = "F-16")
        If (Current DHV Record.DiluentCapIndicator == 1)
            CO2N Count = # of active MonitoringDefault records for the location where
                ParameterCode = 'CO2N' AND DefaultPurposeCode = 'DC' AND
                FuelCode = 'NFS'
            if (CO2N Count > 1)
                return result A
            else if (CO2N Count == 0)
                return result B
            else if MonitoringDefault.DefaultValue <= 0
                return result C
            else
                Calculated Diluent For HI = MonitoringDefault.DefaultValue

        else if (CO2 Conc Checks Needed for Heat Input == true)

            if (Current CO2 Conc Missing Data Monitor Hourly Record is not null)
                Calculated Diluent for HI = CO2C SD Calculated Adjusted Value
            else
                Calculated Diluent for HI = CO2C MHV Calculated Adjusted Value

    else if (Heat Input Equation Code == "F-17" OR Heat Input Equation Code == "F-18")
        if (Current DHV Record.DiluentCapIndicator == 1)
            O2X Count = # of active MonitoringDefault records for the location where
                ParameterCode = 'O2X' AND DefaultPurposeCode = 'DC' AND
                FuelCode = 'NFS'
            if (O2X Count > 1)
                return result D
            else if (O2X Count == 0)
                return result E
            else if MonitoringDefault.DefaultValue <= 0
                return result F
            else
                Calculated Diluent For HI = MonitoringDefault.DefaultValue

```

else if (*Heat Input Equation Code* == "F-17" AND *O2 Wet Checks Needed for Heat Input* == true)

if (*Current O2 Wet Missing Data Monitor Hourly Record* is not null)

*Calculated Diluent for HI = O2C SD Calculated Adjusted Value*

else

*Calculated Diluent for HI = O2 Wet Calculated Adjusted Value*

else if (*Heat Input Equation Code* == "F-18" AND *O2 Dry Checks Needed for Heat Input* == true)

if (*Current O2 Dry Missing Data Monitor Hourly Record* is not null)

*Calculated Diluent for HI = O2C SD Calculated Adjusted Value*

else

*Calculated Diluent for HI = O2 Dry Calculated Adjusted Value*

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one diluent cap default record for CO2N in your monitoring plan that was active during the current hour.	Critical Error Level 1
B	You did not report an active CO2N diluent cap default record in your monitoring plan for the hour. The use of the diluent cap to calculate HI is only applicable for legacy data.	Critical Error Level 1
C	The DefaultValue reported in the active Default record for CO2N in your monitoring plan is invalid. The value must be greater than 0.	Critical Error Level 1
D	You reported more than one diluent cap default record for O2X in your monitoring plan that was active during current hour.	Critical Error Level 1
E	You did not report a default record for O2X in your monitoring plan that was active during the current hour. Please note that the use of a diluent cap to calculate HI is only applicable to legacy data.	Critical Error Level 1
F	The DefaultValue reported in the active Default record for O2X in your monitoring plan is invalid. The value must be greater than 0.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Heat Input Calculation Verification

**Check Code:** HOURCV-7

**Check Name:** Calculate Heat Input

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

if (*Derived Hourly Adjusted Value Status* == true AND *Current Hourly Op Record*.OperatingTime is between 0 and 1 (inclusive))

*Heat Input Total Reported Value* = *Current DHV Record*.AdjustedHourlyValue \* *Current Hourly Op Record*.OperatingTime.

if (*Current Month* is not April OR *Annual Reporting Requirement* == true)

if (*Rpt Period HI Reported Accumulator Array* for this location is not null)

if (*Rpt Period HI Reported Accumulator Array* >= 0)

*Rpt Period HI Reported Accumulator Array* for this location = *Rpt Period HI Reported Accumulator Array* for this location + *Heat Input Total Reported Value*

else

*Rpt Period HI Reported Accumulator Array* for this location = *Heat Input Total Reported Value*

if ( *Unit HeatInputTimesOpTime Accumulator* >= 0 )

if ( *Current Entity Type* == "Unit" )

*Unit HeatInputTimesOpTime Accumulator* = *Unit HeatInputTimesOpTime Accumulator* + *Heat Input Total Reported Value*

elsi if ( *Current Entity Type* == "CS" or "MS" )

*Stack HeatInputTimesOpTime Accumulator* = *Stack HeatInputTimesOpTime Accumulator* + *Heat Input Total Reported Value*

else

if (*Current Month* is not April OR *Annual Reporting Requirement* == true)

*Rpt Period HI Reported Accumulator Array* for this location = -1

if (*Current Entity Type* == "Unit")

*Unit HeatInputTimesOpTime Accumulator* = -1

elsi if ( *Current Entity Type* == "CS" or "MS" )

*Stack HeatInputTimesOpTime Accumulator* = -1

*Total Heat Input from Fuel Flow* = null

If (*Heat Input Method Code* == "CEM")

case (*Heat Input Equation Code*)

= "F-15":

If (*Current DHV Record Valid* == true AND *Calculated Diluent for HI* is not null AND *Valid FC Factor Exists* == true AND *FLOW Calculated Adjusted Value* is not null)

*HI Calculated Adjusted Value* = (*FLOW Calculated Adjusted Value* \* *Calculated Diluent for Heat Input*) / (*Current Hourly Op Record*.FcFactor \* 100.0), and round the result to 1 decimal place.

else

return result A

= "F-16":

If (*Current DHV Record Valid* == true AND *Calculated Diluent for HI* is not null AND *Valid FC Factor Exists* == true AND *FLOW Calculated Adjusted Value* is not null AND *Calculated Moisture for HI* is not null)

**HI Calculated Adjusted Value** = [**FLOW Calculated Adjusted Value** \* (100 - **Calculated Moisture for HI**) \* **Calculated Diluent for HI**] / (10,000 \* **Current Hourly Op Record.FcFactor**), and round the result to 1 decimal place.

else

return result A

= "F-17":

If (**Current DHV Record Valid** == true AND **Calculated Diluent for HI** is not null AND **Valid FD Factor Exists** == true AND **FLOW Calculated Adjusted Value** is not null AND **Calculated Moisture for HI** is not null)

**HI Calculated Adjusted Value** = [**FLOW Calculated Adjusted Value** \* (1 / **Current Hourly Op Record.FdFactor**) \* [ 0.209 \* (100 - **Calculated Moisture for HI**) - **Calculated Diluent for HI**] / 20.9 ], and round the result to 1 decimal place.

else

return result A

= "F-18":

If (**Current DHV Record Valid** == true AND **Calculated Diluent for HI** is not null AND **Valid FD Factor Exists** == true AND **FLOW Calculated Adjusted Value** is not null AND **Calculated Moisture for HI** is not null)

**HI Calculated Adjusted Value** = (**FLOW Calculated Adjusted Value** \* [100 - **Calculated Moisture for HI**] \* [20.9 - **Calculated Diluent for HI**] ) / (2090 \* **Current Hourly Op Record.FdFactor**), and round the result to 1 decimal place.

else

return result A

= All Other Equation Codes:

return result A

if no result

if (**HI Calculated Adjusted Value** is less than 1 AND **Legacy Data Evaluation** == false)

**HI Calculated Adjusted Value** = 1

**Apportionment Calc HI Array** at this Location = **HI Calculated Adjusted Value**

if (**MP Stack Config for Hourly Checks** == "MS")

**Config HeatInput Accumulator** = **Config HeatInput Accumulator** + **HI Calculated Adjusted Value**

if result A

**Apportionment Calc HI Array** at this Location = -1

**Config HeatInputTimesOpTime Accumulator** = -1

if (**Current Month** is not April OR **Annual Reporting Requirement** == true)

**Rpt Period HI Calculated Accumulator Array** for this location = -1

if (**MP Stack Config for Hourly Checks** == "MS")

**Config HeatInput Accumulator** = -1

else if (**Heat Input App D Method Active for Hour** == true)

if (**HI App D Accumulator** >= 0)

**Total Heat Input from Fuel Flow** = **HI App D Accumulator**

if (**HI App D Accumulator** >= 0 AND **Current Hourly Op Record.OperatingTime** is greater than 0 and less than or equal to 1)

**Apportionment Calc HI Array** at this Location = **HI App D Accumulator** / **Current Hourly Op Record.OperatingTime**, rounded to one decimal place.

if (**Heat Input Method Code** == "AD")

**HI Calculated Adjusted Value** = **Apportionment Calc HI Array** at this Location

```

    App E Calc HI = HI Calculated Adjusted Value
else
    for each location in the configuration where Apportionment HI Method Array in set {CALC, ADCALC}
        set Apportionment HI Method Array for this location to "NOCALC"
else
    Apportionment Calc HI Array at this Location = -1
    Config HeatInputTimesOpTime Accumulator = -1
    if (Current Month is not April OR Annual Reporting Requirement == true)
        Rpt Period HI Calculated Accumulator Array for this location = -1
    return result A

else if (Heat Input Method Code NOT in set {ADCALC, CALC})
    HI Calculated Adjusted Value = Current DHV Calculated Adjusted Value
    Apportionment Calc HI Array at this Location = HI Calculated Adjusted Value

If (HI Calculated Adjusted Value is not null)

    If (Current Hourly Op Record.OperatingTime is between 0 and 1 inclusive)

        Heat Input Total Calculated Value = HI Calculated Adjusted Value * Current Hourly Op Record.OperatingTime.

        if ( Config HeatInputTimesOpTime Accumulator >= 0)
            Config HeatInputTimesOpTime Accumulator = Config HeatInputTimesOpTime Accumulator + Heat Input Total Calculated Value

        if (Current Month is not April OR Annual Reporting Requirement == true)
            if (Rpt Period HI Calculated Accumulator Array for this location is not null)
                if (Rpt Period HI Calculated Accumulator Array for this location >= 0)
                    Rpt Period HI Calculated Accumulator Array for this location = Rpt Period HI Calculated Accumulator Array for this location + Heat Input Total Calculated Value
                else
                    Rpt Period HI Calculated Accumulator Array for this location = Heat Input Total Calculated Value
            else
                Rpt Period HI Calculated Accumulator Array for this location = Heat Input Total Calculated Value

            if (Current Month is April)
                if (April HI Calculated Accumulator Array for this location is not null)
                    April HI Calculated Accumulator Array for this location = April HI Calculated Accumulator Array for this location + Heat Input Total Calculated Value
                else
                    April HI Calculated Accumulator Array for this location = Heat Input Total Calculated Value

        if ( OS Reporting Requirement is true ) AND ( Current Month is May, June, July, August or September ) AND ( Current Operating Date is on or after OS Reporting Period Begin Date )

            OS HIT Calculated Accumulator Array for this location = OS HIT Calculated Accumulator Array for this location + Heat Input Total Calculated Value

    else
        Config HeatInputTimesOpTime Accumulator = -1
        if (Current Month is not April OR Annual Reporting Requirement == true)
            Rpt Period HI Calculated Accumulator Array for this location = -1

If (Derived Hourly Adjusted Value Status == true)

    If (Heat Input Method Code in set {CEM, AD})

        if (HI Calculated Adjusted Value is equal to 1 AND Current DHV Record.AdjustedHourlyValue is less than 1

```

AND **Current DHV Record**.MODCCode is not equal to "26" and **Legacy Data Evaluation** == false)  
return result C

else

**Heat Input Tolerance** = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
Parameter = "HI" AND  
UOM = "MMBTUHR"

if (ABS(**Current DHV Record**.AdjustedHourlyValue - **HI Calculated Adjusted Value**) > **Heat Input Tolerance**)  
return result B

else if (**Apportionment Calc HI Array** at this Location is greater than or equal to 0) \ AD CALC

If (**Current Hourly Op Record**.OperatingTime is between 0 and 1 inclusive)

**Heat Input Total Calculated Value** = **Apportionment Calc HI Array** at this Location \* **Current Hourly Op Record**.OperatingTime.

if ( **Config HeatInputTimesOpTime Accumulator** >= 0)

**Config HeatInputTimesOpTime Accumulator** = **Config HeatInputTimesOpTime Accumulator** + **Heat Input Total Calculated Value**

else

**Config HeatInputTimesOpTime Accumulator** = -1

else if (**Heat Input Method Code** not in set {AD CALC, CALC})

**Apportionment Calc HI Array** at this Location = -1

**Config HeatInputTimesOpTime Accumulator** = -1

if (**Current Month** is not April OR **Annual Reporting Requirement** == true)

**Rpt Period HI Calculated Accumulator Array** for this location = -1

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The AdjustedHourlyValue in the DHV record for [param] could not be recalculated due to errors listed above.	Informational Message
B	The AdjustedHourlyValue reported in the DHV record for [param] is inconsistent with the recalculated value.	Critical Error Level 1
C	You reported in AdjustedHourlyValue of less than 1 in the DHV record for [param]. You must report a minimum heat input of 1 and a MODCCode of "26".	Critical Error Level 1

## Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Heat Input Calculation Verification



**Check Code:** HOURCV-9

**Check Name:** Calculate SO2 Mass Emissions

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Based on values from SO2 Monitor Hourly and Stack Flow Monitor Hourly, plus moisture values if applicable and the current equation code, the SO2 Mass emissions rate is calculated

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

if (*Derived Hourly Adjusted Value Status* == true AND *Current Hourly Op Record*.OperatingTime is between 0 and 1 (inclusive))

*SO2 Total Reported Value* = *Current DHV Record*.AdjustedHourlyValue \* *Current Hourly Op Record*.OperatingTime.

if (*Rpt Period SO2 Mass Reported Accumulator Array* for this location is not null)

if (*Rpt Period SO2 Mass Reported Accumulator Array* for this location >= 0)

*Rpt Period SO2 Mass Reported Accumulator Array* for this location = *Rpt Period SO2 Mass Reported Accumulator Array* for this location + *SO2 Total Reported Value*

else

*Rpt Period SO2 Mass Reported Accumulator Array* for this location = *SO2 Total Reported Value*

else

*Rpt Period SO2 Mass Reported Accumulator Array* for this location = -1

If (*SO2 CEM Method Active for Hour* == true)

if (*SO2 Equation Code* == "F-1")

If (*Current DHV Record Valid* == true AND *SO2C Calculated Adjusted Value* is not null AND *FLOW Calculated Adjusted Value* is not null)

*SO2 Calculated Adjusted Value* = 0.000000166 \* *SO2C Calculated Adjusted Value* \* *FLOW Calculated Adjusted Value*, ROUNDED to one decimal place.

else

*Rpt Period SO2 Mass Calculated Accumulator Array* for this location = -1  
return result A

else if (*SO2 Equation Code* == "F-2")

If (*Current DHV Record Valid* == true AND *SO2C Calculated Adjusted Value* is not null AND *FLOW Calculated Adjusted Value* is not null AND *Calculated Moisture for SO2* is not null)

*SO2 Calculated Adjusted Value* = 0.000000166 \* *SO2C Calculated Adjusted Value* \* *FLOW Calculated Adjusted Value* \* (100.0 - *Calculated Moisture for SO2*) / 100.0, ROUNDED to one decimal place.

else

*Rpt Period SO2 Mass Calculated Accumulator Array* for this location = -1  
return result A

else

*Rpt Period SO2 Mass Calculated Accumulator Array* for this location = -1  
return result A

else if (*SO2 F23 Method Active for Hour* == true)

If (*Current DHV Record Valid* == true AND *F23 Default Value* is not null AND *HI Calculated Adjusted Value* is not null)

*SO2 Calculated Adjusted Value* = *F23 Default Value* \* *HI Calculated Adjusted Value*, rounded to one decimal place.

```

else
    Rpt Period SO2 Mass Calculated Accumulator Array for this location = -1
    return result A

else if (SO2 App D Method Active for Hour == true)

    if (SO2 App D Accumulator >= 0 AND Current Hourly Op Record.OperatingTime is between 0 and 1 (inclusive))
        SO2 Calculated Adjusted Value = SO2 App D Accumulator / Current Hourly Op Record.OperatingTime.

        If (Hourly Fuel Flow Count For Gas is greater than 0)
            Round SO2 Calculated Adjusted Value to four decimal places.
        else
            Round SO2 Calculated Adjusted Value to one decimal place.

    else
        Rpt Period SO2 Mass Calculated Accumulator Array for this location = -1
        return result A

else
    SO2 Calculated Adjusted Value = Current DHV Calculated Adjusted Value

If (SO2 Calculated Adjusted Value is not null)

    If (Current Hourly Op Record.OperatingTime is between 0 and 1 inclusive)

        SO2 Total Calculated Value = SO2 Calculated Adjusted Value * Current Hourly Op Record.OperatingTime

        if (Rpt Period SO2 Mass Calculated Accumulator Array for this location is not null)
            if (Rpt Period SO2 Mass Calculated Accumulator Array for this location >= 0)
                Rpt Period SO2 Mass Calculated Accumulator Array for this location = Rpt Period SO2 Mass Calculated Accumulator Array for this location + SO2 Total Calculated Value
            else
                Rpt Period SO2 Mass Calculated Accumulator Array for this location = SO2 Total Calculated Value
        else
            Rpt Period SO2 Mass Calculated Accumulator Array for this location = -1

    If (Derived Hourly Adjusted Value Status == true)

        SO2 Tolerance = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where
            Parameter = "SO2" AND
            UOM = "LBHR"

        if (ABS(Current DHV Record.AdjustedHourlyValue - SO2 Calculated Adjusted Value) > SO2 Tolerance)
            return result B

    else
        Rpt Period SO2 Mass Calculated Accumulator Array for this location = -1

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The AdjustedHourlyValue in the DHV record for [param] could not be recalculated due to errors listed above.	Informational Message
B	The AdjustedHourlyValue reported in the DHV record for [param] is inconsistent with the recalculated value.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- SO2 Calculation Verification

**Check Code:** HOURCV-12

**Check Name:** Determine Diluent Cap, Moisture, and NOXC for NOx Rate Calculation Verification

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** For each possible formula, ensure that all required components are available. Note that no responses are output, because each missing part should have generated an earlier error message.

**Specifications:**

If (*Current NOx Rate Method Code* == "CEM" AND *Current DHV Record*.ModcCode in set {01, 02, 03, 04, 14, 22, 53, 54})

if (*NOx Conc Monitor Hourly Count* == 1 AND *Current NOx Conc Monitor Hourly Record*.UnadjustedHourlyValue is not null)  
*NOx Conc for NOx Rate Calculation* = *Current NOx Conc Monitor Hourly Record*.UnadjustedHourlyValue

else

*NOx Conc for NOx Rate Calculation* = null

if (*NOx Rate Equation Code* in set {19-3, 19-3D, 19-4, 19-5, 19-8, 19-9})

If (*H2O Method Code* == "MWD" AND *H2O Derived Hourly Checks Needed* == true AND *H2O DHV Calculated Adjusted Value* is not null)

*Calculated Moisture for NOXR* = *H2O DHV Calculated Adjusted Value*

else if (*H2O Method Code* in set {MMS, MTB} AND *H2O Monitor Hourly Checks Needed* == true AND *H2O MHV Calculated Adjusted Value* is not null)

*Calculated Moisture for NOXR* = *H2O MHV Calculated Adjusted Value*

else if (*H2O Method Code* == "MDF" AND *H2O Derived Hourly Checks Needed* == true AND *H2O DHV Calculated Adjusted Value* is not null)

*Calculated Moisture for NOXR* = *H2O DHV Calculated Adjusted Value*

else if (*H2O Method Code* == "MDF" AND *H2O Derived Hourly Checks Needed* == false AND *H2O Default Value* is not null)

*Calculated Moisture for NOXR* = *H2O Default Value*

if (*NOx Rate Equation Code* in set {19-3D, 19-5D} OR *Current DHV Record*.ModcCode == 14)

If (*NOx Rate Equation Code* in set {F-5, 19-1, 19-2, 19-3, 19-3D, 19-4, 19-5, 19-5D})

*O2 Monitor Default Matches* = count of # active MonitoringDefaultData records for location where

MonitoringDefaultData.ParameterCode = "O2X" AND MonitoringDefaultData.DefaultPurposeCode = "DC" AND MonitoringDefaultData.FuelCode = "NFS"

if *O2 Monitor Default Matches* > 1

return result A

else if *O2 Monitor Default Matches* = 0

return result B

else

*O2 Monitor Default Record* = the single matched record

if ( *O2 Monitor Default Record*.DefaultValue is NULL OR *O2 Monitor Default Record*.DefaultValue <= 0)  
return result C

else

*Calculated Diluent for NOXR* = *O2 Monitor Default Record*.DefaultValue

else if (*NOx Rate Equation Code* in set {F-6, 19-6, 19-7, 19-8, 19-9})

*CO2 Monitor Default Matches* = count of # active MonitoringDefaultData records for location where

MonitoringDefaultData.ParameterCode = "CO2N" AND MonitoringDefaultData.DefaultPurposeCode = "DC" AND MonitoringDefaultData.FuelCode = "NFS"

if *CO2 Monitor Default Matches* > 1

return result D

else if *CO2 Monitor Default Matches* = 0

```

        return result E
    else
        CO2 Monitor Default Record = the single matched record
        if (CO2 Monitor Default Record.DefaultValue is NULL OR CO2 Monitor Default Record.DefaultValue <=
        0)
            return result F
        else
            Calculated Diluent for NOx Rate = CO2 Monitor Default Record.DefaultValue

else

If (NOx Rate Equation Code in set {F-5, 19-1, 19-4} AND O2 Dry Checks Needed for NOx Rate Calc == true)
    Calculated Diluent for NOx Rate = O2 Dry Calculated Adjusted Value

else if (NOx Rate Equation Code in set {19-2, 19-3, 19-5} AND O2 Wet Checks Needed for NOx Rate Calc == true)
    Calculated Diluent for NOx Rate = O2 Wet Calculated Adjusted Value

else if (NOx Rate Equation Code in set {F-6, 19-6, 19-7, 19-8, 19-9} AND CO2 Conc Monitor Hourly Checks Needed
== true)
    Calculated Diluent for NOx Rate = CO2C MHV Calculated Adjusted Value

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one diluent cap default record for O2X in your monitoring plan that was active during current hour.	Critical Error Level 1
B	You did not report a default record for O2X in your monitoring plan that was active during current hour.	Critical Error Level 1
C	The DefaultValue reported in the active Default record for O2X in your monitoring plan is invalid. The value must be greater than 0.	Critical Error Level 1
D	You reported more than one diluent cap default record for CO2N in your monitoring plan that was active during the current hour.	Critical Error Level 1
E	You did not report an active CO2N diluent cap default record in your monitoring plan for the hour.	Critical Error Level 1
F	The DefaultValue reported in the active Default record for CO2N in your monitoring plan is invalid. The value must be greater than 0.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- NOx Emissions Rate Calculation Verification

**Check Code:** HOURCV-13

**Check Name:** Calculate Unadjusted NOx Emissions Rate

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Based on equation code in NOx Emission Rate record and reported values, calculate the NOx Emissions Rate

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

*NOXR Calculated Unadjusted Value* = null

*Derived Hourly Unadjusted Calculation Status* = false

If (*Current NOx Rate Method Code* == "CEM" AND *Current DHV Record.ModeCode* in set {01, 02, 03, 14, 22, 53})

    If (*Current DHV Record.SystemTypeCode* == "NOX")

*RATA Status Required* = true

    case (*NOx Rate Equation Code*)

        "19-1" or "F-5":

            If (*Current DHV Record Valid* == true AND *Calculated Diluent for NOXR* is not null AND *NOX Conc for NOx Rate Calc* is not null AND *Valid FD Factor Exists* == true)

                if (*Calculated Diluent for NOXR* == 20.9)

                    return result A

                else

*NOXR Calculated Unadjusted Value* = 0.0000001194 \* *NOX Conc for NOx Rate Calc* \* *Current Hourly Op Record.FdFactor* \* [20.9 / (20.9 - *Calculated Diluent for NOXR*)], rounded to 3 decimal places.

            else

                return result B

        "19-2":

*Moisture Fraction* = null

*BWA Default Record Count* = count active MonitoringDefaultData Records for the location where ParameterCd = 'BWA'

            If (*BWA Default Record Count* == 0)

*Moisture Fraction* = 0.027

            else If (*BWA Default Record Count* == 1 AND *MonitorDefaultData.DefaultValue* > 0 AND *MonitorDefaultData.DefaultValue* < 1)

*Moisture Fraction* = *MonitorDefaultData.DefaultValue*

            else

                return result D

            If (*Current DHV Record Valid* == true AND *Calculated Diluent for NOXR* is not null AND *NOX Conc for NOx Rate Calc* is not null AND *Valid FW Factor Exists* == true AND *Moisture Fraction* is not null)

                if (*Calculated Diluent for NOXR* == 20.9 \* (1 - *Moisture Fraction*))

                    return result A

                else

*NOXR Calculated Unadjusted Value* = 0.0000001194 \* *NOX Conc for NOx Rate Calc* \* *Current Hourly Op Record.FwFactor* \* [20.9 / (20.9 \* (1 - *Moisture Fraction*) - *Calculated Diluent for NOXR*)], rounded to 3 decimal places.

            else

                return result B

"19-3":

If (**Current DHV Record Valid** == true AND **Calculated Diluent for NOXR** is not null AND **NOX Conc for NOx Rate Calc** is not null AND **Valid FD Factor Exists** == true AND **Calculated Moisture for NOXR** is not null)

if (**Calculated Diluent for NOXR** ==  $20.9 * (100 - \text{Calculated Moisture for NOXR}) / 100$ )  
return result A

else

denom =  $(20.9 * (100 - \text{Calculated Moisture for NOXR}) / 100 - \text{Calculated Diluent for NOXR})$   
**NOXR Calculated Unadjusted Value** =  $0.0000001194 * \text{NOX Conc for NOx Rate Calc} * \text{Current Hourly Op Record.FdFactor} * [20.9 / \text{denom}]$ , rounded to 3 decimal places.

else

return result B

"19-3D":

If (**Current DHV Record Valid** == true AND **Calculated Diluent for NOXR** is not null AND **NOX Conc for NOx Rate Calc** is not null AND **Valid FD Factor Exists** == true AND **Calculated Moisture for NOXR** is not null)

$h2oFactor = (100 - \text{Calculated Moisture for NOXR}) / 100.0$   
 $denomTerm = (20.9 * h2oFactor) - (\text{Calculated Diluent for NOXR} * h2oFactor)$   
if ( $denomTerm == 0$ )  
return result A

else

**NOXR Calculated Unadjusted Value** =  $0.0000001194 * \text{NOX Conc for NOx Rate Calc} * \text{Current Hourly Op Record.FdFactor} * 20.9 / denomTerm$ , rounded to 3 decimal places.

else

return result B

"19-4":

If (**Current DHV Record Valid** == true AND **Calculated Diluent for NOXR** is not null AND **NOX Conc for NOx Rate Calc** is not null AND **Valid FD Factor Exists** == true AND **Calculated Moisture for NOXR** is not null)

if ( $\text{Calculated Diluent for NOXR} == 20.9$  OR  $\text{Calculated Moisture for NOXR} == 100$ )  
return result A

else

**NOXR Calculated Unadjusted Value** =  $0.0000001194 * \text{NOX Conc for NOx Rate Calc} * \text{Current Hourly Op Record.FdFactor} / [(100 - \text{Calculated Moisture for NOXR}) / 100.0] * (20.9 / (20.9 - \text{Calculated Diluent for NOXR}))$ , rounded to 3 decimal places.

else

return result B

"19-5":

If (**Current DHV Record Valid** == true AND **Calculated Diluent for NOXR** is not null AND **NOX Conc for NOx Rate Calc** is not null AND **Valid FD Factor Exists** == true AND **Calculated Moisture for NOXR** is not null)

if (**Calculated Moisture for NOXR** == 100)  
return result A

else

$H2OTerm = (100 - \text{Calculated Moisture for NOXR}) / 100.0$   
 $denom = 20.9 - \text{Calculated Diluent for NOXR} / H2OTerm$

if ( $denom == 0$ )  
return result A

```

else
    NOXR Calculated Unadjusted Value = 0.0000001194 * NOX Conc for NOx Rate Calc * Current Hourly Op Record.FdFactor / denom, rounded to 3 decimal places.
else
    return result B

"19-5D":
If (Current DHV Record Valid == true AND Calculated Diluent for NOXR is not null AND NOX Conc for NOx Rate Calc is not null AND Valid FD Factor Exists == true)

    if (Calculated Diluent for NOXR == 20.9)
        return result A
    else
        NOXR Calculated Unadjusted Value = 0.0000001194 * NOX Conc for NOx Rate Calc * Current Hourly Op Record.FdFactor * 20.9 / (20.9 - Calculated Diluent for NOXR) , rounded to 3 decimal places.

else
    return result B

"19-6" or "19-7" or "F-6":
If (Current DHV Record Valid == true AND Calculated Diluent for NOXR is not null AND NOX Conc for NOx Rate Calc is not null AND Valid FC Factor Exists == true)

    if (Calculated Diluent for NOXR == 0.0)
        return result A
    else
        NOXR Calculated Unadjusted Value = 0.0000001194 * NOX Conc for NOx Rate Calc * Current Hourly Op Record.FcFactor * 100.0 / Calculated Diluent for NOXR , rounded to 3 decimal places.

else
    return result B

"19-8":
If (Current DHV Record Valid == true AND Calculated Diluent for NOXR is not null AND NOX Conc for NOx Rate Calc is not null AND Valid FC Factor Exists == true AND Calculated Moisture for NOXR is not null)

    if (Calculated Diluent for NOXR == 0.0 OR Calculated Moisture for NOXR == 100)
        return result A
    else
        NOXR Calculated Unadjusted Value = 0.0000001194 * NOX Conc for NOx Rate Calc * Current Hourly Op Record.FcFactor / [(100 - Calculated Moisture for NOXR) / 100.0] * (100.0 / Calculated Diluent for NOXR), rounded to 3 decimal places.

else
    return result B

"19-9":
If (Current DHV Record Valid == true AND Calculated Diluent for NOXR is not null AND NOX Conc for NOx Rate Calc is not null AND Valid FC Factor Exists == true AND Calculated Moisture for NOXR is not null)

    if (Calculated Diluent for NOXR == 0.0)
        return result A
    else
        H2OTerm = (100 - Calculated Moisture for NOXR) / 100.0
        CO2Term = 100.0 / Calculated Diluent for NOXR
        NOXR Calculated Unadjusted Value = 0.0000001194 * NOX Conc for NOx Rate Calc * Current Hourly Op Record.FcFactor * H2OTerm * CO2Term, rounded to 3 decimal places.

```

else

return result B

If (*Derived Hourly Unadjusted Value Status* == true AND *NOXR Calculated Unadjusted Value* is not null)

*Tolerance* = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
Parameter = "NOXR" AND  
UOM = "LBMMBTU"

if (ABS(*Current DHV Record*.UnadjustedHourlyValue - *NOXR Calculated Unadjusted Value*) > *Tolerance*)  
return result C

else

*Derived Hourly Unadjusted Calculation Status* = true

else if (*Current NOx Rate Method Code* == "PEM" AND *Current DHV Record*.ModcCode in set {01, 02, 03})

If (*Current DHV Record*.SystemTypeCode == "NOXP")

*RATA Status Required* = true

If *Current DHV Record*.UnadjustedHourlyValue >= 0

*NOXR Calculated Unadjusted Value* = *Current DHV Record*.UnadjustedHourlyValue

*Derived Hourly Unadjusted Calculation Status* = true

else if (*Current NOx Rate Method Code* == "AE")

If (*App E Constant Fuel Mix* == true)

*NOXR Calculated Adjusted Value* = *App E Calculated NOx Rate for Source*

else

*NOXR Calculated Adjusted Value* = *Current DHV Calculated Adjusted Value*

if (*Current NOx Rate Method Code* in set {CEM, PEM} AND *Current DHV Record*.ModcCode == 21)

If (*Current DHV Record*.SystemTypeCode in set {NOX, NOXP})

*RATA Status Required* = true

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The NOx emission rate could not be recalculated, because the diluent and/or moisture value would result in division by zero. You should report an MODC of 14 indicating the use of a diluent cap to prevent this.	Critical Error Level 1
B	The UnadjustedHourlyValue in the DHV record for [param] could not be recalculated due to errors listed above.	Informational Message
C	The UnadjustedHourlyValue reported in the DHV record for [param] is inconsistent with the recalculated value.	Critical Error Level 1
D	You did not report a single valid MonitorDefault record for ParameterCode BWA for the hour.	Critical Error Level 1

## Usage:

1 Process/Category: Emissions Data Evaluation Report ----- NOx Emissions Rate Calculation Verification



**Check Code:** HOURCV-15

**Check Name:** Determine Moisture for NOx Mass Calculation Verification

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Verifies that all elements are present to support the equation code indicated by the current NOx Mass Rate record

**Specifications:**

If (*NOx Mass Monitor Method Code* begins with "CEM")

    If (*NOx Mass Equation Code* == "F-26B")

        If (*H2O Method Code* == "MWD" AND *H2O Derived Hourly Checks Needed* == true AND *H2O DHV Calculated Adjusted Value* is not null)

*Calculated Moisture for NOX = H2O DHV Calculated Adjusted Value*

        else if (*H2O Method Code* in set {MMS, MTB} AND *H2O Monitor Hourly Checks Needed* == true AND *H2O MHV Calculated Adjusted Value* is not null)

*Calculated Moisture for NOX = H2O MHV Calculated Adjusted Value*

        else if (*H2O Method Code* == "MDF" AND *H2O Derived Hourly Checks Needed* == true AND *H2O DHV Calculated Adjusted Value* is not null)

*Calculated Moisture for NOX = H2O DHV Calculated Adjusted Value*

        else if (*H2O Method Code* == "MDF" AND *H2O Derived Hourly Checks Needed* == false AND *H2O Default Value* is not null)

*Calculated Moisture for NOX = H2O Default Value*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- NOx Mass Rate Calculation Verification
---	-------------------	---

**Check Code:** HOURCV-16

**Check Name:** Calculate NOx Mass Emissions

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Based on Formula Code and all reported values, the NOx Mass Calculation is verified

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

if (*Derived Hourly Adjusted Value Status* == true AND *Current Hourly Op Record*.OperatingTime is between 0 and 1 (inclusive))

*NOX Mass Total Reported Value* = *Current DHV Record*.AdjustedHourlyValue \* *Current Hourly Op Record*.OperatingTime.

if (*Current Month* is not April OR *Annual Reporting Requirement* == true)

if (*Rpt Period NOX Mass Reported Accumulator Array* for this location is not null)

if (*Rpt Period NOX Mass Reported Accumulator Array* for this location >= 0)

*Rpt Period NOX Mass Reported Accumulator Array* for this location = *Rpt Period NOX Mass Reported Accumulator Array* for this location + *NOX Mass Total Reported Value*

else

*Rpt Period NOX Mass Reported Accumulator Array* for this location = *NOX Mass Total Reported Value*

else

if (*Current Month* is not April OR *Annual Reporting Requirement* == true)

*Rpt Period NOX Mass Reported Accumulator Array* for this location = -1

If (*NOx Mass Monitor Method Code* in set {CEM, NOXR, CEMNOXR})

if (*NOx Mass Equation Code* == "F-26A")

If (*Current DHV Record Valid* == true AND *NOXC Calculated Adjusted Value* is not null AND *FLOW Calculated Adjusted Value* is not null)

*NOX Calculated Adjusted Value* = 0.0000001194 \* *NOXC Calculated Adjusted Value* \* *Stack Flow Calculated Adjusted Value*, ROUNDED to one decimal place.

else

if (*Current Month* is not April OR *Annual Reporting Requirement* == true)

*Rpt Period NOX Mass Calculated Accumulator Array* for this location = -1

return result A

else if (*NOX Mass Equation Code* == "F-26B")

If (*Current DHV Record Valid* == true AND *NOXC Calculated Adjusted Value* is not null AND *FLOW Calculated Adjusted Value* is not null AND *Calculated Moisture for NOX* is not null)

*NOX Calculated Adjusted Value* = 0.0000001194 \* *NOXC Calculated Adjusted Value* \* *FLOW Calculated Adjusted Value* \* (100.0 - *Calculated Moisture for NOX*) / 100.0, ROUNDED to one decimal place.

else

if (*Current Month* is not April OR *Annual Reporting Requirement* == true)

*Rpt Period NOX Mass Calculated Accumulator Array* for this location = -1

return result A

else if (*NOX Mass Equation Code* == "F-24A")

if (*Heat Input Method Code* NOT in set {CALC, ADCALC})

If (*Current DHV Record Valid* == true AND *NOXR Calculated Adjusted Value* is not null

If (*HI Calculated Adjusted Value* is not null)

*NOX Calculated Adjusted Value* = *NOXR Calculated Adjusted Value* \* *HI Calculated Adjusted Value*, **ROUNDED** to one decimal place.

else

if (*Current Month* is not April OR *Annual Reporting Requirement* == true)

*Rpt Period NOX Mass Calculated Accumulator Array* for this location = -1

return result A

else

if (*Current Month* is not April OR *Annual Reporting Requirement* == true)

*Rpt Period NOX Mass Calculated Accumulator Array* for this location = -1

return result A

else

if (*Current Month* is not April OR *Annual Reporting Requirement* == true)

*Rpt Period NOX Mass Calculated Accumulator Array* for this location = -1

return result A

else

*NOX Calculated Adjusted Value* = *Current DHV Calculated Adjusted Value*

If (*NOX Calculated Adjusted Value* is not null)

If (*Current Hourly Op Record.OperatingTime* is between 0 and 1 inclusive)

*NOx Mass Total Calculated Value* = *NOX Calculated Adjusted Value* \* *Current Hourly Op Record.OperatingTime*.

if (*Current Month* is not April OR *Annual Reporting Requirement* == true)

if (*Rpt Period NOX Mass Calculated Accumulator Array* for this location is not null)

if (*Rpt Period NOX Mass Calculated Accumulator Array* for this location >= 0)

*Rpt Period NOX Mass Calculated Accumulator Array* for this location = *Rpt Period NOX Mass Calculated Accumulator Array* for this location + *NOX Mass Total Calculated Value*

else

*Rpt Period NOX Mass Calculated Accumulator Array* for this location = *NOX Mass Total Calculated Value*

if (*Current Month* is April)

if (*April NOX Mass Calculated Accumulator Array* for this location is not null)

*April NOX Mass Calculated Accumulator Array* for this location = *April NOX Mass Calculated Accumulator Array* for this location + *NOX Mass Total Calculated Value*

else

*April NOX Mass Calculated Accumulator Array* for this location = *NOX Mass Total Calculated Value*

if ( *OS Reporting Requirement* is true ) AND ( *Current Month* is May, June, July, August or September ) AND ( *Current Operating Date* is on or after *OS Reporting Period Begin Date* )

*OS NOXM Calculated Accumulator Array* for this location = *OS NOXM Calculated Accumulator Array* for this location + *NOX Mass Total Calculated Value*

else

if (*Current Month* is not April OR *Annual Reporting Requirement* == true)

*Rpt Period NOX Mass Calculated Accumulator Array* for this location = -1

If (*Derived Hourly Adjusted Value Status* == true AND *Current DHV Method* in set {CEM, NOXR, CEMNOXR})

*NOX Tolerance* = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
Parameter = "NOX" AND  
UOM = "LBHR"

if (ABS(*Current DHV Record*.AdjustedHourlyValue - *NOX Calculated Adjusted Value*) > *NOX Tolerance*)  
 If (*Legacy Data Evaluation* == false)  
   return result B

else if (*Current Hourly Op Data*.OpTime is greater than 0 and less than or equal to 1)

  if (ABS(*Current DHV Record*.AdjustedHourlyValue - *NOX Calculated Adjusted Value*) > *NOX Tolerance* / *Current Hourly Op Record*.OperatingTime)  
     return result B

else if (*NOX Mass Equation Code* <> "F-24A" OR *Current DHV Record Valid* == false OR *NOXR Calculated Adjusted Value* is null OR *Heat Input Method Code* NOT in set {CALC, ADCALC})

  if (*Current Month* is not April OR *Annual Reporting Requirement* == true)  
     *Rpt Period NOX Mass Calculated Accumulator Array* for this location = -1

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The AdjustedHourlyValue in the DHV record for [param] could not be recalculated due to errors listed above.	Informational Message
B	The AdjustedHourlyValue reported in the DHV record for [param] is inconsistent with the recalculated value.	Critical Error Level 1

#### Usage:

1      Process/Category:      Emissions Data Evaluation Report ----- NOx Mass Rate Calculation Verification

**Check Code:** HOURCV-18

**Check Name:** Determine Diluent Cap and Moisture for CO2 Mass Calculation Verification

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** For each possible formula, ensure that all required components are available. Note that no responses are output, because each missing part should have generated an earlier error message.

**Specifications:**

If (*CO2 Method Code* == "CEM")

if (*CO2 Mass Equation Code* == "F-2")

If (*H2O Method Code* == "MWD" AND *H2O Derived Hourly Checks Needed* == true AND *H2O DHV Calculated Adjusted Value* is not null)

*Calculated Moisture for CO2* = *H2O DHV Calculated Adjusted Value*

else if (*H2O Method Code* in set {MMS, MTB} AND *H2O Monitor Hourly Checks Needed* == true AND *H2O MHV Calculated Adjusted Value* is not null)

*Calculated Moisture for CO2* = *H2O MHV Calculated Adjusted Value*

else if (*H2O Method Code* == "MDF" AND *H2O Derived Hourly Checks Needed* == true AND *H2O DHV Calculated Adjusted Value* is not null)

*Calculated Moisture for CO2* = *H2O DHV Calculated Adjusted Value*

else if (*H2O Method Code* == "MDF" AND *H2O Derived Hourly Checks Needed* == false AND *H2O Default Value* is not null)

*Calculated Moisture for CO2* = *H2O Default Value*

if (*Use CO2 Diluent Cap for CO2 Mass Calc* == true)

*CO2N Count* = # of active MonitoringDefault records for location where  
ParameterCode = 'CO2N' AND DefaultPurposeCode = 'DC' AND  
FuelCode = 'NFS'

if (*CO2N Count* > 1)

return result A

else if (*CO2N Count* == 0)

return result B

else if MonitoringDefault.DefaultValue <= 0

return result C

else

*Calculated Diluent for CO2* = MonitoringDefault.DefaultValue

else if (*CO2 Conc Derived Checks Needed* == true)

*Calculated Diluent for CO2* = *CO2C DHV Calculated Adjusted Value*

else if (*CO2 Conc Checks Needed for CO2 Mass* == true)

if (*Current CO2 Conc Missing Data Monitor Hourly Record* is not null)

*Calculated Diluent for CO2* = *CO2C SD Calculated Adjusted Value*

else

*Calculated Diluent for CO2* = *CO2C MHV Calculated Adjusted Value*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one diluent cap default record for CO2N in your monitoring plan that was active during the current hour.	Critical Error Level 1
B	A DHV record indicates use of a diluent cap to calculate CO2, but you did not report an active CO2N default record in your monitoring plan for the hour. Please note that the use of the diluent cap to calculate CO2 is only applicable to legacy data.	Critical Error Level 1
C	The DefaultValue reported in the active Default record for CO2N in your monitoring plan is invalid. The value must be greater than 0.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Mass Rate Calculation Verification
---	-------------------	---

**Check Code:** HOURCV-19

**Check Name:** Calculate CO2 Mass Emissions

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Based on values from CO2 Monitor Hourly and Stack Flow Monitor Hourly, plus moisture values if applicable and the current equation code, the CO2 Mass emissions rate is calculated

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

if (*Derived Hourly Adjusted Value Status* == true AND *Current Hourly Op Record*.OperatingTime is between 0 and 1 (inclusive))

*CO2 Total Reported Value* = *Current DHV Record*.AdjustedHourlyValue \* *Current Hourly Op Record*.OperatingTime.

if (*Rpt Period CO2 Mass Reported Accumulator Array* for this location is not null)

if (*Rpt Period CO2 Mass Reported Accumulator Array* for this location >= 0)

*Rpt Period CO2 Mass Reported Accumulator Array* for this location = *Rpt Period CO2 Mass Reported Accumulator Array* for this location + *CO2 Total Reported Value*

else

*Rpt Period CO2 Mass Reported Accumulator Array* for this location = *CO2 Total Reported Value*

else

*Rpt Period CO2 Mass Reported Accumulator Array* for this location = -1

If (*CO2 Method Code* == "CEM")

if (*CO2 Mass Equation Code* == "F-1")

If (*Current DHV Record Valid* == true AND *Calculated Diluent for CO2* is not null AND *FLOW Calculated Adjusted Value* is not null)

*CO2 Calculated Adjusted Value* = 0.00000057 \* *Calculated Diluent for CO2* \* *FLOW Calculated Adjusted Value*, ROUNDED to one decimal place.

else

*Rpt Period CO2 Mass Calculated Accumulator Array* for this location = -1  
return result A

else if (*CO2 Mass Equation Code* == "F-2")

If (*Current DHV Record Valid* == true AND *Calculated Diluent for CO2* is not null AND *FLOW Calculated Adjusted Value* is not null AND *Calculated Moisture for CO2* is not null)

*CO2 Calculated Adjusted Value* = 0.00000057 \* *Calculated Diluent for CO2* \* *FLOW Calculated Adjusted Value* \* [(100.0 - *Calculated Moisture for CO2*) / 100.0], ROUNDED to one decimal place.

else

*Rpt Period CO2 Mass Calculated Accumulator Array* for this location = -1  
return result A

else

*Rpt Period CO2 Mass Calculated Accumulator Array* for this location = -1  
return result A

else if (*CO2 App D Method Active for Hour* == true)

if (*CO2 App D Accumulator* >= 0 AND *Current Hourly Op Record*.OperatingTime is between 0 and 1 (inclusive))

*CO2 Calculated Adjusted Value* = *CO2 App D Accumulator* / *Current Hourly Op Record*.OperatingTime, rounded to one decimal place.

else

```

    if (Legacy Data Evaluation == false)
        Rpt Period CO2 Mass Calculated Accumulator Array for this location = -1
        return result A
    else
        Rpt Period CO2 Mass Calculated Accumulator Array for this location = -2
else
    CO2 Calculated Adjusted Value = Current DHV Calculated Adjusted Value

If (CO2 Calculated Adjusted Value is not null)

    If (Current Hourly Op Record.OperatingTime is between 0 and 1 inclusive)

        CO2 Total Calculated Value = CO2 Calculated Adjusted Value * Current Hourly Op Record.OperatingTime.

        if (Rpt Period CO2 Mass Calculated Accumulator Array for this location is not null)
            if (Rpt Period CO2 Mass Calculated Accumulator Array for this location >= 0)
                Rpt Period CO2 Mass Calculated Accumulator Array for this location = Rpt Period CO2 Mass Calculated Accumulator Array for this location + CO2 Total Calculated Value
            else
                Rpt Period CO2 Mass Calculated Accumulator Array for this location = CO2 Total Calculated Value
        else
            Rpt Period CO2 Mass Calculated Accumulator Array for this location = -1

    If (Derived Hourly Adjusted Value Status == true)

        CO2 Tolerance = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where
            Parameter = "CO2" AND
            UOM = "TNHR"

        if (ABS(Current DHV Record.AdjustedHourlyValue - CO2 Calculated Adjusted Value) > CO2 Tolerance)
            return result B
    else
        if (Rpt Period CO2 Mass Calculated Accumulator Array for this location <> -2)
            Rpt Period CO2 Mass Calculated Accumulator Array for this location = -1

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The AdjustedHourlyValue in the DHV record for [param] could not be recalculated due to errors listed above.	Informational Message
B	The AdjustedHourlyValue reported in the DHV record for [param] is inconsistent with the recalculated value.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- CO2 Mass Rate Calculation Verification



**Check Code:** HOURCV-25

**Check Name:** Determine BAF Value for NOx Emission Rate System

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Retrieves and sets as an output parameter the Bias Adjustment factor for the NOX Rate Monitoring System

**Specifications:**

*Current NOX System BAF* = null

If (*Current NOx System Status* == true AND *NOXR Calculated Unadjusted Value* is not null AND *Current NOx Rate Method Code* in set {CEM, PEM}) AND *Current DHV Record.ModeCode* in set {01, 02, 03, 14, 22, 53})

    If (*RATA Status BAF* is not null)

*Current NOX System BAF* = *RATA Status BAF*

    else

        return result A

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The BAF for [ParamCode] MonitoringSystemID [ID] cannot be determined, because the prior RATA had critical errors or because of a RATA Status error listed on this report.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- NOX RATA Status Evaluation
---	-------------------	---

**Check Code:** HOURCV-30

**Check Name:** Initialize SO2 Calculated Hourly Data

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check sets generic parameters and output parameters for subsequent Calculated hourly checks for SO2.

**Specifications:**

*Current DHV Parameter = "SO2"*

*Current DHV Record Valid = SO2 Derived Hourly Status*

*SO2 Calculated Adjusted Value = null*

*Calculated Moisture for SO2 = null*

*Current DHV Record = Current SO2 Derived Hourly Record*

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
Usage:		
1	Process/Category:	Emissions Data Evaluation Report ----- SO2 Calculation Verification

**Check Code:** HOURCV-31

**Check Name:** Initialize NOX Calculated Hourly Data

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check sets generic parameters and output parameters for subsequent Calculated hourly checks for NOX.

**Specifications:**

*Current DHV Parameter* = "NOX"

*Current DHV Record Valid* = *NOX Derived Hourly Status*

*NOX Calculated Adjusted Value* = null

*Calculated Moisture for NOX* = null

*Current DHV Record* = *Current NOx Rate Derived Hourly Record*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- NOx Mass Rate Calculation Verification
---	-------------------	---

**Check Code:** HOURCV-32

**Check Name:** Initialize NOXR Calculated Hourly Data

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check sets generic parameters and output parameters for subsequent Calculated hourly checks for NOXR.

**Specifications:**

*Current DHV Parameter* = "NOXR"

*Current DHV Record Valid* = *NOXR Derived Hourly Status*

*NOXR Calculated Adjusted Value* = null

*Calculated Diluent for NOXR* = null

*Calculated Moisture for NOXR* = null

*Current DHV HBHA Value* = *Current NOXR HBHA Value*

*Current DHV Record* = *Current NOx Rate Derived Hourly Record*

*Current Appendix E Status* = null

*RATA Status Required* = false

*RATA Status BAF* = null

*Current Hourly Record for RATA Status* = *Current NOx Rate Derived Hourly Record*

Set *QaStatusComponentId* = null

Set *QaStatusComponentIdentifier* = null

Set *QaStatusComponentTypeCode* = null

Set *QaStatusSystemDesignationCode* = *CurrentDHVRecord*.SystemDesignationCode

Set *QaStatusSystemId* = *CurrentDHVRecord*.SystemId

Set *QaStatusSystemIdentifier* = *CurrentDHVRecord*.SystemIdentifier

Set *QaStatusSystemTypeCode* = *CurrentDHVRecord*.SystemTypeCode

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- NOx Emissions Rate Calculation Verification
---	-------------------	--

**Check Code:** HOURCV-33

**Check Name:** Initialize CO2 Calculated Hourly Data

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check sets generic parameters and output parameters for subsequent Calculated hourly checks for CO2.

**Specifications:**

*Current DHV Parameter = "CO2"*  
*Current DHV Record Valid = CO2 Derived Hourly Status*  
*CO2 Calculated Adjusted Value = null*  
*Calculated Diluent for CO2 = null*  
*Calculated Moisture for CO2 = null*  
*Current DHV Record = Current CO2 Mass Derived Hourly Record*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
1	Process/Category: Emissions Data Evaluation Report ----- CO2 Mass Rate Calculation Verification	

**Usage:**

**Check Code:** HOURCV-34

**Check Name:** Initialize CO2C Calculated Hourly Data

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check sets generic parameters and output parameters for subsequent Calculated hourly checks for CO2C.

**Specifications:**

*Current DHV Parameter = "CO2C"*

*Current DHV Record Valid = CO2C Derived Hourly Status*

*CO2C DHV Calculated Adjusted Value = null*

*Calculated Diluent for CO2C = null*

*Calculated Moisture for CO2C = null*

*Current DHV HBHA Value = Current CO2C DHV HBHA Value*

*Current DHV Record = Current CO2 Conc Derived Hourly Record*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Calculation Verification
---	-------------------	---

**Check Code:** HOURCV-35

**Check Name:** Initialize H2O Calculated Hourly Data

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check sets generic parameters and output parameters for subsequent Calculated hourly checks for CO2C.

**Specifications:**

*Current DHV Parameter* = "H2O"

*Current DHV Record Valid* = *H2O Derived Hourly Status*

*H2O DHV Calculated Adjusted Value* = null

*Current DHV HBHA Value* = *Current H2O DHV HBHA Value*

*Current DHV Record* = *Current H2O Derived Hourly Record*

Set *QaStatusComponentId* = null

Set *QaStatusComponentIdentifier* = null

Set *QaStatusComponentTypeCode* = null

Set *QaStatusSystemDesignationCode* = *CurrentDHVRecord*.SystemDesignationCode

Set *QaStatusSystemId* = *CurrentDHVRecord*.SystemId

Set *QaStatusSystemIdentifier* = *CurrentDHVRecord*.SystemIdentifier

Set *QaStatusSystemTypeCode* = *CurrentDHVRecord*.SystemTypeCode

if (*Current DHV Record*.MODCCode in set {01, 02, 03, 21, 53} AND *Current DHV Record*.SystemTypeCode == "H2O")

*RATA Status Required* = true

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- H2O Calculation Verification
---	-------------------	---

**Check Code:** HOURCV-36

**Check Name:** Initialize HI Calculated Hourly Data

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check sets generic parameters and output parameters for subsequent Calculated hourly checks for HI.

**Specifications:**

*Current DHV Parameter* = "HI"

*Current DHV Record Valid* = *HI Derived Hourly Status*

*HI Calculated Adjusted Value* = null

*Calculated Diluent for HI* = null

*Calculated Moisture for HI* = null

*Current DHV Record* = *Current Heat Input Derived Hourly Record*

*RATA Status Required* = false

*Current Hourly Record for RATA Status* = *Current Heat Input Derived Hourly Record*

Set *QaStatusComponentId* = null

Set *QaStatusComponentIdentifier* = null

Set *QaStatusComponentTypeCode* = null

Set *QaStatusSystemDesignationCode* = *CurrentDHVRecord*.SystemDesignationCode

Set *QaStatusSystemIdentifier* = *CurrentDHVRecord*.SystemIdentifier

Set *QaStatusSystemTypeCode* = *CurrentDHVRecord*.SystemTypeCode

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Heat Input Calculation Verification
---	-------------------	--



**Check Code:** HOURCV-37

**Check Name:** Check Unadjusted Value

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check ensures that the UnadjustedValue in the DHV record for NOXR is valid.

**Specifications:**

*Derived Hourly Unadjusted Value Status* = false

If (*Current NOx Rate Method Code* in set {CEM, PEM})

If (*Current DHV Record*.ModcCode in set {01, 02, 03, 04, 14, 21, 22, 53, 54})

If (*Current DHV Record*.UnadjustedHourlyValue is not null)

If (*Current DHV Record*.UnadjustedHourlyValue < 0.0 AND  
*Current DHV Record*.ModcCode <> "21" )  
return result A

Else if (*Current DHV Record*.UnadjustedHourlyValue > 0 AND  
*Current DHV Record*.ModcCode == 21 )  
return result B

Else if (*Current DHV Record*.UnadjustedHourlyValue is not rounded to three decimal places)  
return result F

Else

*Derived Hourly Unadjusted Value Status* = true

if (*Current DHV Max Min Value* is not null AND (*NOx Conc MODC* is null OR is NOT in set {19, 20}))  
if (*Current DHV Record*.UnadjustedHourlyValue > *Current DHV Max Min Value*)  
return result C

Else If (*Current DHV Record*.ModcCode not in set {04, 53, 54})  
return result A

Else

*Derived Hourly Unadjusted Value Status* = true

Else if (*Derived Hourly Modc Status* == true)

If (*Current DHV Record*.UnadjustedHourlyValue is not null)  
return result D

Else

*Derived Hourly Unadjusted Value Status* = true

Else If (*Current DHV Record*.UnadjustedHourlyValue is not null)  
return result E

Else

*Derived Hourly Unadjusted Value Status* = true

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The UnadjustedHourlyValue reported in the DHV record for [param] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
B	You reported an MODCCode of 21 in the DHV record for [param], but the UnadjustedHourlyValue is greater than 0.	Critical Error Level 1
C	Warning: The UnadjustedHourlyValue reported in the DHV record for [param] is in excess of the maximum value listed in the monitoring plan. Sources are required to periodically (at least once annually) evaluate the appropriateness of these maximum values in the monitoring plan and make proper adjustments when necessary. Adjustments may include the need to update Span and/or Default values. You should investigate the cause of these exceedances and determine whether adjustments to your monitoring systems or monitoring plan are necessary.	Informational Message
D	You reported an MODCCode of [modcCode] in the DHV record for [param], so you should not have reported a value for the UnadjustedHourlyValue.	Critical Error Level 1
E	You reported an UnadjustedHourlyValue in the DHV record for [param]. A value in this field should not be reported for the [param] [method] method.	Critical Error Level 1
F	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- NOx Emissions Rate Calculation Verification

**Check Code:** HOURCV-38

**Check Name:** Determine Maximum or Minimum Value for Parameter in DHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check determines the maximum or minimum value for the parameter from the span or default table based on MODC.

**Specifications:**

*Current DHV Max Min Value* = null

If (*Current DHV Record Valid* == true AND

((*Current DHV Parameter* == "H2O" AND *H2O Method Code* == "MWD") OR

(*Current DHV Parameter* == "NOXR" AND *Current NOx Rate Method Code* in set {CEM,PEM}) OR

*Current DHV Parameter* == "CO2C" OR

*Current DHV Parameter* == "HI")

If (*Current DHV Parameter* == "H2O")

If (*H2O Fuel Specific Missing Data* == true)

*Current DHV Fuel Specific Hour* = true

If (*H2O Missing Data Approach* == "MAX")

*Current DHV Default Parameter* = "H2OX"

Else If (*H2O Missing Data Approach* == "MIN")

*Current DHV Default Parameter* = "H2ON"

Else If (*Current DHV Record.ModeCode* == 12)

return result A

else if (*Current DHV Parameter* == "NOXR")

*Current DHV Default Parameter* = "NORX"

If (*Current DHV Record.ModeCode* in set {23, 24})

If (*NOx Rate Bypass Code* == "BYMAXFS")

*Current DHV Fuel Specific Hour* = true

else

*Current DHV Fuel Specific Hour* = false

else if (*NOx Rate Fuel Specific Missing Data* == true)

*Current DHV Fuel Specific Hour* = true

else

*Current DHV Fuel Specific Hour* = false

else if (*Current DHV Parameter* == "CO2C")

*Current DHV Default Parameter* = "CO2X"

If (*CO2 Fuel Specific Missing Data* == true)

*Current DHV Fuel Specific Hour* = true

If (*Current DHV Parameter* == "HI")

Locate all active UnitCapacity records linked to the location where MaxHourlyHeatInputCapacity > 0.

If any are found,

Set *Current DHV Max Min Value* to the sum of MaxHourlyHeatInputCapacity in all records found.

else if (*Current DHV Default Parameter* is not null)

If (*Current DHV Record.ModeCode* in set {12, 23, 25} AND *Current DHV Fuel Specific Hour* = true)

If (***Current Hourly Op Record***.FuelCode is not null)

***Current DHV Missing Data Fuel*** = ***Current Hourly Op Record***.FuelCode

Count active MonitoringDefaultData record for location where

ParameterCode = ***Current DHV Default Parameter***

FuelCode = ***Current Hourly Op Record***.FuelCode

DefaultPurposeCode = "MD" // Missing Data

OperatingCode in set {A,U} // Not Controlled

if (*count* > 1)

return result B

else if (*count* == 0)

return result C

else

*Default Record* = the single matched record

if (*Default Record*.DefaultValue > 0)

***Current DHV Max Min Value*** = *Default Record*.DefaultValue

else

return result D

else if (***Current DHV Record***.ModeCode in set {13, 24})

If (***Current DHV Fuel Specific Hour*** == true)

If ***Current Hourly Op Record***.FuelCode is not null

***Current DHV Missing Data Fuel*** = ***Current Hourly Op Record***.FuelCode

Count active MonitoringDefaultData record for location where

ParameterCode = ***Current DHV Default Parameter***

FuelCode = ***Current Hourly Op Record***.FuelCode

DefaultPurposeCode = "MD" // Missing Data

OperatingCode in == "C" // Controlled

if (*count* > 1)

return result B

else if (*count* == 0)

return result C

else

*Default Record* = the single matched record

if (*Default Record*.DefaultValue > 0)

***Current DHV Max Min Value*** = *Default Record*.DefaultValue

else

return result D

else

***Current DHV Missing Data Fuel*** = "NFS"

Count active MonitoringDefaultData record for location where

ParameterCode = ***Current DHV Default Parameter***

FuelCode = "NFS"

DefaultPurposeCode = "MD" // Missing Data

OperatingCode in == "C" // Controlled

if (*count* > 1)

return result B

```

    else if (count == 0)
        return result C
    else
        Default Record = the single matched record

        if (Default Record.DefaultValue > 0)
            Current DHV Max Min Value = Default Record.DefaultValue
        else
            return result D

else if (Current DHV Record.ModeCode <> "15")

    Current DHV Missing Data Fuel = "NFS"

    Count active MonitoringDefaultData record for location where
        ParameterCode = Current DHV Default Parameter
        FuelCode = "NFS"
        DefaultPurposeCode = "MD" // Missing Data
        OperatingCode in set {A,U} // Not Controlled

    if (count > 1)
        return result B

    else if (count == 0 AND Current DHV Parameter == "CO2C")

        Monitor Span Record Count = Find active MonitoringSpanData records for location where
            MonitoringSpanData .ComponentTypeCode = "CO2" AND
            MonitoringSpanData.SpanScaleCode = "H"

        if (Monitor Span Record Count > 1)
            return result E
        else if (Monitor Span Record Count = 0)
            return result F
        else
            Current Monitor Span Record = the single matched record

            If (Current Monitor Span Record.DefaultHighRange is null AND Current DHV Record.ModeCode not in set {13, 24})

                if (Current Monitor Span Record.MPCValue > 0)
                    Current DHV Max Min Value = Current Monitor Span Record.MPCValue
                else
                    return result G

    else if (count == 0 AND Current DHV Parameter == "NOXR")

        Count active MonitoringDefaultData record for location where
            ParameterCode = "MNNX"
            FuelCode = "NFS"
            DefaultPurposeCode = "MD" // Missing Data
            OperatingCode in set {A,U} // Not Controlled

        if (count > 1)
            Current DHV Default Parameter = "MNNX"
            return result B

        else if (count = 0)
            return result C

```

```

else
    Current DHV Default Parameter = "MNNX"
    Default Record = the single matched record

    if (Default Record.DefaultValue >= 0)
        Current DHV Max Min Value = Default Record.DefaultValue
    else
        return result D

else if (count == 0)
    return result C

else
    Default Record = the single matched record

    if (Default Record.DefaultValue > 0)
        Current DHV Max Min Value = Default Record.DefaultValue
    else
        return result D

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The missing data default parameter for H2O could not be determined, because you used both Standard and Inverse Part 75 missing data approaches during the hour.	Critical Error Level 2
B	You reported more than one applicable [param] Default record with a FuelCode of [FuelCode] in your monitoring plan for the hour.	Critical Error Level 1
C	You did not report an applicable [param] Default record with a FuelCode of [FuelCode].	Critical Error Level 1
D	The values reported in the applicable [param] Default record with a FuelCode of [FuelCode] are invalid.	Critical Error Level 1
E	You reported more than one active span record for [key] in your monitoring plan for the hour.	Critical Error Level 1
F	You did not report a missing data maximum default for CO2 in a span or default record in your monitoring plan.	Critical Error Level 1
G	The values reported in the applicable span record for [key] are invalid.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Calculation Verification
2	Process/Category:	Emissions Data Evaluation Report ----- H2O Calculation Verification
3	Process/Category:	Emissions Data Evaluation Report ----- Heat Input Calculation Verification
4	Process/Category:	Emissions Data Evaluation Report ----- NOx Emissions Rate Calculation Verification

**Check Code:** HOURCV-39

**Check Name:** Check Adjusted Hourly Value in DHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check ensures that AdjustedHourlyValue is valid and does not conflict with the reported MODC codes.

**Validation Tables:**

Parameter UOM (Complex Lookup Table)

**Specifications:**

*Derived Hourly Adjusted Value Status* = false

*Current DHV Calculated Adjusted Value* = null

if (*Current DHV Record Valid* == true)

Locate *Parameter Units of Measure* lookup table record where ParameterCode = *Current DHV Parameter*.

If (*Hourly Fuel Flow Count For Gas* is greater than 0 AND *Current DHV Parameter* == "SO2")

Set *Current DHV Precision* to 4.

else

Set *Current DHV Precision* to the *Parameter Units of Measure*.Decimals\_Hrly.

if (*Current DHV Record*.ModcCode is not null)

case (*Current DHV Record*.ModcCode )

= 21: *Current DHV Calculated Adjusted Value* = 0

if (*Current DHV Record*.AdjustedHourlyValue == 0)

*Derived Hourly Adjusted Value Status* = true

else

return result A

= 12 OR 23 OR 25:

If (*Current DHV Max Min Value* is not null)

*Current DHV Calculated Adjusted Value* = *Current DHV Max Min Value*

if (*Current DHV Record*.AdjustedHourlyValue == *Current DHV Max Min Value* )

*Derived Hourly Adjusted Value Status* = true

else

return result B

= 13 OR 24:

If (*Current DHV Max Min Value* is not null)

*Current DHV Calculated Adjusted Value* = *Current DHV Max Min Value*

if (*Current DHV Record*.AdjustedHourlyValue == *Current DHV Max Min Value* )

*Derived Hourly Adjusted Value Status* = true

else

return result C

= 06:

If (*Current DHV Parameter* in set {CO2C, H2O} AND (*Current DHV Record*.AdjustedHourlyValue is null or *Current DHV Record*.AdjustedHourlyValue < 0 or *Current DHV Record*.AdjustedHourlyValue > 100))

return result L

else if (*Current DHV HBHA Value* is not null)

***Current DHV Calculated Adjusted Value = Current DHV HBHA Value***

```

If (Current DHV Record.AdjustedHourlyValue >= 0)
  if ( Current DHV Record.AdjustedHourlyValue == Current DHV Calculated Adjusted Value)
    Derived Hourly Adjusted Value Status = true
  else
    return result D
else
  return result E

else
  If (Current DHV Record.AdjustedHourlyValue >= 0)
    If (Current DHV Record.AdjustedHourlyValue is not rounded to Current DHV Precision)
      return result M
    else
      Current DHV Calculated Adjusted Value = Current DHV Record.AdjustedHourlyValue
      Derived Hourly Adjusted Value Status = true

      if (Current DHV Parameter in set {CO2C, H2O, NOXR} AND Current DHV Max Min Value is not null)
        If (Current DHV Parameter == "H2O" AND H2O Missing Data Approach == "MIN")
          if (Current DHV Record.AdjustedHourlyValue < Current DHV Max Min Value)
            return result H
          else
            if (Current DHV Record.AdjustedHourlyValue > Current DHV Max Min Value)
              If (Current DHV Parameter == "NOXR" and Current DHV Record.AdjustedHourlyValue > Current DHV Max Min Value * 2)
                return result O
              Otherwise,
                return result G
            Else
              return result E

```

= 08 OR 09:

If (***Current DHV Parameter*** in set {CO2C, H2O} AND (***Current DHV Record.AdjustedHourlyValue*** is null or ***Current DHV Record.AdjustedHourlyValue < 0*** or ***Current DHV Record.AdjustedHourlyValue > 100***))  
return result L

else if (***Current DHV Record.AdjustedHourlyValue >= 0***)

If (***Current DHV HBHA Value*** is not null AND ***Current DHV Parameter == "H2O" AND H2O Missing Data Approach == "MIN" AND Current DHV HBHA Value < Current DHV Record.AdjustedHourlyValue***)

***Current DHV Calculated Adjusted Value = Current DHV HBHA Value***  
return result N

else if (***Current DHV HBHA Value*** is not null AND (***Current DHV Parameter <> "H2O" OR H2O Missing Data Approach == "MAX"***) AND ***Current DHV HBHA Value > Current DHV Record.AdjustedHourlyValue*** AND (***Unit is Load Based == true*** or ***Current DHV Parameter <> "NOXR"***))

***Current DHV Calculated Adjusted Value = Current DHV HBHA Value***  
return result F



```

    elseif (Current DHV Record.AdjustedHourlyValue is not rounded to Current DHV Precision)
        return result M
    else
        Current DHV Calculated Adjusted Value = Current DHV Record.AdjustedHourlyValue
        Derived Hourly Adjusted Value Status = true

        if (Current DHV Parameter in set {CO2C, H2O, NOXR} AND Current DHV Max Min Value is
            not null)
            If (Current DHV Parameter == "H2O" AND H2O Missing Data Approach == "MIN")
                if (Current DHV Record.AdjustedHourlyValue < Current DHV Max Min Value)
                    return result H
            else
                if (Current DHV Record.AdjustedHourlyValue > Current DHV Max Min Value)
                    If (Current DHV Parameter == "NOXR" and Current DHV
                        Record.AdjustedHourlyValue > Current DHV Max Min Value * 2)
                        return result O
                    Otherwise,
                        return result G

        Else
            return result E

= 04, 05, 07, 10, 11, 15, 53, 54, OR 55:

    If (Current DHV Parameter in set {CO2C, H2O} AND (Current DHV Record.AdjustedHourlyValue is null or
        Current DHV Record.AdjustedHourlyValue < 0 or Current DHV Record.AdjustedHourlyValue > 100))
        return result L

    else if (Current DHV Record.AdjustedHourlyValue >= 0)
        If (Current DHV Record.AdjustedHourlyValue is not rounded to Current DHV Precision)
            return result M
        else
            Current DHV Calculated Adjusted Value = Current DHV Record.AdjustedHourlyValue
            Derived Hourly Adjusted Value Status = true

            if (Current DHV Parameter in set {CO2C, H2O, NOXR} AND Current DHV Max Min Value is
                not null)
                If (Current DHV Parameter == "H2O" AND H2O Missing Data Approach == "MIN")
                    if (Current DHV Record.AdjustedHourlyValue < Current DHV Max Min Value)
                        return result H
                else
                    if (Current DHV Record.AdjustedHourlyValue > Current DHV Max Min Value)
                        If (Current DHV Parameter == "NOXR" and Current DHV
                            Record.AdjustedHourlyValue > Current DHV Max Min Value * 2)
                            return result O
                        Otherwise,
                            return result G

            Else
                return result E

= 26:    If (Current DHV Record.AdjustedHourlyValue == 1)
        Derived Hourly Adjusted Value Status = true
    else
        return result I

= All Other Codes except 40:

```

```

    If (Current DHV Parameter in set {CO2C, H2O} AND (Current DHV Record.AdjustedHourlyValue is null or
Current DHV Record.AdjustedHourlyValue < 0 or Current DHV Record.AdjustedHourlyValue > 100))
        return result L

    else if (Current DHV Record.AdjustedHourlyValue >= 0)
        If (Current DHV Record.AdjustedHourlyValue is not rounded to Current DHV Precision)
            return result M

        else
            Derived Hourly Adjusted Value Status = true

            If (Current DHV Parameter in set {CO2C, H2O} AND Current DHV Max Min Value is not
            null)
                If (Current DHV Parameter == "H2O" AND H2O Missing Data Approach == "MIN")
                    if (Current DHV Record.AdjustedHourlyValue < Current DHV Max Min Value)
                        return result H
                    else
                        if (Current DHV Record.AdjustedHourlyValue > Current DHV Max Min Value)
                            return result G

            Else
                return result E

    else

        If (Current DHV Record.AdjustedHourlyValue >= 0)
            If (Current DHV Record.AdjustedHourlyValue is not rounded to Current DHV Precision)
                return result M

            else

                Derived Hourly Adjusted Value Status = true

                If (Current DHV Parameter == "HI")
                    if (Heat Input Method Code not in set {AD, ADCALC, CALC})
                        Current DHV Calculated Adjusted Value = Current DHV Record.AdjustedHourlyValue

                    If (Current DHV Record.AdjustedHourlyValue == 0.0)

                        If (Heat Input Method Code == "CEM")

                            If Legacy Data Evaluation = true
                                If (Current Hourly Op Record.OpTime > 0.25 )
                                    return result J
                                else
                                    If (Current Hourly Op Record.OpTime > 0)
                                        return result K

                            else if (Current DHV Max Min Value is not null and Current DHV Record.AdjustedHourlyValue
                            > Current DHV Max Min Value)
                                return result G

                else if (Current DHV Parameter == "NOXR")
                    if (Current NOx Rate Method Code <> "AE")
                        Current DHV Calculated Adjusted Value = Current DHV Record.AdjustedHourlyValue

                else if (Current DHV Parameter == "SO2")
                    if (SO2 App D Method Active for Hour == false)
                        Current DHV Calculated Adjusted Value = Current DHV Record.AdjustedHourlyValue

```

---

```
        else if (Current DHV Parameter == "CO2")
            if (CO2 App D Method Active for Hour == false)
                Current DHV Calculated Adjusted Value = Current DHV Record.AdjustedHourlyValue
            else
                Current DHV Calculated Adjusted Value = Current DHV Record.AdjustedHourlyValue
        else
            return result E
```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an MODCCode of 21 in the DHV record for [param], but the AdjustedHourlyValue does not equal 0.	Critical Error Level 1
B	You reported an MODCCode of [modcCode] in the DHV record for [param], but the AdjustedHourlyValue does not equal the maximum potential value reported in the span or default record in your monitoring plan.	Critical Error Level 1
C	You reported an MODCCode of 13 or 24 in the DHV record for NOXR, but the AdjustedHourlyValue does not equal the maximum controlled emission rate reported in the NORX default record in your monitoring plan.	Critical Error Level 1
D	You reported an MODCCode of 06 in the DHV record for [param], but the AdjustedHourlyValue does not equal average of measured hour before and measured hour after.	Critical Error Level 1
E	The AdjustedHourlyValue reported in the DHV record for [param] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
F	You reported an MODCCode of [MODCCode] in the DHV record for [param], but you reported an AdjustedHourlyValue that is less than the average of the measured hour before and measured hour after.	Critical Error Level 1
G	Warning: The AdjustedHourlyValue reported in the DHV record for [param] is in excess of the maximum value listed in the monitoring plan. Sources are required to periodically (at least once annually) evaluate the appropriateness of these maximum values in the monitoring plan and make proper adjustments when necessary. Adjustments may include the need to update Span, Default, and/or Unit Capacity values. You should investigate the cause of these exceedances and determine whether adjustments to your monitoring systems or monitoring plan are necessary.	Informational Message
H	Warning: The AdjustedHourlyValue reported in the DHV record for [param] is lower than the minimum value listed in the monitoring plan. Sources are required to periodically (at least once annually) evaluate the appropriateness of these minimum values in the monitoring plan and make proper adjustments when necessary. Adjustments may include the need to update Span Default values. You should investigate the cause of these low values and determine whether adjustments to your monitoring systems or monitoring plan are necessary.	Informational Message
I	You reported an MODCCode of 26 in the DHV record for [param], but the AdjustedHourlyValue does not equal 1.	Critical Error Level 1
J	You reported an AdjustedHourlyValue of 0 in the DHV record for HI, but you operated more than 0.25 hour.	Non-Critical Error
K	You reported an AdjustedHourlyValue of 0 in the DHV record for HI, but you had operating time during the hour. If you operated, you must report a heat input rate of at least 1 mmBtu/hr.	Critical Error Level 1
L	The AdjustedHourlyValue reported in the DHV record for [param] is invalid. The value must be between 0 and 100.	Critical Error Level 1
M	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1
N	You reported an MODCCode of [MODCCode] in the DHV record for [param], but you reported an AdjustedHourlyValue that is greater than the average of the measured hour before and measured hour after.	Critical Error Level 1
O	The AdjustedHourlyValue reported in the DHV record for NOXR is in excess of 200% of the maximum value listed in the monitoring plan. Sources are required to periodically (at least once annually) evaluate the appropriateness of these maximum values in the monitoring plan and make proper adjustments when necessary. Adjustments may include the need to update Span and/or Default values. You should investigate the cause of these exceedances and determine whether adjustments to your monitoring systems or monitoring plan are necessary.	Critical Error Level 2

**Usage:**

- |   |                   |  |
|---|-------------------|--|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- CO2 Concentration Calculation Verification  |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- CO2 Mass Rate Calculation Verification      |
| 3 | Process/Category: | Emissions Data Evaluation Report ----- H2O Calculation Verification                |
| 4 | Process/Category: | Emissions Data Evaluation Report ----- Heat Input Calculation Verification         |
| 5 | Process/Category: | Emissions Data Evaluation Report ----- NOx Emissions Rate Calculation Verification |
| 6 | Process/Category: | Emissions Data Evaluation Report ----- NOx Mass Rate Calculation Verification      |
| 7 | Process/Category: | Emissions Data Evaluation Report ----- SO2 Calculation Verification                |

**Check Code:** HOURCV-40

**Check Name:** Determine Moisture for SO2 Mass Calculation Verification

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Verifies that all elements are present to support the equation code indicated by the current SO2 Mass Rate record

**Specifications:**

If (*SO2 Method Code* begins with "CEM")

if (*SO2 Mass Equation Code* == "F-2")

If (*H2O Method Code* == "MWD" AND *H2O Derived Hourly Checks Needed* == true AND *H2O DHV Calculated Adjusted Value* is not null)

*Calculated Moisture for SO2 = H2O DHV Calculated Adjusted Value*

else if (*H2O Method Code* in set {MMS, MTB} AND *H2O Monitor Hourly Checks Needed* == true AND *H2O MHV Calculated Adjusted Value* is not null)

*Calculated Moisture for SO2 = H2O MHV Calculated Adjusted Value*

else if (*H2O Method Code* == "MDF" AND *H2O Derived Hourly Checks Needed* == true AND *H2O DHV Calculated Adjusted Value* is not null)

*Calculated Moisture for SO2 = H2O DHV Calculated Adjusted Value*

else if (*H2O Method Code* == "MDF" AND *H2O Derived Hourly Checks Needed* == false AND *H2O Default Value* is not null)

*Calculated Moisture for SO2 = H2O Default Value*

**Results:**

Result

Response

Severity

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- SO2 Calculation Verification

**Check Code:** HOURCV-41

**Check Name:** Calculate Adjusted NOx Rate in DHV Record

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

if (*Derived Hourly Adjusted Value Status* == true)

if (*Rpt Period NOx Rate Reported Accumulator Array* for this location is not null)

if (*Rpt Period NOx Rate Reported Accumulator Array* for this location >= 0)

*Rpt Period NOx Rate Reported Accumulator Array* for this location = *Rpt Period NOx Rate Reported Accumulator Array* for this location + *Current DHV Record*.AdjustedHourlyValue

else

*Rpt Period NOx Rate Reported Accumulator Array* for this location = *Current DHV Record*.AdjustedHourlyValue

else

*Rpt Period NOx Rate Reported Accumulator Array* for this location = -1

if (*RATA Status Required* == true AND *Current NOX System BAF* is not null)

*NOXR Calculated Adjusted Value* = *NOXR Calculated Unadjusted Value* \* *Current NOX System BAF*, and round the result to three decimal places

else if (*Current NOx Rate Method Code* == "AE" AND *Hourly Fuel Flow Count for Gas* + *Hourly Fuel Flow Count for Oil* > 0 AND *App E Constant Fuel Mix* == false)

If (*NOXR App E Accumulator* >= 0 AND *HI Calculated Adjusted Value* is not null AND *Current Hourly Op Record*.OperatingTime is between 0 and 1 (inclusive))

If (*NOXR App E Accumulator* == 0)

*NOXR Calculated Adjusted Value* = 0

else

*NOXR Calculated Adjusted Value* = *NOXR App E Accumulator* / *Total Heat Input from Fuel Flow*, and round the result to three decimal places

else

*Apportionment Calc NOXR Array* at this Location = -1

*Rpt Period NOx Rate Calculated Accumulator Array* for this location = -1

return result A

If (*NOXR Calculated Adjusted Value* is not null)

*Apportionment Calc NOXR Array* at this Location = *NOXR Calculated Adjusted Value*

if (*MP Stack Config for Hourly Checks* == "MS" AND *Expected Summary Value NOx Rate Array* for the location == true)

if (*Config NOxRateTimesHeatInput Accumulator* >= 0 AND *HI Calculated Adjusted Value* is not null)

*Config NOxRateTimesHeatInput Accumulator* = *Config NOxRateTimesHeatInput Accumulator* + (*HI Calculated Adjusted Value* \* *NOXR Calculated Adjusted Value*)

else

*Config NOxRateTimesHeatInput Accumulator* = -1

if (*Config NOxRateTimesOpTime Accumulator* >= 0 AND *Current Hourly Op Record*.OperatingTime is between 0 and 1 (inclusive))

*Config NOxRateTimesOpTime Accumulator* = *Config NOxRateTimesOpTime Accumulator* + (*Current Hourly Op Record*.OperatingTime \* *NOXR Calculated Adjusted Value*)

*Config OpTime Accumulator* = *Config OpTime Accumulator* + *Current Hourly Op Record*.OperatingTime

else

**Config NOxRateTimesOpTime Accumulator = -1**

if (**Rpt Period NOx Rate Calculated Accumulator Array** for this location is not null)  
     if (**Rpt Period NOx Rate Calculated Accumulator Array** for this location >= 0)  
         **Rpt Period NOx Rate Calculated Accumulator Array** for this location = **Rpt Period NOx Rate Calculated Accumulator Array** for this location + **NOXR Calculated Adjusted Value**

else

**Rpt Period NOx Rate Calculated Accumulator Array** for this location = **NOXR Calculated Adjusted Value**

**Rpt Period NOx Rate Hours Accumulator Array** for this location = **Rpt Period NOx Rate Hours Accumulator Array** for this location + 1

if (**Derived Hourly Adjusted Value Status** == true AND **Derived Hourly Unadjusted Calculation Status** == true)

**Tolerance** = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
         Parameter = "NOXR" AND  
         UOM = "LBMMBTU"

    if ABS(**NOXR Calculated Adjusted Value** - **Current DHV Record**.AdjustedHourlyValue) > **Tolerance**  
         return result B

else if **Current NOx Rate Method Code** <> "AE" OR **Hourly Fuel Flow Count for Gas** + **Hourly Fuel Flow Count for Oil** > 0)  
     > 0)

**Apportionment Calc NOXR Array** at this Location = -1

**Rpt Period NOx Rate Calculated Accumulator Array** for this location = -1

if (**MP Stack Config for Hourly Checks** == "MS")

**Config NOxRateTimesHeatInput Accumulator** = -1

if (**RATA Status Required** == true AND **Current NOX System BAF** is null AND **NOXR Calculated Unadjusted Value** is not null )  
     return result A

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The AdjustedHourlyValue in the DHV record for [param] could not be recalculated due to errors listed above.	Informational Message
B	The AdjustedHourlyValue reported in the DHV record for [param] is inconsistent with the recalculated value.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- NOx Emissions Rate Calculation Verification
	Conditions:	RATA Status Required Equals false
2	Process/Category:	Emissions Data Evaluation Report ----- NOX RATA Status Evaluation



**Check Code:** HOURCV-42

**Check Name:** Check HI System in DHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check ensures that a valid Monitoring System is indicated in the DHV record.

**Specifications:**

*If Current DHV Parameter == "HI" AND Heat Input Method Code in set {CEM, AMS} )*

If (*Current DHV Record*.MonitoringSystemID is null

If ( *Heat Input Method Code* == "CEM" )

If ( *CO2 Conc Checks Needed for Heat Input* == true AND *Current CO2 Conc Monitor Hourly Record* is not null AND *Current CO2 Conc Monitor Hourly Record*.ModcCode in set {01, 02, 03, 04, 17, 20, 21} ) OR

( *O2 Wet Checks Needed for Heat Input* == true AND *Current O2 Wet Monitor Hourly Record* is not null AND *Current O2 Wet Monitor Hourly Record*.ModcCode in set {01, 02, 03, 04, 17, 20} ) OR

( *O2 Dry Checks Needed for Heat Input* == true AND *Current O2 Dry Monitor Hourly Record* is not null AND *Current O2 Dry Monitor Hourly Record*.ModcCode in set {01, 02, 03, 04, 17, 20} )

return result A

Else

return result E

Else

*HI DHV Mon Sys Record* = find active MonitoringSystemData record for location where MonitoringSystemData.MonitoringSystemID = *Current DHV Record*.MonitoringSystemID

If ( *HI DHV Mon Sys Record* is null )

return result C

Else If ( *HI DHV Mon Sys Record*.SystemTypeCode not in set {CO2, O2} )

return result D

Else If ( *Heat Input Method Code* != "CEM" ) OR

( *CO2 Conc Checks Needed for Heat Input* == true AND *Current CO2 Conc Monitor Hourly Record* is not null AND *Current CO2 Conc Monitor Hourly Record*.ModcCode in set {01, 02, 03, 04, 17, 20, 21} ) OR

( *O2 Wet Checks Needed for Heat Input* == true AND *Current O2 Wet Monitor Hourly Record* is not null AND *Current O2 Wet Monitor Hourly Record*.ModcCode in set {01, 02, 03, 04, 17, 20} ) OR

( *O2 Dry Checks Needed for Heat Input* == true AND *Current O2 Dry Monitor Hourly Record* is not null AND *Current O2 Dry Monitor Hourly Record*.ModcCode in set {01, 02, 03, 04, 17, 20} )

If ( *CO2 RATA Required* == true )

*RATA Status Required* = true

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report MonitoringSystemID in the DHV record for HI. While this was acceptable for legacy data, this field is required when you report measured data.	Critical Error Level 1
B	You reported a MonitoringSystemID in the DHV record for [param]. This field should be blank when missing data substitution is used.	Non-Critical Error
C	You reported MonitoringSystemID [ID] in the DHV record for [param], but according to your monitoring plan this system was not active during the hour.	Critical Error Level 1
D	You reported MonitoringSystemID [ID] in the DHV record for HI, but this system is not a CO2 or O2 monitoring system.	Critical Error Level 1
E	You did not report MonitoringSystemID in the DHV record for HI. MonitoringSystemID is required when you report missing data.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Heat Input Calculation Verification

**Check Code:** HOURCV-43  
**Check Name:** Determine DHV Measure Code  
**Related Former Checks:**  
**Applicability:** General Check  
**Description:**  
**Specifications:**

Set *Current Measure Code* to null.

If (*Current DHV Parameter* in set {CO2C, H2O})

If (*Current DHV Record.ModeCode* in set {01, 02, 03, 04, 21, 53, 54})

Set *Monitor Measure Code Array* for the *Current DHV Parameter* to "MEASURE"

if (*Current DHV Parameter* == "CO2C" AND *CO2 Conc CEM Equation Code* == "F-14B" AND *Monitor Measure Code Array* for "H2O" == "SUB")

Set *Monitor Measure Code Array* for "CO2C" to "MEASSUB".

else if (*Current DHV Record.ModeCode* in set {06, 07, 08, 09, 10, 12, 55})

Set *Monitor Measure Code Array* for the *Current DHV Parameter* to "SUB"

if (*Current DHV Parameter* == "CO2C" AND *CO2 Conc CEM Equation Code* == "F-14B" AND *Monitor Measure Code Array* for "H2O" == "MEASURE")

Set *Monitor Measure Code Array* for "CO2C" to "MEASSUB".

else if (*Current DHV Parameter* == "NOXR")

If (*Current NOx Rate Method Code* in set {CEM, PEM})

If (*Current DHV Record.ModeCode* in set {01, 02, 03, 04, 05, 14, 21, 22, 53, 54})

Set *Current Measure Code* to "MEASURE".

if (*NOx Rate Equation Code* in set {19-3, 19-3D, 19-4, 19-5, 19-8, 19-9} AND *Monitor Measure Code Array* for "H2O" == "SUB")

set *Current Measure Code* to "MEASSUB".

else if (*Current DHV Record.ModeCode* in set {06, 07, 08, 09, 10, 11, 12, 13, 15, 23, 24, 25, 55})

Set *Current Measure Code* to "SUB"

if (*NOx Rate Equation Code* in set {19-3, 19-3D, 19-4, 19-5, 19-8, 19-9} AND *Monitor Measure Code Array* for "H2O" == "MEASURE")

set *Current Measure Code* to "MEASSUB".

else if (*Current NOx Rate Method Code* == "AE")

Set *Current Measure Code* to the *Monitor Measure Code Array* for "NOXR".

Set *NOXR Measure Code* to the *Current Measure Code*.

else if (*Current DHV Parameter* == "HI")

If (*Heat Input Method Code* == "CEM")

if (*Heat Input Equation Code* in set {F-15, F-16})

If (*Monitor Measure Code Array* for "CO2C" and "FLOW" are both equal to "MEASURE")

set *Current Measure Code* to "MEASURE".

---

else if (**Monitor Measure Code Array** for "CO2C" and "FLOW" are both equal to "SUB")  
set **Current Measure Code** to "SUB".

else if (**Monitor Measure Code Array** for "CO2C" and "FLOW" are both not null)  
set **Current Measure Code** to "MEASSUB".

else if (**Heat Input Equation Code** in set {F-18})

If (**Monitor Measure Code Array** for "O2D" and "FLOW" are both equal to "MEASURE")  
set **Current Measure Code** to "MEASURE".

else if (**Monitor Measure Code Array** for "O2D" and "FLOW" are both equal to "SUB")  
set **Current Measure Code** to "SUB".

else if (**Monitor Measure Code Array** for "O2D" and "FLOW" are both not null)  
set **Current Measure Code** to "MEASSUB".

else if (**Heat Input Equation Code** in set {F-17})

If (**Monitor Measure Code Array** for "O2W" and "FLOW" are both equal to "MEASURE")  
set **Current Measure Code** to "MEASURE".

else if (**Monitor Measure Code Array** for "O2W" and "FLOW" are both equal to "SUB")  
set **Current Measure Code** to "SUB".

else if (**Monitor Measure Code Array** for "O2W" and "FLOW" are both not null)  
set **Current Measure Code** to "MEASSUB".

if (**Heat Input Equation Code** in set {F-16, F-17, F-18} AND **Monitor Measure Code Array** for "H2O" is not null)

If ((**Current Measure Code** == "MEASURE" AND **Monitor Measure Code Array** for "H2O" == "SUB") OR  
(**Current Measure Code** == "SUB" AND **Monitor Measure Code Array** for "H2O" == "MEASURE"))  
set **Current Measure Code** to "MEASSUB".

else if (**Heat Input App D Method Active for Hour** == true)

If (**Monitor Measure Code Array** for "FF" in set {OTHER, MEASSUB})  
set **Current Measure Code** to **Monitor Measure Code Array** for "FF".

else if (**Monitor Measure Code Array** for "FF" and "GCV" are both equal to "MEASURE")  
set **Current Measure Code** to "MEASURE".

else if (**Monitor Measure Code Array** for "FF" and "GCV" are both equal to "SUB")  
set **Current Measure Code** to "SUB".

else if (**Monitor Measure Code Array** for "FF" and "GCV" are both not null)  
set **Current Measure Code** to "MEASSUB".

if (**Monitor Measure Code Array** for "DENSITY" is not null)

If ((**Current Measure Code** == "MEASURE" AND **Monitor Measure Code Array** for "DENSITY" == "SUB")  
OR (**Current Measure Code** == "SUB" AND **Monitor Measure Code Array** for "DENSITY" == "MEASURE"))  
set **Current Measure Code** to "MEASSUB".

Set **HI Measure Code** to the **Current Measure Code**.

else if (*Current DHV Parameter* == "SO2")

    If (*SO2 CEM Method Active for Hour* == true)

        If (*Monitor Measure Code Array* for "SO2C" and "FLOW" are both equal to "MEASURE")  
            set *Current Measure Code* to "MEASURE".

    else if (*Monitor Measure Code Array* for "SO2C" and "FLOW" are both equal to "SUB")  
        set *Current Measure Code* to "SUB".

    else if (*Monitor Measure Code Array* for "SO2C" and "FLOW" are both not null)  
        set *Current Measure Code* to "MEASSUB".

    if (*SO2 Equation Code* == "F-2" AND *Monitor Measure Code Array* for "H2O" is not null)

        If ((*Current Measure Code* == "MEASURE" AND *Monitor Measure Code Array* for "H2O" == "SUB") OR  
            (*Current Measure Code* == "SUB" AND *Monitor Measure Code Array* for "H2O" == "MEASURE"))  
            set *Current Measure Code* to "MEASSUB".

else if (*SO2 F23 Method Active for Hour* == true)

    set *Current Measure Code* to *HI Measure Code*.

else if (*SO2 App D Method Active for Hour* == true)

    If (*Monitor Measure Code Array* for "FF" in set {OTHER, MEASSUB} OR *Monitor Measure Code Array* for "SULFUR"  
    is null)  
        set *Current Measure Code* to *Monitor Measure Code Array* for "FF".

    else if (*Monitor Measure Code Array* for "FF" and "SULFUR" are both equal to "MEASURE")  
        set *Current Measure Code* to "MEASURE".

    else if (*Monitor Measure Code Array* for "FF" and "SULFUR" are both equal to "SUB")  
        set *Current Measure Code* to "SUB".

    else if (*Monitor Measure Code Array* for "FF" is not null)  
        set *Current Measure Code* to "MEASSUB".

else if (*Current DHV Parameter* == "CO2")

    If (*CO2 Method Code* == "CEM")

        If (*Monitor Measure Code Array* for "CO2C" and "FLOW" are both equal to "MEASURE")  
            set *Current Measure Code* to "MEASURE".

    else if (*Monitor Measure Code Array* for "CO2C" and "FLOW" are both equal to "SUB")  
        set *Current Measure Code* to "SUB".

    else if (*Monitor Measure Code Array* for "CO2C" and "FLOW" are both not null)  
        set *Current Measure Code* to "MEASSUB".

    if (*CO2 Mass Equation Code* == "F-2" AND *Monitor Measure Code Array* for "H2O" is not null)

        If ((*Current Measure Code* == "MEASURE" AND *Monitor Measure Code Array* for "H2O" == "SUB") OR  
            (*Current Measure Code* == "SUB" AND *Monitor Measure Code Array* for "H2O" == "MEASURE"))  
            set *Current Measure Code* to "MEASSUB".

else if (*CO2 App D Method Active for Hour* == true)

set *Current Measure Code* to *HI Measure Code*.

else if (*Current DHV Parameter* == "NOX")

if (*NOx Mass Equation Code* == "F-24A")

If (*HI Measure Code* and *NOXR Measure Code* are both equal to "MEASURE")  
set *Current Measure Code* to "MEASURE".

else if (*HI Measure Code* and *NOXR Measure Code* are both equal to "SUB")  
set *Current Measure Code* to "SUB".

else if (*HI Measure Code* and *NOXR Measure Code* are both not null)  
set *Current Measure Code* to "MEASSUB".

else if (*NOx Mass Equation Code* in set {F-26A, F-26B})

If (*Monitor Measure Code Array* for "NOXC" and "FLOW" are both equal to "MEASURE")  
set *Current Measure Code* to "MEASURE".

else if (*Monitor Measure Code Array* for "NOXC" and "FLOW" are both equal to "SUB")  
set *Current Measure Code* to "SUB".

else if (*Monitor Measure Code Array* for "NOXC" and "FLOW" are both not null)  
set *Current Measure Code* to "MEASSUB".

if (*NOx Mass Equation Code* == "F-26B" AND *Monitor Measure Code Array* for "H2O" is not null)

If ((*Current Measure Code* == "MEASURE" AND *Monitor Measure Code Array* for "H2O" == "SUB") OR  
(*Current Measure Code* == "SUB" AND *Monitor Measure Code Array* for "H2O" == "MEASURE"))  
set *Current Measure Code* to "MEASSUB".

else if (*Current DHV Parameter* in set {SO2M, NOXM, CO2M, HIT})  
Set *Current Measure Code* to "LME".

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Calculation Verification
2	Process/Category:	Emissions Data Evaluation Report ----- CO2 Mass Rate Calculation Verification
3	Process/Category:	Emissions Data Evaluation Report ----- CO2M Derived Hourly Evaluation (LME)
4	Process/Category:	Emissions Data Evaluation Report ----- H2O Calculation Verification
5	Process/Category:	Emissions Data Evaluation Report ----- Heat Input Calculation Verification
6	Process/Category:	Emissions Data Evaluation Report ----- HIT Derived Hourly Evaluation (LME)
7	Process/Category:	Emissions Data Evaluation Report ----- NOx Emissions Rate Calculation Verification
8	Process/Category:	Emissions Data Evaluation Report ----- NOx Mass Rate Calculation Verification
9	Process/Category:	Emissions Data Evaluation Report ----- NOXM Derived Hourly Evaluation (LME)
10	Process/Category:	Emissions Data Evaluation Report ----- SO2 Calculation Verification
11	Process/Category:	Emissions Data Evaluation Report ----- SO2M Derived Hourly Evaluation (LME)

**Check Category:**

**Hourly Derived Data**



**Check Code:**HOURDHV-1

**Check Name:**Initialize SO2 Derived Hourly Data

**Related Former Checks:**

**Applicability:**General Check

**Description:**This check sets generic parameters and output parameters for subsequent derived hourly checks for SO2.

**Specifications:**

*Current DHV Parameter* = "SO2"  
*SO2 Derived Hourly Status* = true  
*Current DHV Record* = *Current SO2 Derived Hourly Record*  
*Current DHV Method* = *SO2 Method Code*  
*Current DHV System Type* = null

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
<b>Usage:</b>		
1	Process/Category:	Emissions Data Evaluation Report ----- SO2 Derived Hourly Evaluation

**Check Code:** HOURDHV-2

**Check Name:** Initialize NOX Derived Hourly Data

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check sets generic parameters and output parameters for subsequent derived hourly checks for NOX.

**Specifications:**

*Current DHV Parameter* = "NOX"

*NOX Derived Hourly Status* = true

*Current DHV Record* = *Current NOx Mass Derived Hourly Record*

*Current DHV Method* = *NOx Mass Monitor Method Code*

*Current DHV System Type* = null

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- NOx Mass Rate Derived Hourly Evaluation
---	-------------------	--

**Check Code:** HOURDHV-3

**Check Name:** Initialize NOXR Derived Hourly Data

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check sets generic parameters and output parameters for subsequent derived hourly checks for NOXR.

**Specifications:**

*Current DHV Parameter* = "NOXR"

*NOXR Derived Hourly Status* = true

*Current DHV System Type* = null

*Current DHV Record* = *Current NOx Rate Derived Hourly Record*

*Current DHV Method* = *Current NOx Rate Method Code*

*NOx Emission Rate MODC* = *Current NOx Rate Derived Hourly Record*.ModcCode

if (*Current DHV Method* == "CEM")

*Current DHV System Type* = "NOX"

else if (*Current DHV Method* == "PEM")

*Current DHV System Type* = "NOXP"

if (*Current DHV Method* == "AE")

*Current DHV System Type* = "NOXE"

#### Results:

Result

Response

Severity

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- NOx Emissions Rate Derived Hourly Evaluation
---	-------------------	---

Check Code:

HOURDHV-4

Check Name:

Initialize CO2 Derived Hourly Data

Related Former Checks:

Applicability:

General Check

Description:

This check sets generic parameters and output parameters for subsequent derived hourly checks for CO2.

Specifications:

*Current DHV Parameter* = "CO2"  
*CO2 Derived Hourly Status* = true  
*Current DHV Record* = *Current CO2 Mass Derived Hourly Record*  
*Current DHV Method* = *CO2 Method Code*  
*Current DHV System Type* = null

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Mass Rate Derived Hourly Evaluation
---	-------------------	--

Check Code:

HOURDHV-5

Check Name:

Initialize CO2C Derived Hourly Data

Related Former Checks:

Applicability:

CEM Check

Description:

This check sets generic parameters and output parameters for subsequent derived hourly checks for CO2C.

Specifications:

*Current DHV Parameter* = "CO2C"  
*CO2C Derived Hourly Status* = true  
*Current DHV Record* = *Current CO2 Conc Derived Hourly Record*  
*Current DHV System Type* = 'CO2'  
*Current DHV Method* = "CEM"

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Derived Hourly Evaluation
---	-------------------	--

Check Code:

HOURDHV-6

Check Name:

Initialize H2O Derived Hourly Data

Related Former Checks:

Applicability:

CEM Check

Description:

This check sets generic parameters and output parameters for subsequent derived hourly checks for H2O.

Specifications:

*Current DHV Parameter = "H2O"*  
*H2O Derived Hourly Status = true*  
*Current DHV Record = Current H2O Derived Hourly Record*  
*Current DHV System Type = "H2O"*  
*Current DHV Method = H2O Method Code*  
*RATA Status Required = false*  
*Current Hourly Record for RATA Status = Current H2O Derived Hourly Record*

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- H2O Derived Hourly Evaluation
---	-------------------	--

**Check Code:** HOURDHV-7  
**Check Name:** Initialize HI Derived Hourly Data

**Related Former Checks:**

**Applicability:** General Check  
**Description:** This check sets generic parameters and output parameters for subsequent derived hourly checks for HI.

**Specifications:**

*Current DHV Parameter* = "HI"  
*HI Derived Hourly Status* = true  
*Current DHV System Type* = null  
*Current DHV Record* = *Current Heat Input Derived Hourly Record*  
*Current DHV Method* = *Heat Input Method Code*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Heat Input Derived Hourly Evaluation
---	-------------------	---

**Check Code:**HOURDHV-8

**Check Name:**Initialize SO2R Derived Hourly Data

**Related Former Checks:**

**Applicability:**CEM Check

**Description:**This check sets generic parameters and output parameters for subsequent derived hourly checks for SO2R.

**Specifications:**

*Current DHV Parameter* = "SO2R"  
*SO2R Derived Hourly Status* = true  
*Current DHV System Type* = null  
*Current DHV Record* = *Current SO2R Derived Hourly Record*  
*Current DHV Method* = null

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
<b>Usage:</b>		
1	Process/Category:	Emissions Data Evaluation Report ----- SO2R Derived Hourly Evaluation



**Check Code:** HOURDHV-9

**Check Name:** Initialize SO2M Derived Hourly Data

**Related Former Checks:**

**Applicability:** LME Check

**Description:** This check sets generic parameters and output parameters for subsequent derived hourly checks for SO2M.

**Specifications:**

*Current DHV Parameter* = "SO2M"  
*SO2M Derived Hourly Status* = true  
*Current DHV System Type* = null  
*Current DHV Method* = "LME"  
*Current DHV Record* = *Current SO2 Derived Hourly Record*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- SO2M Derived Hourly Evaluation (LME)
---	-------------------	---

**Check Code:**HOURDHV-10

**Check Name:**Initialize NOXM Derived Hourly Data

**Related Former Checks:**

**Applicability:**LME Check

**Description:**This check sets generic parameters and output parameters for subsequent derived hourly checks for NOXM.

**Specifications:**

*Current DHV Parameter* = "NOXM"  
*NOXM Derived Hourly Status* = true  
*Current DHV System Type* = null  
*Current DHV Method* = "LME"  
*Current DHV Record* = *Current NOx Mass Derived Hourly Record*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- NOXM Derived Hourly Evaluation (LME)
---	-------------------	---

**Check Code:** HOORDHV-11

**Check Name:** Initialize CO2M Derived Hourly Data

**Related Former Checks:**

**Applicability:** LME Check

**Description:** This check sets generic parameters and output parameters for subsequent derived hourly checks for CO2M.

**Specifications:**

*Current DHV Parameter* = "CO2M"  
*CO2M Derived Hourly Status* = true  
*Current DHV System Type* = null  
*Current DHV Method* = "LME"  
*Current DHV Record* = *Current CO2 Mass Derived Hourly Record*

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
Usage:		
1	Process/Category:	Emissions Data Evaluation Report ----- CO2M Derived Hourly Evaluation (LME)

**Check Code:**HOURDHV-12

**Check Name:**Initialize HIT Derived Hourly Data

**Related Former Checks:**

**Applicability:**LME Check

**Description:**This check sets generic parameters and output parameters for subsequent derived hourly checks for HIT.

**Specifications:**

*Current DHV Parameter* = "HIT"  
*HIT Derived Hourly Status* = true  
*Current DHV System Type* = null  
*Current DHV Method* = *Heat Input Method Code*  
*Current DHV Record* = *Current Heat Input Derived Hourly Record*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
1	Process/Category: Emissions Data Evaluation Report ----- HIT Derived Hourly Evaluation (LME)	

**Usage:**

**Check Code:** HOURLHV-13

**Check Name:** Check MODC in DHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Basic check to ensure that MODC reported in the DHV record is valid for the parameter. Also initializes variables for the category.

**Specifications:**

*Derived Hourly Modc Status* = false

case (*Current DHV Parameter*)

```

SO2:  If (Current DHV Method == "AMS")
        If (Current DHV Record.ModcCode is not null and is not in set {01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 12, 13, 15,
        16, 21, 23, 53, 54, 55})
            return result A
        Else
            Derived Hourly Modc Status = true
    else
        If (Current DHV Record.ModcCode is not null)
            return result B
        Else
            Derived Hourly Modc Status = true

NOX:  If (Current DHV Method == "AMS")
        If (Current DHV Record.ModcCode is not null and is not in set {01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13,
        15, 21, 23, 24, 53, 54, 55})
            return result A
        Else
            Derived Hourly Modc Status = true
    else
        If (Current DHV Record.ModcCode is not null)
            return result B
        Else
            Derived Hourly Modc Status = true

NOXR: If (Current DHV Method == "AMS" AND Current DHV Record.ModcCode is null)
        Derived Hourly Modc Status = true

    else if (Current DHV Method == "AE")
        If (Current DHV Record.ModcCode is not null)
            return result C
        Else
            Derived Hourly Modc Status = true
    else
        if (Current DHV Record.ModcCode not in set {01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 21, 22,
        23, 24, 25, 53, 54, 55})
            return result A
        Else
            Derived Hourly Modc Status = true

CO2C: If (Current DHV Record.ModcCode not in set {01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 12, 21, 53, 54, 55})
        return result A
    Else
        Derived Modc Status = true

CO2:  If (Current DHV Method == "AMS")

```

```

    If (Current DHV Record.ModcCode is not null and is not in set {01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 12, 53, 54, 55})
        return result A
    Else
        Derived Hourly Modc Status = true
else
    If (Current DHV Record.ModcCode is not null)
        return result B
    Else
        Derived Hourly Modc Status = true

HI:    If (Current DHV Method == "AMS")
        If (Current DHV Record.ModcCode is not null and is not in set {01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 12, 26, 53, 54, 55})
            return result A
        Else
            Derived Hourly Modc Status = true
else
    If (Current DHV Record.ModcCode is not null and Current DHV Record.ModcCode <> "26")
        return result B
    Else
        Derived Hourly Modc Status = true

H2O:    H2O DHV MODC = Current DHV Record.ModcCode

        if (Current DHV Method == "MWD")
            If (Current DHV Record.ModcCode not in set {01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 12, 21, 53, 54, 55})
                return result A
            else
                Derived Hourly Modc Status = true

        else if (Current DHV Method == "MDF")
            If (Current DHV Record.ModcCode <> "40")
                return result A
            else
                Derived Hourly Modc Status = true

SO2R:    If (SO2 F23 Method Active For Hour == true)
            If (Current DHV Record.ModcCode <> "40")
                return result A
            else
                Derived Hourly Modc Status = true

HIT:    If (Current DHV Record.ModcCode == "45")
            If (LME HI Substitute Data Code == "MHHI")
                Derived Hourly Modc Status = true
            else
                return result D
        else if (Current DHV Record.ModcCode is not null)
            return result A
        Else
            Derived Hourly Modc Status = true

SO2M, NOXM, CO2M:

        If (Current DHV Record.ModcCode is not null)
            return result B

```

Else

***Derived Hourly Modc Status*** = true**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The MODCCode reported in the DHV record for [param] is invalid.	Critical Error Level 1
B	You reported an MODCCode in the DHV record for [param]. This field should be blank.	Non-Critical Error
C	You reported an MODCCode in the DHV record for NOXR. This field should be blank when you use the Appendix E method to determine the NOx emission rate.	Critical Error Level 1
D	You reported an MODCCode of 45 in the DHV record for HIT, but you have not reported a SubstituteDataCode of MHHI in the active heat input method record in your monitoring plan.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Derived Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- CO2 Mass Rate Derived Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- CO2M Derived Hourly Evaluation (LME)
4	Process/Category:	Emissions Data Evaluation Report ----- H2O Derived Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- Heat Input Derived Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- HIT Derived Hourly Evaluation (LME)
7	Process/Category:	Emissions Data Evaluation Report ----- NOx Emissions Rate Derived Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- NOx Mass Rate Derived Hourly Evaluation
9	Process/Category:	Emissions Data Evaluation Report ----- NOXM Derived Hourly Evaluation (LME)
10	Process/Category:	Emissions Data Evaluation Report ----- SO2 Derived Hourly Evaluation
11	Process/Category:	Emissions Data Evaluation Report ----- SO2M Derived Hourly Evaluation (LME)
12	Process/Category:	Emissions Data Evaluation Report ----- SO2R Derived Hourly Evaluation

**Check Code:** HOURLHV-14

**Check Name:** Check Percent Monitor Availability in DHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Performs a series basic checks to ensure that the reported monitor percent available is between 0 and 100, inclusive, then checks to see that percent available is within permitted ranges for specific MODC codes

**Specifications:**

*Derived Hourly Pma Status* = false

*Derived Hourly Missing Data Status* = true

If (*Derived Hourly Modc Status* == true)

    If ( *Current DHV Record*.PercentAvailable is NULL)

        if (*Current DHV Parameter* not in set {H2O, CO2C, NOXR})

*Derived Hourly Pma Status* = true

    else if (*Current DHV Parameter* == "NOXR" and *Current DHV Method* not in set {PEM, CEM})

*Derived Hourly Pma Status* = true

    else if (*Current DHV Parameter* == "H2O" and *Current DHV Record*.ModcCode == "40")

*Derived Hourly Pma Status* = true

    else

        if (*Current DHV Record*.ModcCode not in set {01, 02, 03, 04, 14, 21, 22, 53, 54} AND *Legacy Data Evaluation* == true)

*Derived Hourly Pma Status* = true

            return result A

        else

            return result B

else

    if (*Current DHV Parameter* == "NOXR" and *Current DHV Method* == "AE")

        return result C

    else if (*Current DHV Parameter* == "H2O" and *Current DHV Record*.ModcCode == "40")

        return result C

    else if (*Current DHV Parameter* not in set {H2O, CO2C, NOXR} AND *Current DHV Method* <> "AMS")

        return result C

    else if (*Current DHV Record*.PercentAvailable > 100.0 OR

*Current DHV Record*.PercentAvailable < 0.0)

        return result D

Else

    case ( *Current DHV Record*.ModcCode )

    = 06: If *Current DHV Record*.PercentAvailable >= 90.0

*Derived Hourly Pma Status* = true

    Else

        return result E

    = 08: If *Current DHV Record*.PercentAvailable >= 95.0

*Derived Hourly Pma Status* = true

    Else

        return result E

    = 09: If *Current DHV Record*.PercentAvailable >= 90.0 AND *Current DHV Record*.PercentAvailable < 95.0

*Derived Hourly Pma Status* = true

    Else



```

        return result E
= 10:  If Current DHV Record.PercentAvailable >=80.0 AND Current DHV Record.PercentAvailable < 90.0
        Derived Hourly Pma Status = true
    Else If Current DHV Parameter == "NOXR" and Current DHV Record.PercentAvailable >=90.0
        Derived Hourly Pma Status = true
    return result F
    Else
        return result E
= 11:  If Current DHV Record.PercentAvailable >=90.0
        Derived Hourly Pma Status = true
    Else
        return result E

```

All other MODC Codes:

*Derived Hourly Pma Status* = true

### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an MODCCode of [ModcCode] in the DHV record for [param], but you did not report a value for PercentAvailable. While this is not required for legacy EDR data, it is required in all [param] DHV records for ECMPS.	Informational Message
B	You did not report PercentAvailable in the DHV record for [param].	Critical Error Level 1
C	You reported PercentAvailable in the DHV record for [param]. This field should be blank.	Critical Error Level 1
D	The PercentAvailable reported in the DHV record for [param] is invalid. This value must be between 0 and 100.	Critical Error Level 1
E	You reported an MODCCode of [modcCode] in the DHV for [param], but the PercentAvailable is not appropriate for this MODC.	Critical Error Level 1
F	You reported an MODCCode of 10 in the [type] record for [param], but the PercentAvailability is greater than or equal to 90. When the PMA is greater than or equal to 90, you should only report an MODC of 10 to indicate that you used the maximum hourly value in the lookback period for the next available higher load bin, because there were no quality-assured data in the bin corresponding to the current load range. (See Part 75.33(c)(5).)	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Derived Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- CO2 Mass Rate Derived Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- CO2M Derived Hourly Evaluation (LME)
4	Process/Category:	Emissions Data Evaluation Report ----- H2O Derived Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- Heat Input Derived Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- HIT Derived Hourly Evaluation (LME)
7	Process/Category:	Emissions Data Evaluation Report ----- NOx Emissions Rate Derived Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- NOx Mass Rate Derived Hourly Evaluation
9	Process/Category:	Emissions Data Evaluation Report ----- NOXM Derived Hourly Evaluation (LME)
10	Process/Category:	Emissions Data Evaluation Report ----- SO2 Derived Hourly Evaluation
11	Process/Category:	Emissions Data Evaluation Report ----- SO2M Derived Hourly Evaluation (LME)
12	Process/Category:	Emissions Data Evaluation Report ----- SO2R Derived Hourly Evaluation

**Check Code:** HOURDHV-15

**Check Name:** Check Prior QA'd Hours for MODC 07

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** For Method of Determination Code 07, all prior hours in reporting period are checked to ensure that total of QA'd hours is below a certain threshold

**Specifications:**

if (*Derived Hourly Modc Status* == true AND *Derived Hourly PMA Status* == true)

if (*Current DHV Record*.ModcCode == 07)

case (*Current DHV Parameter*)

NOXR: *MODC Set* = {01, 02, 04, 14, 21, 22, 53}

CO2C: *MODC Set* = {01, 02, 04, 21, 53}

H2O: *MODC Set* = {01, 02, 04, 21, 53}

if ( *Current DHVParameter* == "NOXR" ) AND ( *Primary Bypass Active For Hour* == true )

*PrimaryOrPrimaryBypassSystemKey* = *Current DHV Parameter*.SystemKey

else

*PrimaryOrPrimaryBypassSystemKey* = null

*Prior QA Hours* = count DerivedHourlyValueData records where

( *PrimaryOrPrimaryBypassSystemKey* == null OR DerivedHourlyValueData.SystemKey==

*PrimaryOrPrimaryBypassSystemKey* ) AND

DerivedHourlyValueData.ModcCode in set *MODC Set* AND

DerivedHourlyValueData.ParameterCode = *Current DHV Record*.ParameterCode AND

( DerivedHourlyValueData.BeginDate < *Current Date* OR

(DerivedHourlyValueData.BeginDate = *Current Date* AND DerivedHourlyValueData.BeginHour < *Current Hour*))

if (*Current DHV Parameter* == "NOXR")

if (*Prior QA Hours* > 2160)

*Derived Hourly Missing Data Status* = false

return result A

else

if (*Prior QA Hours* > 720)

*Derived Hourly Missing Data Status* = false

return result A

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an MODCCode of 07 in the DHV record for [param], but too many prior quality assured hours exist in evaluation period for use of this missing data approach.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Derived Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- H2O Derived Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- NOx Emissions Rate Derived Hourly Evaluation

**Check Code:** HOURLHV-16

**Check Name:** Check for Correct Use of Missing Data MODCs

**Related Former Checks:**

**Applicability:** CEM Check

**Description:**

**Specifications:**

*Current DHV HBHA Value* = null

if (*Derived Hourly Modc Status* == true AND *Derived Hourly PMA Status* == true)

case (*Current DHV Parameter*)

NOXR: *MODC Set* = {01, 02, 03, 04, 14, 21, 22, 53, 54}

CO2C: *MODC Set* = {01, 02, 03, 04, 21, 53, 54}

H2O: *MODC Set* = {01, 02, 03, 04, 21, 53, 54}

if (*Current DHV Record.ModcCode* in set {06, 08, 09})

If (*Current DHV Parameter* in set {CO2C, H2O})

*Prior Record* = latest DerivedHourlyValueData record or MonitorHourlyValueData record where  
 ParameterCode = *Current DHV Parameter* AND  
 ModcCode in set *MODC Set* AND  
 (Date < *Current Date* OR  
 (Date = *Current Date* AND Hour < *Current Hour* ))

If *Prior Record* is not null and is in current reporting period

*Next Record* = earliest DerivedHourlyValueData record or MonitorHourlyValueData record where  
 Data.ParameterCode = *Current MHV Parameter* AND  
 Data.ModcCode in set *MODC Set* AND  
 (Date > *Current Date* OR  
 (Date = *Current Date* AND Hour > *Current Hour* ))

If *Next Record* is not null and is in current reporting period

If *Prior Record.AdjustedHourlyValue* >= 0 AND *Next Record.AdjustedHourlyValue* >= 0

*Current DHV HBHA Value* = (*Prior Record.AdjustedHourlyValue* + *Next Record.AdjustedHourlyValue*) / 2, ROUNDED to a single decimal.

else

*Derived Hourly Missing Data Status* = false  
 return result A

else

If ( *Current DHVParameter* == "NOXR" ) AND ( *Primary Bypass Active For Hour* == true )  
*PrimaryOrPrimaryBypassSystemKey* = *Current DHV Parameter.SystemKey*

else

*PrimaryOrPrimaryBypassSystemKey* = null

*Prior DHV Record* = latest DerivedHourlyValueData record where  
 ( *PrimaryOrPrimaryBypassSystemKey* == null OR DerivedHourlyValueData.SystemKey==  
*PrimaryOrPrimaryBypassSystemKey* ) AND  
 DerivedHourlyValueData.ParameterCode = *Current DHV Parameter* AND

DerivedHourValueData.ModeCode in set *MODC Set* AND  
 [DerivedHourlyValueData.Date < **Current Date** OR  
 (DerivedHourlyValueData.Date = **Current Date** AND DerivedHourlyValueData.Hour < **Current Hour** )]

If *Prior DHV Record* is not null and is in current reporting period

*Next DHV Record* = earliest DerivedHourlyValueData record where  
 ( *PrimaryOrPrimaryBypassSystemKey* == null OR DerivedHourlyValueData.SystemKey==  
*PrimaryOrPrimaryBypassSystemKey* ) AND  
 DerivedHourlyValueData.ParameterCode = **Current MHV Parameter** AND  
 DerivedHourValueData.ModeCode in set *MODC Set* AND  
 [DerivedHourlyValueData.Date > **Current Date** OR  
 (DerivedHourlyValueData.Date = **Current Date** AND DerivedHourlyValueData.Hour > **Current Hour** )]

If *Next DHV Record* is not null and is in current reporting period

If *Prior DHV Record*.AdjustedHourlyValue >= 0 AND *Next DHV Record*.AdjustedHourlyValue  
 >= 0

**Current DHV HBHA Value** = (*Prior DHV Record*.AdjustedHourlyValue + *Next DHV Record*.AdjustedHourlyValue) / 2, **ROUNDED** to three decimal places.

else

**Derived Hourly Missing Data Status** = false  
 return result A

else if (**Current DHV Record**.ModeCode == "11")

If ( **Current DHVParameter** == "NOXR" ) AND ( **Primary Bypass Active For Hour** == true )  
*PrimaryOrPrimaryBypassSystemKey* = **Current DHV Parameter**.SystemKey

else

*PrimaryOrPrimaryBypassSystemKey* = null

*Prior Measured DHV Record* = DerivedHourlyValueData record at latest time for the location where  
 ( *PrimaryOrPrimaryBypassSystemKey* == null OR DerivedHourlyValueData.SystemKey==  
*PrimaryOrPrimaryBypassSystemKey* ) AND  
 DerivedHourlyValueData.ModeCode in set *MODC Set* AND  
 DerivedHourlyValueData.ParameterCode = **Current DHV Parameter** AND  
 (DerivedHourlyValueData.BeginDate < **Current Date** OR  
 (DerivedHourlyValueData.BeginDate = **Current Date** AND DerivedHourlyValueData.BeginHour < **Current Hour** )  
 )

If *Prior Measured DHV Record* is not null and is in the current reporting period

*PriorDate* = *Prior Measured DHV Record*.BeginDate  
*PriorHour* = *Prior Measured DHV Record*.BeginHour

else

*PriorDate* = the day prior to the beginning of the current reporting period  
*PriorHour* = 23

*Next Measured DHV Record* = DerivedHourlyValueData record at earliest time for the location where  
 ( *PrimaryOrPrimaryBypassSystemKey* == null OR DerivedHourlyValueData.SystemKey==  
*PrimaryOrPrimaryBypassSystemKey* ) AND  
 DerivedHourlyValueData.ModeCode in set *MODC Set* AND  
 DerivedHourlyValueData.ParameterCode = **Current DHV Parameter** AND  
 (DerivedHourlyValueData.BeginDate > **Current Date** OR  
 (DerivedHourlyValueData.BeginDate = **Current Date** AND DerivedHourlyValueData.BeginHour > **Current Hour** )

```

    )

    If Next Measured DHV Record is not null and is in the current reporting period
        NextDate = Next Measured DHV Record.BeginDate
        NextHour = Next Measured DHV Record.BeginHour
    else
        NextDate = the day after the end of the current reporting period
        NextHour = 0

    Missing Data Period Length = Count of DerivedHourlyValueData records for the location where
        ( PrimaryOrPrimaryBypassSystemKey == null OR DerivedHourlyValueData.SystemKey==
        PrimaryOrPrimaryBypassSystemKey ) AND
        DerivedHourlyValueDataParameterCode = Current DHV Parameter AND
        (DerivedHourlyValueData.BeginDate > PriorDate OR
        (DerivedHourlyValueData.BeginDate = PriorDate AND DerivedHourlyValueData.BeginHour > PriorHour) )
        AND
        (DerivedHourlyValueData.BeginDate < NextDate OR
        (DerivedHourlyValueData.BeginDate = NextDate AND DerivedHourlyValueData.BeginHour < NextHour) )

    if (Current DHV Record.PercentAvailable is null OR Current DHV Record.PercentAvailable >= 95.0)
        if (Missing Data Period Length > 24)
            Derived Hourly Missing Data Status = false
            return result B
    else
        if (Missing Data Period Length > 8)
            Derived Hourly Missing Data Status = false
            return result B

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The AdjustedHourlyValue reported in the DHV record for [param] either before or after the current hour is invalid.	Critical Error Level 1
B	You reported an MODCCode of 11 in the DHV record for [param], but the length of the missing data period exceeds the allowable value for use of this missing data procedure.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Derived Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- H2O Derived Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- NOx Emissions Rate Derived Hourly Evaluation

**Check Code:** HOURDHV-17

**Check Name:** Check Extraneous Data in DHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check ensures that certain fields are null in the DHV record.

**Specifications:**

```
Derived Hourly Null Status = false
Hourly Extraneous Fields = null

if (Current DHV Record.UnadjustedHourlyValue is not null)
    append "UnadjustedHourlyValue" to Hourly Extraneous Fields

if (Current DHV Record.SegmentNumber is not null)
    append "SegmentNumber" to Hourly Extraneous Fields

if (Current DHV Record.OperatingConditionCode is not null)
    if (Current DHV Parameter is not equal to "NOXM")
        append "OperatingConditionCode" to Hourly Extraneous Fields

if (Current DHV Record.FuelCode is not null)
    if (Current DHV Parameter not in set {NOXM,SO2M,CO2M})
        append "FuelCode" to Hourly Extraneous Fields

if (Hourly Extraneous Fields is not null)
    return result A
else
    Derived Hourly Null Status = true
```

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported [fieldnames] in the DHV record for [param]. This data should be blank.	Non-Critical Error

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Derived Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- CO2 Mass Rate Derived Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- CO2M Derived Hourly Evaluation (LME)
4	Process/Category:	Emissions Data Evaluation Report ----- H2O Derived Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- Heat Input Derived Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- HIT Derived Hourly Evaluation (LME)
7	Process/Category:	Emissions Data Evaluation Report ----- NOx Mass Rate Derived Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- NOXM Derived Hourly Evaluation (LME)
9	Process/Category:	Emissions Data Evaluation Report ----- SO2 Derived Hourly Evaluation
10	Process/Category:	Emissions Data Evaluation Report ----- SO2M Derived Hourly Evaluation (LME)
11	Process/Category:	Emissions Data Evaluation Report ----- SO2R Derived Hourly Evaluation



**Check Code:** HOURLHV-18

**Check Name:** Check System in DHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check ensures that a valid Monitoring System is indicated in the DHV record.

**Specifications:**

*Current DHV Mon Sys Record* = null

*Derived Hourly System Status* = false

if (*Current DHV Parameter* == "NOXR")

*App E Constant Fuel Mix* = false

If ((*Current DHV Parameter* in set {SO2, SO2R, NOX, CO2} AND *Current DHV Method* <> "AMS") OR  
     (*Current DHV Parameter* == "HI" AND *Current DHV Method* in set {CALC, AD, ADCALC}) OR  
     (*Current DHV Parameter* == "H2O" AND *Current DHV Method* == "MDF") OR  
     *LME HI Method* is not null)

if *Current DHV Record*.MonitoringSystemID is NOT null

return result A

else

*Derived Hourly System Status* = true

Else If ( *Current DHV Parameter* <> "HI" )

case (*Current DHV Parameter*)

NOXR: *MODC Set* = {01, 02, 03, 04, 14, 21, 22}

CO2C: *MODC Set* = {01, 02, 03, 04, 21}

H2O: *MODC Set* = {01, 02, 03, 04, 21}

If (*Current DHV Record*.MonitoringSystemID is null)

If (*Current DHV Method* == "AMS")

*Derived Hourly System Status* = true

Else If (*Current DHV Method* == "AE")

If *Current DHV Record*.OperatingConditionCode is null

*Derived Hourly System Status* = true

else

return result J

Else If (*Current DHV Record*.ModeCode in set *MODC Set*)

return result C

Else If ( *Current DHV Parameter* == "CO2C" AND *Current DHV Method* == "CEM" )

return result K

Else If ( *Current DHV Parameter* == "NOXR" AND *Current DHV Method* == "CEM" AND *Current DHV Record*.ModeCode <> "23" )

return result K

Else If ( *Current DHV Parameter* == "H2O" AND *Current DHV Method* in set { "MMS", "MTB", "MWD" } )

return result K

Else

*Derived Hourly System Status* = true

else

If ( *Derived Hourly MODC Status* == true AND *Current DHV Method* in set {CEM, PEM, MWD} AND *Current DHV*

---

```

Record.ModeCode not in set {05, 53, 54, 55} AND Current DHV Record.ModeCode not in set MODC Set
AND NOT ( Current DHV Parameter in set { "CO2C", "NOXR" } AND Current DHV Method == "CEM" )
AND NOT ( Current DHV Parameter == "H2O" AND Current DHV Method == "MWD" ) )
    return result B

else

    Current DHV Mon Sys Record = find active MonitoringSystemData record for location where
    MonitoringSystemData.MonitoringSystemID = Current DHV Record.MonitoringSystemID

    if (Current DHV Mon Sys Record is null)
        return result D

    else if (Derived MHV Mon Sys Record.SystemTypeCode <> Current DHV System Type)
        return result E

    else if (Current DHV Method == "AE" AND Hourly Fuel Flow Count for Gas + Hourly Fuel Flow Count for Oil > 0)

        If (Derived DHV Mon Sys Record.FuelCode == "MIX" OR Current DHV Record.OperatingConditionCode is not null)
            if (Current DHV Record.OperatingConditionCode == "E")
                return result F
            else
                App E Constant Fuel Mix = true
                App E Reporting Method = "CONSTANT"
                App E Reported Value = Current DHV Record.AdjustedHourlyValue
                App E Segment Number = Current DHV Record.SegmentNumber
                App E Fuel Code = "MIX"
                App E NOXE System ID = Current DHV Record.MonitoringSystemID
                App E NOXE System Identifier = Current DHV Record.SystemIdentifier
                Derived Hourly System Status = true
                if (Current DHV Record.OperatingConditionCode in set {X, Y, Z, U, W, N, M})
                    App E Op Code = Current DHV Record.OperatingConditionCode
                    if (Derived DHV Mon Sys Record.FuelCode <> "MIX")
                        return result G
                else
                    return result H
            else
                return result I
        else
            Derived Hourly System Status = true

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported [fieldnames] in the DHV record for [param]. This data should be blank.	Non-Critical Error
B	You reported a MonitoringSystemID in the DHV record for [param]. This field should be blank when missing data substitution is used.	Non-Critical Error
C	You did not report a MonitoringSystemID in the DHV record for [param]. This information is required when you report measured data.	Critical Error Level 1
D	You reported MonitoringSystemID [ID] in the DHV record for [param], but according to your monitoring plan this system was not active during the hour.	Critical Error Level 1
E	You reported MonitoringSystemID [ID] in the DHV record for [param], but the SystemTypeCode of this system is not appropriate.	Critical Error Level 1
F	You reported an OperatingConditionCode of E in the DHV record for NOXR. You should report the NOx emission rate for emergency fuels in an HPFF record, not a DHV record.	Critical Error Level 1
G	You reported an OperatingConditionCode in the DHV record for NOXR, which indicates that you are determining NOx emission rate from a mixed fuel Appendix E curve, but the FuelCode of NOXE MonitoringSystemID [ID] is not equal to "MIX". If a NOXE system measures an individual fuel, the emissions from this system should be reported in an HPFF record, not a DHV record.	Critical Error Level 1
H	The OperatingConditionCode reported in the DHV record for NOXR is missing or invalid.	Critical Error Level 1
I	You reported NOXE MonitoringSystemID [ID] in the DHV record for NOXR, but the FuelCode of this system is not equal to "MIX". If a NOXE system measures an individual fuel, the emissions from this system should be reported in an HPFF record. If this data represents unit-level emissions based on fuel-specific emissions data that have been reported in one or more HPFF records, then the MonitoringSystemID should be blank.	Critical Error Level 1
J	You reported an OperatingConditionCode in the DHV record for NOXR, which indicates that you are determining NOx emission rate using Appendix E, but you did not report a MonitoringSystemID in this record. If you determined the NOx emission rate from a mixed fuel curve or via heat input apportionment, you should report the MonitoringSystemID of the NOXE system for the curve. If you determined the NOx emission rate from one or more individual fuel curves, you should not report an OperatingConditionCode in the NOXR DHV record.	Critical Error Level 1
K	You did not report a MonitoringSystemID in the DHV record for [param]. This information is required when you report missing data.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Derived Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- CO2 Mass Rate Derived Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- CO2M Derived Hourly Evaluation (LME)
4	Process/Category:	Emissions Data Evaluation Report ----- H2O Derived Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- Heat Input Derived Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- HIT Derived Hourly Evaluation (LME)
7	Process/Category:	Emissions Data Evaluation Report ----- NOx Emissions Rate Derived Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- NOx Mass Rate Derived Hourly Evaluation
9	Process/Category:	Emissions Data Evaluation Report ----- NOXM Derived Hourly Evaluation (LME)
10	Process/Category:	Emissions Data Evaluation Report ----- SO2 Derived Hourly Evaluation
11	Process/Category:	Emissions Data Evaluation Report ----- SO2M Derived Hourly Evaluation (LME)
12	Process/Category:	Emissions Data Evaluation Report ----- SO2R Derived Hourly Evaluation

**Check Code:** HOURLHV-19

**Check Name:** Check System Designation Code for System in DHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check ensures that the SystemDesignationCode of the monitoring system is compatible with reported MODC.

**Specifications:**

If (*Derived Hourly Modc Status* == true AND *Derived Hourly System Status* == true AND *Current DHV Mon Sys Record* is not null)

case (*Current DHV Record*.ModcCode)

01: If (*Current DHV Mon Sys Record*. SystemDesignationCode NOT in set {P, PB})  
return result A

02: If (*Current DHV Mon Sys Record*. SystemDesignationCode NOT in set {B, RB, DB})  
return result B

04: If (*Current DHV Mon Sys Record*. SystemDesignationCode <> "RM")  
return result C

22: If (*Current DHV Mon Sys Record*. SystemDesignationCode <> "CI")  
return result D

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an MODCCode of [modcCode] in the DHV record for [param], but MonitoringSystemID [ID] is not a primary system.	Critical Error Level 1
B	You reported an MODCCode of [modcCode] in the DHV record for [param], but MonitoringSystemID [ID] is not a backup system.	Critical Error Level 1
C	You reported an MODCCode of [modcCode] in the DHV record for [param], but MonitoringSystemID [ID] is not a reference method system.	Critical Error Level 1
D	You reported an MODCCode of 22 in the DHV record for NOXR, but MonitoringSystemID [ID] is not a certified inlet system.	Critical Error Level 1

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Derived Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- H2O Derived Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- NOx Emissions Rate Derived Hourly Evaluation

**Check Code:** HOURDHV-24

**Check Name:** Check Formula in DHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Checks the Formula ID in the DerivedHourlyValue record and ensures that it can be used for the calculation.

**Specifications:**

*Derived Hourly Formula Status* = false

*Derived Hourly Equation Status* = false

*Current DHV Multiple Fuel Equation Code* == null

*Current DHV Formula Record* = null

If (*Current DHV Record*.FormulaIDKey is null)

    If (*Current DHV Method* in set {AMS, LME}) OR

        (*Derived Hourly Modc Status* == true AND *Current DHV Record*.ModcCode == "40") OR

*LME HI Method* is not null)

*Derived Hourly Formula Status* = true

else if (*Current DHV Parameter* = "AE" AND *App E Constant Fuel Mix* == true)

*Derived Hourly Formula Status* = true

else if (*Current DHV Parameter* in set {NOXR, SO2, HI, CO2}) AND *Current DHV Method* in set {AD, AE})

*Derived Hourly Formula Status* = true

    If (*Hourly Fuel Flow Count for Gas* + *Hourly Fuel Flow Count for Oil* > 1)

        case (*Current DHV Parameter*)

            NOXR: *Current DHV Multiple Fuel Equation Code* = "E-2"

            SO2: *Current DHV Multiple Fuel Equation Code* = "D-12"

            CO2: *Current DHV Multiple Fuel Equation Code* = "G-4A"

            HI: *Current DHV Multiple Fuel Equation Code* = "D-15A"

        Locate active Formula Record for location WHERE

            ParameterCode == *Current DHV Parameter* AND

            EquationCode == *Current DHV Multiple Fuel Equation Code*

        If found,

            If (*Legacy Data Evaluation* == true)

                return result A

            else

                return result B

else if (*Current DHV Method* = "PEM")

*Derived Hourly Formula Status* = true

else if (*Current DHV Parameter* == "NOX" AND *Current NOx Rate Method Code* == "AE" AND *Hourly Fuel Flow Count for Gas* + *Hourly Fuel Flow Count for Oil* > 1 AND *Legacy Data Evaluation* == true)

*Derived Hourly Formula Status* = true

else if (*Current DHV Parameter* in set {NOXR, H2O, CO2C})

    If (*Derived Hourly Modc Status* == true)

        If (*Current DHV Record*.ModcCode in set {01, 02, 03, 04, 05, 14, 21, 22, 53, 54})

            return result C

        else

*Derived Hourly Formula Status* = true

            return result K

```

else
    return result C

else
    If (Current DHV Parameter in set {SO2R, H2O} AND Current DHV Record.MODCCode == "40")
        return result D

    else if (LME HI Method is not null)
        return result J
    else

        Current DHV Formula Record = Find MonitoringFormulaData record where
            MonitoringFormulaData.MonitoringFormulaIDKey = Current DHV Record.FormulaIDKey

        If (Current DHV Formula Record is null)
            return result E

        else if (Current DHV Formula Record.ParameterCode is not equal to Current DHV Parameter)
            If Current DHV Parameter == "HI" AND Current DHV Method = "AD" AND Hourly Fuel Flow Count for Gas
            + Hourly Fuel Flow Count for Oil > 1 AND Current DHV Formula Record.ParameterCode == "HIT" AND
            Current DHV Formula Record.EquationCode == "D-15" AND Legacy Data Evaluation == true)
                return result I
            else
                return result F

        else
            Derived Hourly Formula Status = true

            if Current DHV Parameter == "HI" AND Current DHV Method = "ADCALC" and Current DHV Formula
            Record.EquationCode not in {F-21A,F-21B,F-21D}

                Count all active MonitoringFormulaData record for location where
                    EquationCode in {F-21A,F-21B,F-21D}

                if (Count = 1)
                    Current DHV Formula Record = Find active MonitoringFormulaData record for location where
                        EquationCode in {F-21A,F-21B,F-21D}

                else if (Current DHV Method == "AE")
                    if (App E Constant Fuel Mix == true OR Hourly Fuel Flow Count for Gas + Hourly Fuel Flow Count
                    for Oil == 0)
                        return result H

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a FormulaID in the DHV record for [param]. While this is acceptable for legacy EDR data, the FormulaID will be required for ECMPS.	Informational Message
B	You did not report a FormulaID in the DHV record for [param]. This formula is required when you burn multiple fuels during the hour.	Critical Error Level 1
C	You did not report a FormulaID in the DHV record for [param].	Critical Error Level 1
D	You reported an MODC of 40, but you reported a FormulaID in the DHV record for [param]. This field should be blank when reporting a default value.	Critical Error Level 1
E	You reported FormulaID [ID] in the DHV record for [param], but there is no active Formula record for this formula in your monitoring plan.	Critical Error Level 1
F	You reported FormulaID [ID] in the DHV record for [param], but this is not a [param] formula.	Critical Error Level 1
G	(Obsolete) You reported a FormulaID in the DHV record for [param]. This field should be blank when using missing data substitution.	Non-Critical Error
H	You reported a FormulaID in the DHV record for NOXR. This field should be blank unless you determine the NOX emission rate using multiple Appendix E curves.	Critical Error Level 1
I	You reported FormulaID [ID] in the DHV record for HI, but FormulaCode D-15 will no longer be appropriate for calculating HI from multiple fuels. For ECMPS, the ParameterCode should be for this formula should be HI and the FormulaCode should be "D-15A".	Informational Message
J	You reported a FormulaID in the DHV record for [param]. This field should be blank when reporting emissions for LME units.	Critical Error Level 1
K	You did not report a FormulaID in the DHV record for [param].	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Derived Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- CO2 Mass Rate Derived Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- CO2M Derived Hourly Evaluation (LME)
4	Process/Category:	Emissions Data Evaluation Report ----- H2O Derived Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- Heat Input Derived Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- HIT Derived Hourly Evaluation (LME)
7	Process/Category:	Emissions Data Evaluation Report ----- NOx Emissions Rate Derived Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- NOx Mass Rate Derived Hourly Evaluation
9	Process/Category:	Emissions Data Evaluation Report ----- NOXM Derived Hourly Evaluation (LME)
10	Process/Category:	Emissions Data Evaluation Report ----- SO2 Derived Hourly Evaluation
11	Process/Category:	Emissions Data Evaluation Report ----- SO2M Derived Hourly Evaluation (LME)
12	Process/Category:	Emissions Data Evaluation Report ----- SO2R Derived Hourly Evaluation



**Check Code:** HOURDHV-25

**Check Name:** Check Heat Input Equation Code

**Related Former Checks:**

**Applicability:** General Check

**Description:** Looks up the equation code for the current Heat Input Derived Hourly Record and verifies that it is appropriate for heat input calculations.

**Specifications:**

*CO2 Conc Checks Needed for Heat Input* = false

*O2 Wet Checks Needed for Heat Input* = false

*O2 Dry Checks Needed for Heat Input* = false

if (*Heat Input App D Method Active For Hour* == true)

*Hourly Fuel Flow Checks needed for Heat Input* = true

else

*Hourly Fuel Flow Checks needed for Heat Input* = false

*Heat Input Equation Code* = null

if (*Derived Hourly Formula Status* == true)

if (*Current DHV Formula Record* is not null)

*Heat Input Equation Code* = *Current DHV Formula Record*.EquationCode

if (*Heat Input CEM Method Active For Hour* == true)

if (*Heat Input Equation Code* in set {F-15, F-16, F-17, F-18} )

*Derived Hourly Equation Status* = true

*Flow Monitor Hourly Checks Needed* = true

*Flow Needed For Part 75* = true

if (*Heat Input Equation Code* <> "F-15")

*Moisture Needed* = true

append "MIN" to *H2O Missing Data Approach*

if (*Heat Input Equation Code* = "F-15" OR *Heat Input Equation Code* = "F-16" )

*CO2 Conc Checks Needed for Heat Input* = true

*FC Factor Needed* = true

else if (*Heat Input Equation Code* = "F-17")

*O2 Wet Checks Needed for Heat Input* = true

*FD Factor Needed* = true

else if (*Heat Input Equation Code* = "F-18")

*O2 Dry Checks Needed for Heat Input* = true

*FD Factor Needed* = true

else if (*Heat Input Equation Code* is null)

return result A

else

return result B

else if (*Heat Input App D Method Active For Hour* == true)

if (*Heat Input Equation Code* == "D-15A")

*Derived Hourly Equation Status* = true

else if (*Heat Input Method Code* == "ADCALC" and *Heat Input Equation Code* in set {F-21A, F-21B, F-21C, F-21D, F-25})

*Derived Hourly Equation Status* = true

if (*Heat Input Equation Code* == "F-21D")

*Apportionment HI Method Array* for the location = "NOCALC"

else if (*Heat Input Equation Code* in set {F-19, F-19V, F-20, D-6, D-8} AND (*Legacy Data Evaluation* == true OR *Hourly Fuel Flow Count for Gas* + *Hourly Fuel Flow Count for Oil* == 1))

*Derived Hourly Equation Status* = true

return result C

else if (*Heat Input Equation Code* is null)

```

        return result A
    else
        return result B
    else if (Current DHV Method in set {CALC, ADCALC})
        if (Heat Input Equation Code in set {F-21A, F-21B, F-21C, F-25})
            Derived Hourly Equation Status = true
        else if (Heat Input Equation Code == "SS-3B")
            Derived Hourly Equation Status = true
            Apportionment HI Method Array for the location = "COMPLEX"
        else if (Heat Input Equation Code == "F-21D" OR Current DHV Method == "ADCALC")
            Derived Hourly Equation Status = true
            Apportionment HI Method Array for the location = "NOCALC"
        else if (Heat Input Equation Code is null)
            return result A
        else
            return result B
    else
        Derived Hourly Equation Status = true
else
    Derived Hourly Equation Status = true

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported FormulaID [ID] in the DHV record for [param], but you did not report a FormulaCode for this formula in your monitoring plan.	Critical Error Level 1
B	You reported FormulaID [ID] in the DHV record for HI, but the FormulaCode of this formula is not appropriate for calculating HI.	Critical Error Level 1
C	You reported FormulaID [ID] in the DHV record for HI, but a formula with a FormulaCode [EQCODE] is no longer appropriate in this record. For ECMPS, if you are calculating heat input from multiple fuels using Appendix D, you should report a formula with a FormulaCode of D-15A in the DHV record; otherwise, do not report a FormulaID.	Informational Message

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Heat Input Derived Hourly Evaluation

**Check Code:** HOURDHV-26

**Check Name:** Check NOx Equation Code

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Retrieves and validates NOx Mass Equation Code as a valid formula code for calculating NOx Mass

**Specifications:**

*NOx Rate Checks Needed for NOx Mass Calc* = false

*Heat Input Checks Needed for NOx Mass Calc* = false

*NOx Mass Equation Code* = null

if (*Derived Hourly Formula Status* == true)

    if (*Current DHV Formula Record* is not null)

*NOx Mass Equation Code* = *Current DHV Formula Record*.EquationCode

    if (*Current DHV Method* == "CEM")

        if (*NOx Mass Equation Code* in set {F-26A, F-26B} )

*Derived Hourly Equation Status* = true

*Flow Monitor Hourly Checks Needed* = true

*Flow Needed For Part 75* = true

        if (*NOx Mass Equation Code* = "F-26B") // note that the old name for this formula was "N-2"

*Moisture Needed* = true

            append "MIN" to *H2O Missing Data Approach*

    else if (*NOx Mass Equation Code* is null)

        return result A

    else

        return result B

else if (*Current DHV Method* == "NOXR")

    if (*NOx Mass Equation Code* == "F-24A" )

*Derived Hourly Equation Status* = true

*Heat Input Checks Needed for NOx Mass Calc* = true

*Nox Rate Checks Needed for NOx Mass Calc* = true

    else if (*NOx Mass Equation Code* is null)

        return result A

    else

        return result C

else

*Derived Hourly Equation Status* = true

else

*Derived Hourly Equation Status* = true

    if (*Current NOx Rate Method Code* == "AE" AND *Hourly Fuel Flow Count for Gas* + *Hourly Fuel Flow Count for Oil* > 1 AND *Legacy Data Evaluation* == true)

*NOx Mass Equation Code* = "F-24A"

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported FormulaID [ID] in the DHV record for [param], but you did not report a FormulaCode for this formula in your monitoring plan.	Critical Error Level 1
B	You reported FormulaID [ID] in the DHV record for NOX, but the FormulaCode of this formula is not appropriate for calculating NOX from a NOXC system.	Critical Error Level 1
C	You reported FormulaID [ID] in the DHV record for NOX, but the FormulaCode of this formula is not appropriate for calculating NOX from a NOx-diluent system.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- NOx Mass Rate Derived Hourly Evaluation
---	-------------------	--

**Check Code:** HOURLHV-27

**Check Name:** Check NOxR Equation Code

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Gets Equation Code from Active Monitor Formula Record and verifies that it is an appropriate equation for calculation of NOx Rate.

**Specifications:**

*O2 Dry Checks Needed for NOx Rate Calc* = false

*O2 Wet Checks Needed for NOx Rate Calc* = false

*CO2 Diluent Checks Needed for NOx Rate Calc* = false

if (*Current DHV Method* == "AE")

*Hourly Fuel Flow Needed for NOx Rate Calc* = true

else

*Hourly Fuel Flow Needed for NOx Rate Calc* = false

*NOx Rate Equation Code* = "" // null string

if (*Derived Hourly Formula Status* == true)

if (*Current DHV Formula Record* is not null)

*NOx Rate Equation Code* = *Current DHV Formula Record*.EquationCode

if (*Current DHV Method* == "CEM")

if (*NOx Rate Equation Code* in set {19-1, 19-2, 19-3, 19-3D, 19-4, 19-5, 19-5D, 19-6, 19-7, 19-8, 19-9, F-5, F-6})

*Derived Hourly Equation Status* = true

If (*Current DHV Record*.ModcCode != "23")

If (*NOx Rate Equation Code* in set {19-1, 19-4, F-5} )

*O2 Dry Checks Needed for NOx Rate Calc* = true

If (*Current DHV Record*.ModcCode in set {01, 02, 03, 04, 05, 14, 21, 22, 53, 54})

*FD Factor Needed* = true

else if (*NOx Rate Equation Code* in set {19-3, 19-5} )

*O2 Wet Checks Needed for NOx Rate Calc* = true

If (*Current DHV Record*.ModcCode in set {01, 02, 03, 04, 05, 14, 21, 22, 53, 54})

*FD Factor Needed* = true

else if (*NOx Rate Equation Code* in set {19-3D, 19-5D} )

If (*Current DHV Record*.ModcCode in set {01, 02, 03, 04, 05, 14, 21, 22, 53, 54})

*FD Factor Needed* = true

else if (*NOx Rate Equation Code* in set {19-6, 19-7, 19-8, 19-9, F-6} )

*CO2 Diluent Checks Needed for NOx Rate Calc* = true

If (*Current DHV Record*.ModcCode in set {01, 02, 03, 04, 05, 14, 21, 22, 53, 54})

*FC Factor Needed* = true

else if (*NOx Rate Equation Code* == "19-2" )

***O2 Wet Checks Needed for NOx Rate Calc*** = true

If (***Current DHV Record.ModcCode*** in set {01, 02, 03, 04, 05, 14, 21, 22, 53, 54})  
***FW Factor Needed*** = true

if (***NOx Rate Equation Code*** in set {19-3, 19-3D, 19-4, 19-8})

***Moisture Needed*** = true  
append "MAX" to ***H2O Missing Data Approach***

else if (***NOx Rate Equation Code*** in set {19-5, 19-9})  
***Moisture Needed*** = true  
append "MIN" to ***H2O Missing Data Approach***

else (if (***NOx Rate Equation Code*** is null))  
return result A  
else  
return result B

else if (***Current DHV Method*** == "AE")  
if (***NOx Rate Equation Code*** == 'E-2')  
***Derived Hourly Equation Status*** = true  
else if (***NOx Rate Equation Code*** is null)  
return result A  
else  
return result C

else  
***Derived Hourly Equation Status*** = true

else  
***Derived Hourly Equation Status*** = true

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported FormulaID [ID] in the DHV record for [param], but you did not report a FormulaCode for this formula in your monitoring plan.	Critical Error Level 1
B	You reported FormulaID [ID] in the DHV record for NOXR, but the FormulaCode of this formula is not appropriate for calculating NOXR.	Critical Error Level 1
C	You reported FormulaID [ID] in the DHV record for NOXR, but the FormulaCode of this formula is not appropriate for calculating NOXR from multiple fuels. The FormulaCode should be E-2.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- NOx Emissions Rate Derived Hourly Evaluation

**Check Code:** HOURDHV-28

**Check Name:** Check CO2C Equation Code

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Gets Equation Code from Active Monitor Formula Record and verifies that it is an appropriate equation for calculation of CO2 Conc (Either F-14A or F-14B)

**Specifications:**

*CO2 Conc CEM Equation Code* = "" // null string

if (*Derived Hourly Formula Status* == true)

    if (*Current DHV Formula Record* is not null)

*CO2 Conc CEM Equation Code* = *Current DHV Formula Record*.FormulaCode

        if (*CO2 Conc CEM Equation Code* in set {F-14A, F-14B})

*Derived Hourly Equation Status* = true

        else

            return result A

    else

*Derived Hourly Equation Status* = true

**Results:**

Result

A

Response

You reported FormulaID [ID] in the DHV record for CO2C, but the FormulaCode of this formula is not appropriate for calculating CO2C.

Severity

Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- CO2 Concentration Derived Hourly Evaluation

**Check Code:** HOURDHV-29

**Check Name:** Check CO2 Equation Code

**Related Former Checks:**

**Applicability:** General Check

**Description:** Gets Equation Code from Active Monitor Formula Record and verifies that it is an appropriate equation for calculation of CO2 Mass (Either F-2 or F-11)

**Specifications:**

```

CO2 Conc Checks Needed for CO2 Mass Calc = false
Use CO2 Diluent Cap for Co2 Mass Calc = false
Use O2 Diluent Cap for Co2 Conc Calc = false
if (CO2 App D Method Active For Hour == true)
    Hourly Fuel Flow Checks Needed for CO2 = true
else
    Hourly Fuel Flow Checks Needed for CO2 = false
  
```

```

CO2 Mass Equation Code = "" // null string
if (Derived Hourly Formula Status == true)

    if (Current DHV Formula Record is not null)
        CO2 Mass Equation Code = Current DHV Formula Record.FormulaCode
    if (CO2 CEM Method Active For Hour == true)
        Flow Monitor Hourly Checks Needed = true
        Flow Needed For Part 75 = true
        CO2 Conc Checks Needed for CO2 Mass Calc = true
  
```

```

    if (CO2 Mass Equation Code == "F-2" OR CO2 Mass Equation Code == "F-11")
        Derived Hourly Equation Status = true
  
```

```

    If (CO2 Mass Equation Code == 'F-2')
        Moisture Needed = true
        append "MIN" to H2O Missing Data Approach
  
```

```

    if (Current DHV Record.DiluentCapIndicator == 1)
        Use CO2 Diluent Cap for Co2 Mass Calc = true
        Use O2 Diluent Cap for Co2 Conc Calc = true
  
```

```

    else
        return result A
    else if (CO2 App D Method Active For Hour == true)
        if (CO2 Mass Equation Code == "G-4A")
            Derived Hourly Equation Status = true
  
```

```

    else if (CO2 Mass Equation Code == "G-4" AND (Legacy Data Evaluation == true OR Hourly Fuel Flow Count for Gas + Hourly Fuel Flow Count for Oil == 1))
        Derived Hourly Equation Status = true
        return result B
  
```

```

    else
        return result A
    else
        Derived Hourly Equation Status = true
  
```

```

else
    Derived Hourly Equation Status = true
  
```



**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported FormulaID [ID] in the DHV record for CO2, but the FormulaCode of this formula is not appropriate for calculating CO2.	Critical Error Level 1
B	You reported FormulaID [ID] in the DHV record for CO2, but a formula with a FormulaCode [EQCODE] is no longer appropriate in this record. For ECMPS, if you are calculating CO2 from multiple fuels using Appendix D, you should report a formula with a FormulaCode of G-4A in the DHV record; otherwise, do not report a FormulaID.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Mass Rate Derived Hourly Evaluation
---	-------------------	--

**Check Code:** HOURDHV-30

**Check Name:** Check SO2 Equation Code

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Gets Equation Code from Active Monitor Formula Record and verifies that it is an appropriate equation for calculation of SO2 Mass (Either F-1 or F-2)

**Specifications:**

*SO2 Monitor Hourly Checks Needed* = false

if (*SO2 App D Method Active For Hour* == true)

*Hourly Fuel Flow Checks Needed for SO2* = true

else

*Hourly Fuel Flow Checks Needed for SO2* = false

*SO2 Equation Code* = "" // null string

if (*Derived Hourly Formula Status* == true)

If (*Current DHV Formula Record* is not null)

*SO2 Equation Code* = *Current DHV Formula Record*.FormulaCode

if (*SO2 CEM Method Active For Hour* == true)

if (*SO2 Equation Code* == "F-1" OR *SO2 Equation Code* == "F-2")

*Derived Hourly Equation Status* = true

*Flow Monitor Hourly Checks Needed* = true

*Flow Needed For Part 75* = true

If (*SO2 Equation Code* == "F-2")

*Moisture Needed* = true

append "MIN" to *H2O Missing Data Approach*

if (*SO2 Monitor Hourly Count* == 0)

return result A

else

*SO2 Monitor Hourly Checks Needed* = true

else if (*SO2 Equation Code* == "F-23" AND *SO2 F23 Method Active For Hour* == true)

*Derived Hourly Equation Status* = true

else

return result B

else if (*SO2 F23 Method Active For Hour* == true)

if (*SO2 Equation Code* == "F-23")

*Derived Hourly Equation Status* = true

else

return result B

else if (*SO2 App D Method Active For Hour* == true)

if (*SO2 Equation Code* = "D-12")

*Derived Hourly Equation Status* = true

else if (*SO2 Equation Code* in {D-2, D-4, D-5} AND *Hourly Fuel Flow Count for Gas* + *Hourly Fuel Flow Count for Oil* == 1))

*Derived Hourly Equation Status* = true

return result C

else

return result B

else

*Derived Hourly Equation Status* = true

else

*Derived Hourly Equation Status* = true

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report an MHV record for [param] for the hour.	Critical Error Level 1
B	You reported FormulaID [ID] in the DHV record for SO2, but the FormulaCode of this formula is not appropriate for calculating SO2.	Critical Error Level 1
C	You reported FormulaID [ID] in the DHV record for SO2, but a formula with a FormulaCode [EQCODE] is not appropriate in this record. If you are calculating SO2 from multiple fuels using Appendix D, you should report a formula with a FormulaCode of D-12 in the DHV record; otherwise, do not report a FormulaID.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- SO2 Derived Hourly Evaluation
---	-------------------	--

**Check Code:**HOURDHV-31

**Check Name:**Check H2O Equation Code

**Related Former Checks:**

**Applicability:**CEM Check

**Description:**Looks up the Formula Identifier defined in the H2O Derived Hourly Record and ensures that it is a valid formula for H2O calculations

**Specifications:**

```
H2O CEM Equation Code = "" // null string
if (Derived Hourly Formula Status == true)
    If (Current DHV Formula Record is not null)
        H2O CEM Equation Code = Current DHV Formula Record.FormulaCode
        if (H2O CEM Equation Code in set (F-31, M-1K))
            Derived Hourly Equation Status = true
        else
            return result A
    else
        Derived Hourly Equation Status = true
```

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported FormulaID [ID] in the DHV record for H2O, but the FormulaCode of this formula is not appropriate for calculating H2O.	Critical Error Level 1

Usage:		
1	Process/Category:	Emissions Data Evaluation Report ----- H2O Derived Hourly Evaluation

**Check Code:** HOURLHV-32

**Check Name:** Verify Correct Reporting of NOXC MHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:**

**Specifications:**

If (*Current DHV Method* in set {CEM, CEMNOXR})

If (*Current DHV Parameter* == "NOXR")

*Nox Conc Needed for NOx Rate Calc* = false

If *Derived Hourly MODC Status* == true

If (*NOx Conc Monitor Hourly Count* == 0)

If *Current DHV Record.ModcCode* in set {01, 02, 03, 04, 14, 21, 22, 53, 54}

return result A

Else If *Current DHV Record.ModcCode* != "23"

return result C

else

*Nox Conc Needed for NOx Rate Calc* = true

Else if (*Current DHV Parameter* == "NOX")

*Nox Conc Needed for NOx Mass Calc* = false

If (*Derived Hourly Equation Status* == true AND *NOx Mass Equation Code* begins with "F-26")

if (*NOx Conc Monitor Hourly Count* == 0)

return result A

else

*Nox Conc Needed for NOx Mass Calc* = true

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report an MHV record for NOXC for the hour.	Critical Error Level 1
B	(Obsolete) You reported an MHV record for NOXC, but you reported a MODCCode of [modc] in the DHV record for NOXR. You should not report an MHV record for NOXC when you use substitute data to determine the NOx emission rate.	Non-Critical Error
C	You did not report an MHV record for NOXC for the hour. An MHV record is required for missing data.	Critical Error Level 1

#### Usage:

- |   |                   |   |
|---|-------------------|---|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- NOx Emissions Rate Derived Hourly Evaluation |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- NOx Mass Rate Derived Hourly Evaluation      |

**Check Code:** HOURDHV-33

**Check Name:** Determine Default Value for MODC 40

**Related Former Checks:**

**Applicability:** CEM Check

**Description:**

**Specifications:**

*Derived Hourly Default Status* == true

If (*Derived Hourly Modc Status* == true AND *Current DHV Record*.ModcCode == 40)

If (*Current DHV Parameter* == "H2O")

If *Current DHV Record*.AdjustedHourlyValue is null OR

*Current DHV Record*.AdjustedHourlyValue <= 0 OR

*Current DHV Record*.AdjustedHourlyValue >= 100

*Derived Hourly Default Status* == false

return result A

If *H2O Default Max Value* is null

If (*H2O Default Value* > 0 AND *H2O Default Value* < 100)

if (*Current DHV Record*.AdjustedHourlyValue <> *H2O Default Value*)

*Derived Hourly Default Status* == false

return result B

else if (*H2O Default Max Value* > 0 AND *H2O Default Max Value* < 100 AND *H2O Default Min Value* > 0 AND *H2O Default Min Value* < 100)

If *Current DHV Record*.AdjustedHourlyValue < *H2O Default Min Value* OR

*Current DHV Record*.AdjustedHourlyValue > *H2O Default Max Value*)

*Derived Hourly Default Status* == false

return result C

Else

*H2O Default Value* = *Current DHV Record*.AdjustedHourlyValue

Else if (*Current DHV Parameter* == "SO2R")

If *Current DHV Record*.AdjustedHourlyValue is null OR

*Current DHV Record*.AdjustedHourlyValue <= 0

*Derived Hourly Default Status* == false

return result D

If *F23 Default Max Value* is null

If (*F23 Default Value* > 0)

if (*Current DHV Record*.AdjustedHourlyValue <> *F23 Default Value*)

*Derived Hourly Default Status* == false

return result B

else if (*F23 Default Max Value* > 0 AND *F23 Default Min Value* > 0)

If *Current DHV Record*.AdjustedHourlyValue < *F23 Default Min Value* OR

*Current DHV Record*.AdjustedHourlyValue > *F23 Default Max Value*)

*Derived Hourly Default Status* == false

return result C

Else

*F23 Default Value* = *Current DHV Record*.AdjustedHourlyValue

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The AdjustedHourlyValue reported in the DHV record for [param] is invalid. The value must be between 0 and 100.	Critical Error Level 1
B	You reported an MODCCode of 40 in the DHV record for [param], but the AdjustedHourlyValue is not equal to the active default value in your monitoring plan.	Critical Error Level 1
C	You reported an MODCCode of 40 in the DHV record for [param], but the AdjustedHourlyValue is outside the range of the active default values in your monitoring plan.	Critical Error Level 1
D	The AdjustedHourlyValue reported in the DHV record for [param] is invalid. The value must be greater than 0.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- H2O Derived Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- SO2R Derived Hourly Evaluation

**Check Code:** HOURDHV-34

**Check Name:** Determine Derived Hourly Record Status

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Specifications:**

If (*Current DHV Parameter* == "NOXR")

*Current NOX System Status* = *Derived Hourly System Status*

*Current NOXR HBHA Value* = *Current DHV HBHA Value*

else if (*Current DHV Parameter* == "CO2C")

*Current CO2C DHV HBHA Value* = *Current DHV HBHA Value*

else if (*Current DHV Parameter* == "H2O")

*Current H2O DHV HBHA Value* = *Current DHV HBHA Value*

If (*Derived Hourly Modc Status* == false OR *Derived Hourly Equation Status* == false OR *Derived Hourly Missing Data Status* == false  
OR (*Current DHV Record*.MODCCode in set {06, 07, 08, 09, 10, 11}) AND *Derived Hourly Pma Status* == false))

Case (*Current DHV Parameter*)

SO2: *SO2 Derived Hourly Status* = false

NOXR: *NOXR Derived Hourly Status* = false

NOX: *NOX Derived Hourly Status* = false

CO2: *CO2 Derived Hourly Status* = false

HI: *HI Derived Hourly Status* = false

CO2C: *CO2C Derived Hourly Status* = false

H2O: *H2O Derived Hourly Status* = false

SO2R: *SO2R Derived Hourly Status* = false

SO2M: *SO2M Derived Hourly Status* = false

NOXM: *NOXM Derived Hourly Status* = false

CO2M: *CO2M Derived Hourly Status* = false

HIT: *HIT Derived Hourly Status* = false

**Results:**

Result

Response

Severity



**Usage:**

- |   |                   |   |
|---|-------------------|---|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- CO2 Concentration Derived Hourly Evaluation  |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- CO2 Mass Rate Derived Hourly Evaluation      |
| 3 | Process/Category: | Emissions Data Evaluation Report ----- H2O Derived Hourly Evaluation                |
| 4 | Process/Category: | Emissions Data Evaluation Report ----- Heat Input Derived Hourly Evaluation         |
| 5 | Process/Category: | Emissions Data Evaluation Report ----- NOx Emissions Rate Derived Hourly Evaluation |
| 6 | Process/Category: | Emissions Data Evaluation Report ----- NOx Mass Rate Derived Hourly Evaluation      |
| 7 | Process/Category: | Emissions Data Evaluation Report ----- SO2 Derived Hourly Evaluation                |
| 8 | Process/Category: | Emissions Data Evaluation Report ----- SO2R Derived Hourly Evaluation               |

**Check Code:** HOURLDHFV-36

**Check Name:** NOx Rate DHV Extraneous Fields Check

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Specifications:**

*Hourly Extraneous Fields* = null

if (*Current DHV Method* <> "AE" OR (*Hourly Fuel Flow Count for Gas* + *Hourly Fuel Flow Count for Oil* > 0 AND *App E Constant Fuel Mix* == false)

    if (*Current DHV Record*.SegmentNumber is not null)

        append "SegmentNumber" to *Hourly Extraneous Fields*

    if (*Current DHV Record*.OperatingConditionCode is not null)

        append "OperatingConditionCode" to *Hourly Extraneous Fields*

if (*Current DHV Method* <> "LME")

    if (*Current DHV Record*.FuelCode is not null)

        append "FuelCode" to *Hourly Extraneous Fields*

if (*Hourly Extraneous Fields* is not null),

    return result A

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported [fieldnames] in the DHV record for [param]. This data should be blank.	Non-Critical Error

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- NOx Emissions Rate Derived Hourly Evaluation
---	-------------------	---

**Check Code:** HOURDHV-37

**Check Name:** Calculate Heat Input for LME Unit

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

*HIT Calculated Adjusted Value* = null

If (*Derived Hourly Mode Status* == true)

if (*LME HI Method* is equal to "MHHI" OR *Current DHV Record*.MODCCode = "45")

Locate all **Monitor Default** records for the hour and location where the ParameterCode is equal to "MHHI".

If (one record is found, AND *Monitor Default*.DefaultValue is greater than 0, AND *Monitor Default*.DefaultUnitsOfMeasureCode is equal to "MMBTUHR")

If (*Current Hourly Op Record*.OpTime is greater than 0 and less than or equal to 1)

Calculate *HIT Calculated Adjusted Value* = DefaultValue \* *Current Hourly Op Record*.OpTime, rounded to one decimal place.

else

return result A

else if (*LME HI Method* is equal to "LTFF")

If (*LME CP Total Heat Input* is greater than or equal to 0, AND *LME Total Heat Input Array* for the location is greater than or equal to 0, AND *Current Hourly Op Record*.HourLoad is greater than or equal to 0, AND *Current Hourly Op Record*.OpTime is greater than 0 and less than or equal to 1)

If (*LME OS* is equal to true, AND the Quarter of the *Current Reporting Period* is equal to 2)

If the *Current Month* is April,

If (*LME April Load* is greater than 0)

If (HourLoad is equal to 0)

Set *HIT Calculated Adjusted Value* = 0

else

Calculate *HIT Calculated Adjusted Value* = (*LME CP April Heat Input* \* *Current Hourly Op Record*.HourLoad \* *Current Hourly Op Record*.OpTime / *LME April Load*) + (*LME April Heat Input Array* for the location \* *Current Hourly Op Record*.HourLoad \* *Current Hourly Op Record*.OpTime / *LME April Load Array* for the location), and round the result to 1 decimal place.

else if (*LME April Optime* is greater than 0)

Calculate *HIT Calculated Adjusted Value* = (*LME CP April Heat Input* \* *Current Hourly Op Record*.OpTime / *LME April Optime*) + (*LME April Heat Input Array* for the location \* *Current Hourly Op Record*.OpTime / *LME April Optime Array* for the location), and round the result to 1 decimal place.

Otherwise,

If (*LME Total Load* is greater than 0)

If (HourLoad is equal to 0)

Set *HIT Calculated Adjusted Value* = 0

else

Calculate *HIT Calculated Adjusted Value* =  $((LME\ CP\ Total\ Heat\ Input - LME\ CP\ April\ Heat\ Input) * Current\ Hourly\ Op\ Record.HourLoad * Current\ Hourly\ Op\ Record.OpTime / (LME\ Total\ Load - LME\ April\ Load)) + ((LME\ Total\ Heat\ Input\ Array\ for\ the\ location - LME\ April\ Heat\ Input\ Array\ for\ the\ location) * Current\ Hourly\ Op\ Record.HourLoad * Current\ Hourly\ Op\ Record.OpTime / (LME\ Total\ Load\ Array\ for\ the\ location - LME\ April\ Load\ Array\ for\ the\ location))$ , and round the result to 1 decimal place.

else if (*LME Total Optime* is greater than 0)

Calculate *HIT Calculated Adjusted Value* =  $((LME\ CP\ Total\ Heat\ Input - LME\ CP\ April\ Heat\ Input) * Current\ Hourly\ Op\ Record.OpTime / (LME\ Total\ Optime - LME\ April\ Optime)) + ((LME\ Total\ Heat\ Input\ Array\ for\ the\ location - LME\ April\ Heat\ Input\ Array\ for\ the\ location) * Current\ Hourly\ Op\ Record.OpTime / (LME\ Total\ Optime\ Array\ for\ the\ location - LME\ April\ Optime\ Array\ for\ the\ location))$ , and round the result to 1 decimal place.

Otherwise,

If (*LME Total Load* is greater than 0)

If (HourLoad is equal to 0)

Set *HIT Calculated Adjusted Value* = 0

else

Calculate *HIT Calculated Adjusted Value* =  $(LME\ CP\ Total\ Heat\ Input * Current\ Hourly\ Op\ Record.HourLoad * Current\ Hourly\ Op\ Record.OpTime / LME\ Total\ Load) + (LME\ Total\ Heat\ Input\ Array\ for\ the\ location * Current\ Hourly\ Op\ Record.HourLoad * Current\ Hourly\ Op\ Record.OpTime / LME\ Total\ Load\ Array\ for\ the\ location)$ , and round the result to 1 decimal place.

else if (*LME Total Optime* is greater than 0)

Calculate *HIT Calculated Adjusted Value* =  $(LME\ CP\ Total\ Heat\ Input * Current\ Hourly\ Op\ Record.OpTime / LME\ Total\ Optime) + (LME\ Total\ Heat\ Input\ Array\ for\ the\ location * Current\ Hourly\ Op\ Record.OpTime / LME\ Total\ Optime\ Array\ for\ the\ location)$ , and round the result to 1 decimal place.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a single, active, valid default record for MHHI in your monitoring plan.	Critical Error Level 1
B	This check result is obsolete.	Critical Error Level 1

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- HIT Derived Hourly Evaluation (LME)
---	-------------------	--

**Check Code:** HOURDHV-38

**Check Name:** Check Reported Heat Input for LME Unit

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

If (*Current DHV Record*.AdjustedHourlyValue is null or is less than 0)

*Rpt Period HI Reported Accumulator Array* for this location = -1

return result A

else if (*Current DHV Record*.AdjustedHourlyValue is not rounded to one decimal place)

*Rpt Period HI Reported Accumulator Array* for this location = -1

return result C

else

if (*Current Month* is not April OR *LME Annual* == true)

if (*Rpt Period HI Reported Accumulator Array* for this location is not null)

if (*Rpt Period HI Reported Accumulator Array* >= 0)

*Rpt Period HI Reported Accumulator Array* for this location = *Rpt Period HI Reported Accumulator Array* for this location + *Current DHV Record*.AdjustedHourlyValue

else

*Rpt Period HI Reported Accumulator Array* for this location = *Current DHV Record*.AdjustedHourlyValue

If (*HIT Calculated Adjusted Value* is not null and *Current DHV Record*.AdjustedHourlyValue is not equal to *HIT Calculated Adjusted Value*)

If (*HIT Calculated Adjusted Value* is greater than 1 OR *Current DHV Record*.AdjustedHourlyValue is greater than 1)

*Heat Input Tolerance* = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where

Parameter = "HIT" AND

UOM = "MMBTU"

if (ABS(*Current DHV Record*.AdjustedHourlyValue - *HIT Calculated Adjusted Value*) > *Heat Input Tolerance*)

return result B.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The AdjustedHourlyValue reported in the DHV record for [param] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
B	The AdjustedHourlyValue reported in the DHV record for [param] is inconsistent with the recalculated value.	Critical Error Level 1
C	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- HIT Derived Hourly Evaluation (LME)
---	-------------------	--

**Check Code:** HOURDHV-39  
**Check Name:** Calculate SO2 Mass for LME Unit  
**Related Former Checks:**  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

*SO2M Calculated Adjusted Value* = null

If *Current DHV Record.FuelCode* is null,  
    *Rpt Period SO2 Mass Calculated Accumulator Array* for this location = -1  
    return result A.

Otherwise,  
    Locate *MonitorDefault* record for the hour and location where *ParameterCd* = "SO2R", *DefaultPurposeCd* = "LM", and *FuelCode* is equal to *Current DHV Record.FuelCode*.

If not found, or if more than one record is found, or if *DefaultValue* is less than or equal to 0, or *DefaultValueUnitsOfMeasure* is not equal to "LBMMBTU".

*Rpt Period SO2 Mass Calculated Accumulator Array* for this location = -1  
    return result B.

Otherwise,  
    *SO2R Default Value* = *MonitorDefault.DefaultValue*

    Locate *MonitorDefault* record for the hour and location where *ParameterCd* = "SO2R", *DefaultPurposeCd* = "LM", *FuelCode* is in *LME Fuel Code List*, *FuelCode* is not equal to *Current DHV Record.FuelCode*, *Default Value* is greater than *SO2R Default Value*, and *DefaultValueUnitsOfMeasure* is equal to "LBMMBTU".

    If found,  
        *Rpt Period SO2 Mass Calculated Accumulator Array* for this location = -1  
        return result C.

    Otherwise,  
        If *HIT Calculated Adjusted Value* is null,  
            *Rpt Period SO2 Mass Calculated Accumulator Array* for this location = -1  
            return result D.

    else

        Calculate *SO2M Calculated Adjusted Value* = *HIT Calculated Adjusted Value* \* *SO2R Default Value*, and round the result to one decimal place.

        if (*Rpt Period SO2 Mass Calculated Accumulator Array* for this location is not null)  
            if (*Rpt Period SO2 Mass Calculated Accumulator Array* for this location >= 0)  
                *Rpt Period SO2 Mass Calculated Accumulator Array* for this location = *Rpt Period SO2 Mass Calculated Accumulator Array* for this location + *SO2M Calculated Adjusted Value*

        else  
            *Rpt Period SO2 Mass Calculated Accumulator Array* for this location = *SO2 Mass Calculated Adjusted Value*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The AdjustedHourlyValue in the DHV record for [param] could not be recalculated, because you did not report a FuelCode in this record.	Critical Error Level 1
B	You have not reported one and only one active Monitor Default record with a valid ParameterCode and DefaultPurposeCode in your monitoring plan to report the default emission rate for the fuel. The AdjustedHourlyValue in the DHV for [param] could not be recalculated.	Critical Error Level 1
C	You reported [Fuel] as the FuelCode in the DHV record for [param], but, according to the Monitor Default records in your monitoring plan, this fuel does not have the highest default emissions rate of the fuels combusted during the hour. The AdjustedHourlyValue could not be recalculated.	Critical Error Level 1
D	The AdjustedHourlyValue in the DHV record for [param] could not be recalculated because the heat input rate could not be determined for the hour.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- SO2M Derived Hourly Evaluation (LME)
---	-------------------	---



**Check Code:** HOURDHV-40  
**Check Name:** Determine Fuels Burned for LME Unit  
**Related Former Checks:**  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

*LME Fuel Code List* = null

If (*HIT Calculated Adjusted Value* is not null)

Locate all *DerivedHourlyValue* records for the location and hour where ParameterCode in set {SO2M, CO2M, NOXM}

For each record found,

Append *DerivedHourlyValue.FuelCode* to *LME Fuel Code List*.

if (*Current Month* is not April OR *LME Annual* == true)

if (*Rpt Period HI Calculated Accumulator Array* for this location is not null)

if (*Rpt Period HI Calculated Accumulator Array* for this location >= 0)

*Rpt Period HI Calculated Accumulator Array* for this location = *Rpt Period HI Calculated Accumulator Array* for this location + *HIT Calculated Adjusted Value*

else

*Rpt Period HI Calculated Accumulator Array* for this location = *HIT Calculated Adjusted Value*

if (*Current Month* is April)

if (*April HI Calculated Accumulator Array* for this location is not null)

*April HI Calculated Accumulator Array* for this location = *April HI Calculated Accumulator Array* for this location + *HIT Calculated Adjusted Value*

else

*April HI Calculated Accumulator Array* for this location = *HIT Calculated Adjusted Value*

if ( *OS Reporting Requirement* is true ) AND ( *Current Month* is May, June, July, August or September ) AND ( *Current Operating Date* is on or after *OS Reporting Period Begin Date* )

*OS HIT Calculated Accumulator Array* for this location = *OS HIT Calculated Accumulator Array* for this location + *HIT Calculated Adjusted Value*

else

if (*Current Month* is not April OR *LME Annual* == true)

*Rpt Period HI Calculated Accumulator Array* for this location = -1

return result A

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The AdjustedHourlyValue in the DHV record for HIT could not be recalculated due to another error listed in this report.	Informational Message

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- HIT Derived Hourly Evaluation (LME)

**Check Code:** HOURDHV-41

**Check Name:** Check Reported SO2M for LME Unit

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

If (*Current DHV Record*.AdjustedHourlyValue is null or is less than 0)

*Rpt Period SO2 Mass Reported Accumulator Array* for this location = -1

return result A

else if (*Current DHV Record*.AdjustedHourlyValue is not rounded to one decimal place)

*Rpt Period SO2 Reported Accumulator Array* for this location = -1

return result C

else

if (*Rpt Period SO2 Mass Reported Accumulator Array* for this location is not null)

if (*Rpt Period SO2 Mass Reported Accumulator Array* >= 0)

*Rpt Period SO2 Mass Reported Accumulator Array* for this location = *Rpt Period SO2 Mass Reported Accumulator Array* for this location + *Current DHV Record*.AdjustedHourlyValue

else

*Rpt Period SO2 Mass Reported Accumulator Array* for this location = *Current DHV Record*.AdjustedHourlyValue

If (*SO2M Calculated Adjusted Value* is not null AND *Current DHV Record*.AdjustedHourlyValue is not equal to *SO2M Calculated Adjusted Value*)

*SO2 Mass Tolerance* = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where

Parameter = "SO2M" AND

UOM = "LB"

if (ABS(*Current DHV Record*.AdjustedHourlyValue - *SO2M Calculated Adjusted Value*) > *SO2 Mass Tolerance*)

return result B

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The AdjustedHourlyValue reported in the DHV record for [param] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
B	The AdjustedHourlyValue reported in the DHV record for [param] is inconsistent with the recalculated value.	Critical Error Level 1
C	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- SO2M Derived Hourly Evaluation (LME)

**Check Code:** HOURDHV-42  
**Check Name:** Calculate CO2 Mass for LME Unit  
**Related Former Checks:**  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

*CO2M Calculated Adjusted Value* = null

If *Current DHV Record*.FuelCode is null,  
    *Rpt Period CO2 Mass Calculated Accumulator Array* for this location = -1  
    return result A.

Otherwise,  
    Locate *MonitorDefault* record for the hour and location where ParameterCd = "CO2R", DefaultPurposeCd = "LM", and FuelCode is equal to *Current DHV Record*.FuelCode.

If not found, or if more than one record is found, or if DefaultValue is less than or equal to 0, or DefaultValueUnitsOfMeasure is not equal to "TNMMBTU".

*Rpt Period CO2 Mass Calculated Accumulator Array* for this location = -1  
    return result B.

Otherwise,  
    *CO2R Default Value* = *MonitorDefault*.DefaultValue

    Locate *MonitorDefault* record for the hour and location where ParameterCd = "CO2R", DefaultPurposeCd = "LM", FuelCode is in *LME Fuel Code List*, FuelCode is not equal to *Current DHV Record*.FuelCode, Default Value is greater than *CO2R Default Value*, and DefaultValueUnitsOfMeasure is equal to "TNMMBTU".

    If found,  
        *Rpt Period CO2 Mass Calculated Accumulator Array* for this location = -1  
        return result C.

    Otherwise,  
        If *HIT Calculated Adjusted Value* is null,  
            *Rpt Period CO2 Mass Calculated Accumulator Array* for this location = -1  
            return result D.

    else

        Calculate *CO2M Calculated Adjusted Value* = *HIT Calculated Adjusted Value* \* *CO2R Default Value*,  
        and round the result to one decimal place.

        if (*Rpt Period CO2 Mass Calculated Accumulator Array* for this location is not null)  
            if (*Rpt Period CO2 Mass Calculated Accumulator Array* for this location >= 0)  
                *Rpt Period CO2 Mass Calculated Accumulator Array* for this location = *Rpt Period CO2 Mass Calculated Accumulator Array* for this location + *CO2M Calculated Adjusted Value*  
        else  
            *Rpt Period CO2 Mass Calculated Accumulator Array* for this location = *CO2 Mass Calculated Adjusted Value*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The AdjustedHourlyValue in the DHV record for [param] could not be recalculated, because you did not report a FuelCode in this record.	Critical Error Level 1
B	You have not reported one and only one active Monitor Default record with a valid ParameterCode and DefaultPurposeCode in your monitoring plan to report the default emission rate for the fuel. The AdjustedHourlyValue in the DHV for [param] could not be recalculated.	Critical Error Level 1
C	You reported [Fuel] as the FuelCode in the DHV record for [param], but, according to the Monitor Default records in your monitoring plan, this fuel does not have the highest default emissions rate of the fuels combusted during the hour. The AdjustedHourlyValue could not be recalculated.	Critical Error Level 1
D	The AdjustedHourlyValue in the DHV record for [param] could not be recalculated because the heat input rate could not be determined for the hour.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2M Derived Hourly Evaluation (LME)
---	-------------------	---

**Check Code:** HOURDHV-43

**Check Name:** Check Reported CO2M for LME Unit

**Related Former Checks:**

**Applicability:** LME Check

**Description:****Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

If (*Current DHV Record*.AdjustedHourlyValue is null or is less than 0)  
     *Rpt Period CO2 Mass Reported Accumulator Array* for this location = -1  
     return result A

else if (*Current DHV Record*.AdjustedHourlyValue is not rounded to one decimal place)  
     *Rpt Period CO2 Reported Accumulator Array* for this location = -1  
     return result C

else  
     if (*Rpt Period CO2 Mass Reported Accumulator Array* for this location is not null)  
         if (*Rpt Period CO2 Mass Reported Accumulator Array* >= 0)  
             *Rpt Period CO2 Mass Reported Accumulator Array* for this location = *Rpt Period CO2 Mass Reported Accumulator Array* for this location + *Current DHV Record*.AdjustedHourlyValue  
         else  
             *Rpt Period CO2 Mass Reported Accumulator Array* for this location = *Current DHV Record*.AdjustedHourlyValue

If (*CO2M Calculated Adjusted Value* is not null AND *Current DHV Record*.AdjustedHourlyValue is not equal to *CO2M Calculated Adjusted Value*)

*CO2 Mass Tolerance* = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
         Parameter = "CO2M" AND  
         UOM = "TON"

    if (ABS(*Current DHV Record*.AdjustedHourlyValue - *CO2M Calculated Adjusted Value*) > *CO2 Mass Tolerance*)  
         return result B

**Results:**

Result	Response	Severity
A	The AdjustedHourlyValue reported in the DHV record for [param] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
B	The AdjustedHourlyValue reported in the DHV record for [param] is inconsistent with the recalculated value.	Critical Error Level 1
C	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- CO2M Derived Hourly Evaluation (LME)

**Check Code:** HOURDHV-44  
**Check Name:** Calculate NOX Mass for LME Unit  
**Related Former Checks:**  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

*NOXM Calculated Adjusted Value* = null  
*UDEFStatus* = null.  
*UDEFExpirationDate* = null.

If *Current DHV Record*.FuelCode is null,  
    if (*Current Month* is not April OR *LME Annual* == true)  
        *Rpt Period NOx Mass Calculated Accumulator Array* for this location = -1  
  
    return result A

Otherwise,

*Default Condition* = null

If *Current DHV Record*.OperatingConditionCode is null,  
    *Default Condition* = "A"

else if *Current DHV Record*.OperatingConditionCode in set {C, U, P, B}  
    *Default Condition* = *Current DHV Record*.OperatingConditionCode

If *Default Condition* is null,  
    if (*Current Month* is not April OR *LME Annual* == true)  
        *Rpt Period NOx Mass Calculated Accumulator Array* for this location = -1  
  
    return result B

else

    if (*Current DHV Record*.OperatingConditionCode is equal to "U")  
        Locate MonitorDefault record for the hour and location where ParameterCd = "NORX", DefaultPurposeCd = "MD", OperatingConditionCode is equal to *Default Condition*, and FuelCode is equal to *Current DHV Record*.FuelCode.

    else  
        Locate MonitorDefault record for the hour and location where ParameterCd = "NOXR", DefaultPurposeCd = "LM", OperatingConditionCode is equal to *Default Condition*, and FuelCode is equal to *Current DHV Record*.FuelCode.

    If not found, or if more than one record is found, or if DefaultValue is less than or equal to 0, or DefaultValueUnitsOfMeasure is not equal to "LBMMBTU".  
        if (*Current Month* is not April OR *LME Annual* == true)  
            *Rpt Period NOx Mass Calculated Accumulator Array* for this location = -1  
  
        return result C

    Otherwise,  
        *NOXR Default Value* = *MonitorDefault*.DefaultValue

        if (*Default Condition* is in set {A,C,B,P} AND *MonitorDefault*.DefaultSourceCode == "TEST")

if (**MonitorDefault**.GroupID is null)

if (*Default Condition* == "A" or "C")

Locate the latest **UnitDefaultTestRecordsByLocationForQAStatus** for the location where FuelCode = **Current DHV Record**.FuelCode and EndDate/EndHour is on or before the **CurrentOperatingDate/Hour**.

else if (*Default Condition* == "B")

Locate the latest **UnitDefaultTestRecordsByLocationForQAStatus** for the location where FuelCode = **Current DHV Record**.FuelCode, OperatingConditionCode == "A" or "B", and EndDate/EndHour is on or before the **CurrentOperatingDate/Hour**.

else if (*Default Condition* == "P")

Locate the latest **UnitDefaultTestRecordsByLocationForQAStatus** for the location where FuelCode = **Current DHV Record**.FuelCode, OperatingConditionCode == "A" or "P", and EndDate/EndHour is on or before the **CurrentOperatingDate/Hour**.

If not found,

**UDEFStatus** = "MISSING"

else

**UDEFStatus** = "FOUND"

Set **UDEFExpiration Date** to 5 years after the end of the quarter of the **UnitDefaultTestRecordsByLocationForQAStatus**.EndDate.

Otherwise,

**UDEFStatus** = "GROUP"

Set **UDEFExpiration Date** to 5 years after the end of the quarter of the **MonitorDefault**.BeginDate.

if (**Current DHV Record**.OperatingConditionCode is equal to "U")

Locate **MonitorDefault** record for the hour and location where ParameterCd = "NORX", DefaultPurposeCd = "MD", OperatingConditionCode is equal to *Default Condition*, FuelCode is in **LME Fuel Code List**, FuelCode is not equal to **Current DHV Record**.FuelCode, Default Value is greater than **NOXR Default Value**, and DefaultValueUnitsOfMeasure is equal to "LBMMBTU".

else

Locate **MonitorDefault** record for the hour and location where ParameterCd = "NOXR", DefaultPurposeCd = "LM", OperatingConditionCode is equal to *Default Condition*, FuelCode is in **LME Fuel Code List**, FuelCode is not equal to **Current DHV Record**.FuelCode, Default Value is greater than **NOXR Default Value**, and DefaultValueUnitsOfMeasure is equal to "LBMMBTU".

If found,

if (**Current Month** is not April OR **LME Annual** == true)

**Rpt Period NOx Mass Calculated Accumulator Array** for this location = -1

return result D

Otherwise,

If **HIT Calculated Adjusted Value** is null,

if (**Current Month** is not April OR **LME Annual** == true)

**Rpt Period NOx Mass Calculated Accumulator Array** for this location = -1

return result E

else

Calculate *NOXM Calculated Adjusted Value* = *HIT Calculated Adjusted Value* \* *NOXR Default Value*, and round the result to one decimal place.

if (*Current Month* is not April OR *LME Annual* == true)

if (*Rpt Period NOx Mass Calculated Accumulator Array* for this location is not null)

if (*Rpt Period NOx Mass Calculated Accumulator Array* for this location >= 0)

*Rpt Period NOx Mass Calculated Accumulator Array* for this location =  
*Rpt Period NOx Mass Calculated Accumulator Array* for this location +  
*NOXM Calculated Adjusted Value*

else

*Rpt Period NOx Mass Calculated Accumulator Array* for this location = *NOx Mass Calculated Adjusted Value*

if (*Current Month* is April)

if (*April NOx Mass Calculated Accumulator Array* for this location is not null)

*April NOx Mass Calculated Accumulator Array* for this location = *April NOx Mass Calculated Accumulator Array* for this location + *NOXM Calculated Adjusted Value*

else

*April NOx Mass Calculated Accumulator Array* for this location = *NOXM Calculated Adjusted Value*

if ( *OS Reporting Requirement* is true ) AND ( *Current Month* is May, June, July, August or September ) AND ( *Current Operating Date* is on or after *OS Reporting Period Begin Date* )

*OS NOXM Calculated Accumulator Array* for this location = *OS NOXM Calculated Accumulator Array* for this location + *NOXM Calculated Adjusted Value*

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The AdjustedHourlyValue in the DHV record for [param] could not be recalculated, because you did not report a FuelCode in this record.	Critical Error Level 1
B	You reported an invalid OperatingConditionCode in the DHV record for [param]. The AdjustedHourlyValue could not be recalculated.	Critical Error Level 1
C	You have not reported one and only one active Monitor Default record with a valid ParameterCode, DefaultPurposeCode, and OperatingConditionCode in your monitoring plan to report the default emission rate for the fuel. The AdjustedHourlyValue in the DHV for [param] could not be recalculated.	Critical Error Level 1
D	You reported [Fuel] as the FuelCode in the DHV record for [param], but, according to the Monitor Default records in your monitoring plan, this fuel does not have the highest default emissions rate of the fuels combusted during the hour. The AdjustedHourlyValue could not be recalculated.	Critical Error Level 1
E	The AdjustedHourlyValue in the DHV record for [param] could not be recalculated because the heat input rate could not be determined for the hour.	Informational Message

## Usage:

1 Process/Category: Emissions Data Evaluation Report ----- NOXM Derived Hourly Evaluation (LME)



**Check Code:** HOURDHV-45

**Check Name:** Check Reported NOXM for LME Unit

**Related Former Checks:**

**Applicability:** LME Check

**Description:****Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

If (*Current DHV Record*.AdjustedHourlyValue is null or is less than 0)  
     *Rpt Period NOx Mass Reported Accumulator Array* for this location = -1  
     return result A

else if (*Current DHV Record*.AdjustedHourlyValue is not rounded to one decimal place)  
     *Rpt Period NOx Mass Reported Accumulator Array* for this location = -1  
     return result C

else  
     if (*Current Month* is not April OR *LME Annual* == true)  
         if (*Rpt Period NOx Mass Reported Accumulator Array* for this location is not null)  
             if (*Rpt Period NOx Mass Reported Accumulator Array* >= 0)  
                 *Rpt Period NOx Mass Reported Accumulator Array* for this location = *Rpt Period NOx Mass Reported Accumulator Array* for this location + *Current DHV Record*.AdjustedHourlyValue  
             else  
                 *Rpt Period NOx Mass Reported Accumulator Array* for this location = *Current DHV Record*.AdjustedHourlyValue

If (*NOXM Calculated Adjusted Value* is not null AND *Current DHV Record*.AdjustedHourlyValue is not equal to *NOXM Calculated Adjusted Value*)

*NOX Mass Tolerance* = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
         Parameter = "NOXM" AND  
         UOM = "LB"

    if (ABS(*Current DHV Record*.AdjustedHourlyValue - *NOXM Calculated Adjusted Value*) > *NOX Mass Tolerance*)  
         return result B

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The AdjustedHourlyValue reported in the DHV record for [param] is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
B	The AdjustedHourlyValue reported in the DHV record for [param] is inconsistent with the recalculated value.	Critical Error Level 1
C	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- NOXM Derived Hourly Evaluation (LME)

**Check Code:** HOURDHV-46

**Check Name:** Equation Code Consistent with Moisture Basis

**Related Former Checks:**

**Applicability:** CEM Check

**Description:**

**Specifications:**

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- SO2M Derived Hourly Evaluation (LME)
---	-------------------	---

**Check Code:** HOURDHV-47

**Check Name:** Unit Default Test Expiration Check

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

If *UDEF Status* is not null,

If (*UDEF Status* == "MISSING")  
return result A.

else if (*UDEF Status* == "FOUND")  
if (*Current Operating Date* is after the *UDEF Expiration Date*)  
return result B.

else  
Append *CurrentDHV*.FuelCode to the *LME Fuel Array* for the location.

else if (*UDEF Status* == "GROUP")  
if (*Current Operating Date* is after the *UDEF Expiration Date*)  
return result C.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report an applicable prior LME Unit Default Test for Fuel Code [FUEL].	Critical Error Level 1
B	The applicable prior LME Unit Default Test for Fuel Code [FUEL] has expired. You need to use a Part 75 default NOx emissions rate until you perform a new unit-and-fuel-specific default test. You will need to put an end date on your existing NOXR default records in your monitoring plan, and add a new NOXR default record based on the Part 75 default value.	Critical Error Level 1
C	Warning: Based on the BeginDate in your NOXR Default record in your monitoring plan, the LME Unit Default Test(s) that established the default NOx emission rate for Fuel Code [FUEL] may have expired. Unit Default Tests must be performed every five years. If your test has expired, you need to use a Part 75 default NOx emissions rate until you perform a new unit-and-fuel-specific default test. You will need to put an end date on your existing NOXR default records in your monitoring plan, and add a new NOXR default record based on the Part 75 default value.	Informational Message

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- NOXM Derived Hourly Evaluation (LME)

**Check Code:** HOURDHV-48

**Check Name:** Flag Petition MODC Use

**Related Former Checks:**

**Applicability:** General Check

**Description:** MODC 53, 54 and 55 were designed for sources with approved petitions. This check will flag when MODC 53, 54 and 55 are used to make clear to sources that they should have a petition in place.

**Specifications:**

If ( *DerivedHourlyModcStatus* is NOT false ) AND ( *CurrentDhvRecord*.ModcCode in set { 53, 54, 55 } )

return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You have reported MODC [modcCode] for [type] parameter [param]. Use of this MODC requires EPA permission.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Derived Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- CO2 Mass Rate Derived Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- CO2M Derived Hourly Evaluation (LME)
4	Process/Category:	Emissions Data Evaluation Report ----- H2O Derived Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- Heat Input Derived Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- HIT Derived Hourly Evaluation (LME)
7	Process/Category:	Emissions Data Evaluation Report ----- NOx Emissions Rate Derived Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- NOx Mass Rate Derived Hourly Evaluation
9	Process/Category:	Emissions Data Evaluation Report ----- NOXM Derived Hourly Evaluation (LME)
10	Process/Category:	Emissions Data Evaluation Report ----- SO2 Derived Hourly Evaluation
11	Process/Category:	Emissions Data Evaluation Report ----- SO2M Derived Hourly Evaluation (LME)
12	Process/Category:	Emissions Data Evaluation Report ----- SO2R Derived Hourly Evaluation

**Check Category:**

**Hourly General**

**Check Code:** HOURGEN-1

**Check Name:** Initialize Accumulators, Dictionaries and Lists

**Related Former Checks:** HOUROP-27

**Applicability:** General Check

**Description:** Initializes summary value data: the operating time, operating hours, and reported and calculated values for each parameter. Also initializes dictionaries and lists used to collect information during processing.

**Specifications:**

For each location in Monitoring Plan, initialize arrays with size **Current Location Count**

**Rpt Period CO2 Mass Reported Accumulator Array** for the location = 0

**Rpt Period CO2 Mass Calculated Accumulator Array** for the location = 0

**Expected Summary Value CO2 Array** for the location = false

**Rpt Period HI Reported Accumulator Array** for the location = 0

**Rpt Period HI Calculated Accumulator Array** for the location = 0

**Expected Summary Value HI Array** for the location = false

**Rpt Period NOx Rate Reported Accumulator Array** for the location = 0

**Rpt Period NOx Rate Calculated Accumulator Array** for the location = 0

**Rpt Period NOx Rate Hours Accumulator Array** for the location = 0

**Expected Summary Value NOx Array** for the location = false

**Rpt Period SO2 Mass Reported Accumulator Array** for the location = 0

**Rpt Period SO2 Mass Calculated Accumulator Array** for the location = 0

**Expected Summary Value SO2 Array** for the location = false

**Rpt Period NOx Mass Reported Accumulator Array** for the location = 0

**Rpt Period NOx Mass Calculated Accumulator Array** for the location = 0

**Expected Summary Value NOx Mass Array** for the location = false

**Rpt Period Op Time Accumulator Array** for the location = 0

**Rpt Period Op Hours Accumulator Array** for the location = 0

**Rpt Period Op Days Accumulator Array** for the location = 0

**Rpt Period Load Accumulator Array** for the location = 0

**Daily Op Time Accumulator Array** for this location = 0

**April HI Calculated Accumulator Array** for the location = 0

**April NOx Mass Calculated Accumulator Array** for the location = 0

**April Op Time Accumulator Array** for the location = 0

**April Op Hours Accumulator Array** for the location = 0

**April Op Days Accumulator Array** for the location = 0

**OS HIT Calculated Accumulator Array** for this location = 0

**OS NOXM Calculated Accumulator Array** for this location = 0

**OS Op Hours Calculated Accumulator Array** for this location = 0

**OS Op Time Calculated Accumulator Array** for this location = 0

**LME Total Load Array** for the location = 0

**LME April Load Array** for the location = 0

**LME Total Heat Input Array** for the location = 0

**LME April Heat Input Array** for the location = 0

**LME Total OpTime Array** for the location = 0

**LME April OpTime Array** for the location = 0

**Last Day of Operation Array** for the location = null

**First Day of Operation** = null

*First Hour of Operation* = null

*FLOW System ID Array* for the location = null  
*NOXE System ID Array* for the location = null  
*LME Fuel Array* for the location = null

*Operating Date Array* for the location = empty date list

Count the number of unique location + FuelCode in the *Hourly Fuel Flow* records for the monitoring configuration and reporting period.  
Initialize an array with this number of elements:  
*Fuel Op Hours Accumulator Array* for the location and FuelCode = 0

Initialize *F2LStatusSystemResultDictionary* as a dictionary with both a string key and lookup value  
Initialize *F2LStatusSystemCheckDictionary* as a dictionary with a string key and a data row value  
Initialize *F2LStatusSystemMissingOpDictionary* as a dictionary with both a string key and lookup value

Initialize *InvalidCylinderIdList* as a list with string values.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---

**Check Code:** HOURGEN-2

**Check Name:** Reporting Period Details

**Related Former Checks:**

**Applicability:** General Check

**Description:** Checks the current reporting period to see if the monitoring plan is active. Also sets a parameter indicating whether legacy data is being processed.

**Specifications:**

*Abort Hourly Checks* = false

*Legacy Data Evaluation* = false

*LME HI Method* = null

*LME HI Substitute Data Code* = null

*Annual Reporting Requirement* = false

*OS Reporting Requirement* = false

*OS Reporting Period Begin Date* = null

*OS Active Program Earliest UMCBD* = null

*LME Annual* = false

*LME OS* = false

*Reported Emissions Value* = null

*Multiple Stack Configuration* = false

*Ignored Daily Calibration Tests* = false

*Ignored Daily Interference Tests* = false

if ( (*Current Reporting Period* < *Current Monitoring Plan Record*.BeginReportPeriod) OR  
     (*Current Monitoring Plan Record*.EndReportPeriod is not null AND *Current Monitoring Plan Record*.EndReportPeriod <  
     *Current Reporting Period*) )

*Abort Hourly Checks* = true

    return result A

else

    Locate a *UnitProgram* record for any unit in the configuration where ProgramCode in *Program is Ozone Season List*,  
     UnitMonitorCertBeginDate is on or before *Current Reporting Period End Date*, and the EndDate is null or is on or after Jan 1 of  
     the year of the *Current Reporting Period*.

    If found,

*OS Reporting Requirement* = true

    If *Current Reporting Period Quarter* equals 2 or 3,

        Locate *OS Active Program Earliest UMCBD* as the earliest UnitMonitorCertBeginDate in *MP Program Records*  
 where:

- 1) ProgramCode in *Program is Ozone Season List*,
- 2) UnitMonitorCertBeginDate is on or before *Current Reporting Period End Date*,
- 3) EndDate is null or is on or after Jan 1 of *Current Reporting Period Year*.

    If *Current Reporting Period Quarter* equals 2,

*OS Reporting Period Begin Date* = May 1st of the *Current Reporting Period Year*.

    Else

*OS Reporting Period Begin Date* = *Current Reporting Period Begin Date*.

    If *OS Active Program Earliest UMCBD* is not null, AND *OS Active Program Earliest UMCBD* is after *OS  
 Reporting Period Begin Date*,

*OS Reporting Period Begin Date* = *OS Program Earliest UMCBD*.



Locate all **LocationReportingFrequency** record for any unit in the configuration where BeginQuarter is on or before the **Current Reporting Period**, and the EndQuarter is null or is on or after the **Current Reporting Period**.

If found, and the ReportingFrequencyCode in all records == "Q",  
**Annual Reporting Requirement** = true

else if found, and the ReportingFrequencyCode in all records == "OS",  
If **OS Reporting Requirement** == false  
**Abort Hourly Checks** = true  
return result B

else if the Quarter of the **Current Reporting Period** is equal to 1 or 4,  
**Abort Hourly Checks** = true  
return result C

Otherwise,  
**Abort Hourly Checks** = true  
return result B

If (**Abort Hourly Checks** == false)

If (the associated First ECMPS Reporting Period for the monitoring plan is null)  
If **Current Reporting Period** is on or prior to 2008)  
**Legacy Data Evaluation** = true

Else  
If **Current Reporting Period** is prior to the First ECMPS Reporting Period)  
**Legacy Data Evaluation** = true

Locate a Hourly Op Data record for the configuration and reporting period where OperatingTime is greater than 0,

If found,  
**Reporting Period Operating** = true

else,  
**Reporting Period Operating** = false

Set **LME Annual** to false.  
Set **LME OS** to false.

Set **AnyMonitoringMethodFound** to false.  
Set **OsMonitoringMethodFound** to false.

Locate MonitorMethod record for ANY location in the file where:

- 1) ParameterCode in set {SO2M, NOXM, CO2M}.
- 2) MethodCode = "LME".
- 3) BeginDate is on or before the first day of the **Current Reporting Period**.
- 4) EndDate is null or is on or after the last day of the **Current Reporting Period**.

If found,

Set **AnyMonitoringMethodFound** to true

If **Current Reporting Period** is for the 2nd or 3rd Quarter,  
Set **OsMonitoringMethodFound** to true

Locate all MonitorQualification records for all units in the monitoring configuration where:

- 1) QualificationTypeCode is equal to "LMEA".
- 2) BeginDate is on or before the last day of the reporting period.
- 3) EndDate is null or is on or after January 1 of the year of the **Current Reporting Period**.

If found,

Set **LME Annual** to true.

If *OsMonitoringMethodFound* is false, AND **Current Reporting Period** is for the 2nd Quarter,

Locate MonitorMethod record for ANY location in the file where:

- 1) ParameterCode in set {SO2M, NOXM, CO2M}.
- 2) MethodCode = "LME".
- 3) BeginDate is on or before May 1st of the year of the **Current Reporting Period**.
- 4) EndDate is null OR is on or after the last day of the **Current Reporting Period**.

If found,

Set *AnyMonitoringMethodFound* to true.

Set *OsMonitoringMethodFound* to true.

If *OsMonitoringMethodFound* ,

Locate all MonitorQualification records for all units in the monitoring configuration where:

- 1) QualificationTypeCode is equal to "LMES".
- 2) BeginDate is on or before the last day of the reporting period.
- 3) EndDate is null OR is on or after January 1 of the year of the **Current Reporting Period**.

If found,

Set **LME OS** to true.

If *AnyMonitoringMethodFound* ,

If (**LME Annual** == true and **Annual Reporting Requirement** == false)

**Abort Hourly Checks** = true

return result D

else if (**LME OS** == true and **OS Reporting Requirement** == false)

**Abort Hourly Checks** = true

return result E

else if (**LME Annual** == false and **LME OS** == false)

**Abort Hourly Checks** = true

return result F

Otherwise,

Locate MonitorMethod records for all locations in the file where:

- 1) ParameterCode = "HIT".
- 2) BeginDate is on or before:
  - a) If **Current Reporting Period** is for the 2nd quarter AND **LME Annual** is false, then May 1st of the year of the **Current Reporting Period**.
  - b) Otherwise, the first day of the **Current Reporting Period**.
- 3) EndDate is null OR is on or after the last day of the **Current Reporting Period**.

If not found for any location,

**Abort Hourly Checks** = true

return result G

Else

If MethodCode = "MHHI" for all locations,  
***LME HI Method*** = "MHHI"

If MethodCode in set {LTFF, CALC, LTFCALC} for all locations,  
***LME HI Method*** = "LTFF"

If SubstituteDataCode is equal to "MHHI" for any location,  
***LME HI Substitute Data Code*** = "MHHI".

Otherwise,  
***Abort Hourly Checks*** = true  
return result H

If (***Abort Hourly Checks*** == false)

Locate all Unit Program records for all units in the configuration where the UnitMonitorCertBeginDate is on or prior to the ***Current Reporting Period*** and the EndDate is null or is on or after the ***Current Reporting Period***.

If the ProgramCode in all the retrieved Location Program records is NOT in ***Program Uses RUE List***,

Locate all Unit Operating Status records for all units in the configuration where the Op Status Code is equal to "RET", the year of the Begin Date is prior to ***Current Reporting Period***, and the End Date is null or is on or after the last day of the ***Current Reporting Period***.

If found,  
return result I

Otherwise,

For each Unit Program record retrieved above where the ProgramCode is in ***Program Uses RUE List***,

If ProgramCode is in ***Program is Ozone Season List*** and the ***Current Reporting Period*** is in the first or second quarter,

Locate a Unit Program Exemption record for the unit program where the Exempt Type is equal to "RUE", the Exemption Begin Date is on or prior to May 1 of the year of the ***Current Reporting Period***, and the Exemption End Date is null or is on or after the last day of the ***Current Reporting Period***.

Otherwise,

Locate a Unit Program Exemption record for the unit program where the Exempt Type is equal to "RUE", the Exemption Begin Date is on or prior to the first day of the ***Current Reporting Period***, and the Exemption End Date is null or is on or after the last day of the ***Current Reporting Period***.

If a Unit Program Exemption record was found for all unit programs,  
return result I

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The locations in the file do not represent a valid monitoring configuration during the reporting period. The file will not be evaluated.	Fatal
B	The active Reporting Frequency records for this configuration are missing or invalid. The file will not be evaluated. Please contact ECMPS technical support for assistance with this matter.	Fatal
C	According to the Reporting Frequency records, this monitoring configuration is an ozone-season-only reporter, however the reporting period is not within the ozone season. The file will not be evaluated.	Fatal
D	You have reported an LME Annual Qualification record in your monitoring plan, but, according to the Reporting Frequency records, this configuration is not an annual reporter. The file will not be evaluated.	Fatal
E	You have reported an LME Ozone Season Qualification record in your monitoring plan, but, according to the Unit Program records, this configuration does not report ozone season totals. The file will not be evaluated.	Fatal
F	You have reported an LME method in your monitoring plan for one or more units in this configuration, but you have not reported an LME qualification record. The file will not be evaluated.	Fatal
G	You did not report an active heat input method for one or more locations in the file. The file will not be evaluated.	Fatal
H	The active heat input methods reported for the locations in the file are inconsistent. The file will not be evaluated.	Fatal
I	This file contains at least one unit that is retired. Please contact EPA if you believe that all units in this configuration should report emissions data during this reporting period.	Critical Error Level 2

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---

**Check Code:** HOURGEN-3

**Check Name:** Calculate Total Load for LME Configuration for Reporting Period

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

*LME Total Load* = 0

*LME April Load* = 0

*LME CP Total Heat Input* = 0

*LME CP April Heat Input* = 0

*LME Total Optime* = 0

*LME April Optime* = 0

If (*LME HI Method* is not null)

    If (*LME HI Method* == "MHHI")

        Locate an LTFF record for any location in the monitoring configuration during the reporting period.

        If found,

            set *Abort Hourly Checks* to true, and return result A.

    else

        For each *Hourly Op Data* record for every unit in the monitoring configuration.

            If *Hourly Op Data*.OpTime is not equal to 0 or *Hourly Op Data*.HourLoad is not null,

                If *Hourly Op Data*.HourLoad is greater than or equal to 0 and *Hourly Op Data*.OpTime is between 0 and 1 (inclusive),

                    Locate the *DerivedHourlyValue* record for the unit and the hour where ParameterCode is equal to "HIT".

                    If found, AND *DerivedHourlyValue*.MODCCode is null,

                        Add HourLoad \* OpTime to *LME Total Load Array* for the location

                        Add HourLoad \* OpTime to *LME Total Load*.

                        Add OpTime to *LME Total OpTime Array* for the location

                        Add OpTime to *LME Total Optime*.

                    If the month of *Hourly Op Data*.Date is "April" AND *LME OS* is equal to true ,

                        Add HourLoad \* OpTime to *LME April Load Array* for the location

                        Add HourLoad \* OpTime to *LME April Load*.

                        Add OpTime to *LME April OpTime Array* for the location

                        Add OpTime to *LME April Optime*.

                    If not found, AND *Hourly Op Data*.HourLoad is greater than 0,

                        set *LME Total Load* to -1.

                        exit for.

        Otherwise,

            set *LME Total Load* to -1.

            exit for.

If *LME OS* is equal to true and the reporting period is the second quarter,

    Locate an LTFF record for any location in the monitoring configuration during the reporting period where the

FuelFlowPeriodCode is equal to "A".

If found, AND **LME April Load** is equal to 0 and **LME April Optime** is equal to 0,  
set **Abort Hourly Checks** to true, and return result C.

else if not found AND (**LME April Load** is greater than 0 or **LME April Optime** is greater than 1),  
return result F.

else

Locate an LTFF record for any location in the monitoring configuration during the reporting period where the FuelFlowPeriodCode is equal to "MJ".

If found,

If (**LME Total Load - LME April Load**) is equal to 0 and (**LME Total Optime - LME April Optime**) is equal to 0,  
set **Abort Hourly Checks** to true, and return result E.

else

If (**LME Total Load - LME April Load**) is greater than 0 or (**LME Total Optime - LME April Optime**) is greater than 1,  
return result G.

else

Locate an LTFF record for any location in the monitoring configuration during the reporting period.

If found,

If **LME Total Load** is equal to 0 and **LME Total Optime** is equal to 0,  
set **Abort Hourly Checks** to true, and return result B.

else

If **LME Total Load** is greater than 0 or **LME Total Optime** is greater than 1,  
return result D.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You have reported MHHI as the heat input method for this configuration, but you have reported a long-term fuel flow record.	Fatal
B	You have reported a long-term fuel flow record for this reporting period, but the sum of the load and operating time values in the hourly records (where MHHIIndicator is not equal to 1) are equal to 0.	Fatal
C	You have reported a long-term fuel flow record for April, but the sum of the load and operating time values in the hourly records (where MHHIIndicator is not equal to 1) are equal to 0.	Fatal
D	You have reported LTFF as the heat input method for this configuration, but you have not reported a long-term fuel flow record for this reporting period.	Critical Error Level 1
E	You have reported a long-term fuel flow record for May and June, but the sum of the load and operating time values in the hourly records (where MHHIIndicator is not equal to 1) are equal to 0.	Fatal
F	You have reported LTFF as the heat input method for this ozone-season reporting configuration, but you have not reported a long-term fuel flow record for April.	Critical Error Level 1
G	You have reported LTFF as the heat input method for this ozone-season reporting configuration, but you have not reported a long-term fuel flow record for May/June.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report Summary Value Initialization

**Check Code:** HOURGEN-7  
**Check Name:** Validate LME Eligibility  
**Related Former Checks:**  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

If (*LME HI Method* is not null)

Set *LME Exceeding Parameter* to null.  
Set *Final LME Year* to false.

For each unit in the monitoring configuration:

If (*LME Annual* == true)

Locate the latest *MonitorQualification* record where location is the unit being evaluated, the *QualificationTypeCode* is equal to "LMEA", *BeginDate* is on or before the first day of the *Current Reporting Period*, and the *EndDate* is null or is on or after December 31 of the year prior to the *Current Reporting Period*.

If (not found)  
return result A.

If (found and the *BeginDate* of the retrieved qualification record is prior to the *Current Reporting Period Year*)

For each year from three years prior to the *Current Reporting Period Year* until the year prior to the *Current Reporting Year*:

Set *Annual NOx* to 0.  
Set *Annual SO2* to 0.

For quarter 1 until quarter 4:

Locate an *Op Supp Data* record for the location and quarter/year being checked where the *OpTypeCode* = "NOXM".

If (found)  
add *OpValue* to *Annual NOx*.

Locate an *Op Supp Data* record for the location and quarter/year being checked where the *OpTypeCode* = "SO2M".

If (found)  
add *OpValue* to *Annual SO2*.

If (the year being evaluated is the year prior to the *Current Reporting Period Year*)

If (*Annual NOx* is greater than 100 or *Annual SO2* is greater than 25)  
set *Final LME Year* to true.

Else

If (*Annual NOx* is greater than 100)  
append "Annual NOx" to *LME Exceeding Parameter*.

If (*Annual SO2* is greater than 25)  
append "Annual SO2" to *LME Exceeding Parameter*.

If (*LME OS* == true)

Locate the latest *MonitorQualification* record where the location is the unit being evaluated, QualificationTypeCode is equal to "LMES", BeginDate is on or before the later of the first day of the *Current Reporting Period* and May 1 of the year of the *Current Reporting Period*, and the EndDate is null or is on or after December 31 of the year prior to the *Current Reporting Period*.

If (not found)

return result B.

If (found and the BeginDate of the retrieved qualification record is prior to the *Current Reporting Period Year*)

For each year from three years prior to the *Current Reporting Period Year* until the year prior to the *Current Reporting Period Year*:

Set *OS NOx* to 0.

Locate an *Op Supp Data* record for the location and quarter 2 of the year being checked where the OpTypeCode = "NOXMOS".

If found,

add OpValue to *OS NOx*.

Locate an *Op Supp Data* record for the location and quarter 3 of the year being checked where the OpTypeCode = "NOXM".

If found,

add OpValue to *OS NOx*.

If (the year being evaluated is the year prior to the *Current Reporting Period Year*)

If (*OS NOx* is greater than 50)

set *Final LME Year* to true.

Else

If (*OS NOx* is greater than 50)

append "Ozone Season NOx" to *LME Exceeding Parameter*.

if (*LME Exceeding Parameter* is not null)

return result C.

else if (*Final LME Year* == true)

return result D.



**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You have reported an active LMEA qualification record for this configuration in your monitoring plan, but you have not reported an active LMEA qualification record for at least one unit in the configuration.	Fatal
B	You have reported an active LMES qualification record for this configuration in your monitoring plan, but you have not reported an active LMES qualification record for at least one unit in the configuration.	Fatal
C	You have reported that this configuration has an active LME qualification, but this configuration is no longer eligible to qualify for an LME methodology, because at least one unit in the configuration has exceeded the eligibility limit for [param] in a prior year.	Critical Error Level 2
D	The emissions from at least one unit in this configuration exceeded the applicable number of tons necessary to qualify as an LME unit in the previous reporting year. According to Part 75.19(b), you must install the appropriate monitoring systems by December 31 of this reporting year.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---

**Check Code:** HOURGEN-8

**Check Name:** Monitor Plan Evaluation Check

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Specifications:**

Set *MpSuccessfullyEvaluated* = false.  
 Set *MpLastEvaluatedTimeframe* = "".

If the SeverityLevelCd of the monitoring plan record for this configuration is equal to "CRIT1" or "FATAL".

return result A.

Else If the NeedsEvalFlag and MustSubmitFlag of the monitoring plan record for this configuration are equal to "Y",

return result B.

Else If the LastEvaluationDate is null,

Set *MpLastEvaluatedTimeframe* = " this calendar year".  
 return result C.

Else If the LastEvaluationDate 's year is less than *CurrentReportingPeriodYear*,

Set *MpLastEvaluatedTimeframe* = " since " + LastEvaluationDate.  
 return result C.

Otherwise,

Set *MpSuccessfullyEvaluated* = true.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The Monitoring Plan associated with this quarterly emissions file has critical errors. You must correct the Monitoring Plan for this monitoring configuration in order to submit this emissions file to be loaded on EPA's host system.	Critical Error Level 1
B	The Monitoring Plan associated with this quarterly emissions file has not been evaluated. You must evaluate the Monitoring Plan for this monitoring configuration in order to complete the evaluation of this emissions file.	Critical Error Level 1
C	The Monitoring Plan associated with this quarterly emissions file has not been evaluated [DateClause]. Monitoring Plan evaluations are required at least once in (or after) the calendar year of the emission report to ensure data accuracy.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report Summary Value Initialization

**Check Code:** HOURGEN-9

**Check Name:** QA/Cert Test Evaluation Check

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Specifications:**

Locate any QA/Cert Test record for the monitoring configuration where the EndDate is on or before the last day of the **Current Reporting Period**, MustSubmitFlag is equal to 'Y' or CanSubmitFlag and UpdatedStatusFlag are equal to "Y", and the SeverityCd is equal to "CRIT1" or "FATAL".

If found,  
return result A.

Otherwise,

Locate any QA/Cert Test record for the monitoring configuration where the EndDate is on or before the last day of the **Current Reporting Period**, MustSubmitFlag is equal to 'Y' or CanSubmitFlag and UpdatedStatusFlag are equal to "Y", and the NeedsEvalFlag are equal to "Y".

If found,  
return result B.

Otherwise,

Locate any QA Supp Data record for the monitoring configuration without any associated Test Summary record where the EndDate is on or before the last day of the **Current Reporting Period** and MustSubmitFlag is equal to 'Y'.

If found,  
return result C.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	At least one QA/certification test associated with this monitoring configuration has critical errors. You must correct all prior or concurrent QA/certification tests in order to submit this quarterly emissions file to be loaded on EPA's host system.	Critical Error Level 1
B	At least one QA/certification test associated with this monitoring configuration has not been evaluated. You must evaluate all prior or concurrent QA/certification tests in order to complete the evaluation of this quarterly emissions file.	Critical Error Level 1
C	The emissions quarterly reported cannot be submitted, because EPA has required the resubmission of a QA/certification test that is not present in the Client Tool. Please review the Submission Access report for more information about what needs to be submitted.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report Summary Value Initialization

**Check Code:** HOURGEN-10

**Check Name:** QA/Cert Event Evaluation Check

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Specifications:**

Locate any QA/Certification Event record for the monitoring configuration where the QACertEventDate is on or before the last day of the **Current Reporting Period**, the MustSubmitFlag is equal to "Y", and the SeverityCd is equal to "CRIT1" or "FATAL".

If found,  
return result A.

Otherwise,

Locate any QA/Certification Event record for the monitoring configuration where the QACertEventDate is on or before the last day of the **Current Reporting Period** and the MustSubmitFlag and NeedsEvalFlag are equal to "Y".

If found,  
return result B.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	At least one QA/certification event associated with this monitoring configuration has critical errors. You must correct all prior or concurrent QA/certification events in order to submit this quarterly emissions file to be loaded on EPA's host system.	Critical Error Level 1
B	At least one QA/certification event associated with this monitoring configuration has not been evaluated. You must evaluate all prior or concurrent QA/certification event in order to complete the evaluation of this quarterly emissions file.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report Summary Value Initialization

**Check Code:** HOURGEN-11

**Check Name:** Test Extension/Exemption Evaluation Check

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Specifications:**

Locate any Test Extension/Exemption record for the monitoring configuration where the ReportingPeriod is on or before the **Current Reporting Period**, the MustSubmitFlag is equal to "Y", and the SeverityCd is equal to "CRIT1" or "FATAL".

If found,  
return result A.

Otherwise,  
Locate any Test Extension/Exemption record for the monitoring configuration where the ReportingPeriod is on or before the **Current Reporting Period** and the MustSubmitFlag and NeedsEvalFlag are equal to "Y".

If found,  
return result B.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	At least one test extension/exemption associated with this monitoring configuration has critical errors. You must correct all prior or concurrent test extension/exemption records in order to submit this quarterly emissions file to be loaded on EPA's host system.	Critical Error Level 1
B	At least one test extension/exemption associated with this monitoring configuration has not been evaluated. You must evaluate all prior or concurrent test extension/exemption records in order to complete the evaluation of this quarterly emissions file.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report Summary Value Initialization

**Check Code:** HOURGEN-12

**Check Name:** Prior Emissions File Evaluation Check

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Specifications:**

Locate any Emissions File for any location in the current monitoring configuration where the ReportingPeriod is prior to the **Current Reporting Period**, and either the Submission Availability Code = 'CRITERR' or (CAN\_SUBMIT = 'Y' and SeverityCd is equal to "CRIT1" or "FATAL").

If found,  
return result A.

Otherwise,  
Locate any Emissions File for any location in the current monitoring configuration where CAN\_SUBMIT = 'Y', the ReportingPeriod is prior to the **Current Reporting Period**, and the NeedsEvalFlag is equal to "Y".

If found,  
return result B.

If not found,  
Locate any Emissions File for any location in the current monitoring configuration where the ReportingPeriod is prior to the **Current Reporting Period**, and either the Submission Availability Code = 'NOTSUB' or (CAN\_SUBMIT = 'Y' and UpdatedStatusFlag = 'NODATA').

If found,  
return result C.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	At least one prior quarterly emissions file for at least one location in this monitoring configuration has critical errors. You must correct all prior quarterly emissions files in order to submit this quarterly emissions file to be loaded on EPA's host system.	Critical Error Level 1
B	At least one prior quarterly emissions file for at least one location in this monitoring configuration has not been evaluated. You must evaluate all prior quarterly emissions files in order to complete the evaluation for this quarterly emissions file.	Critical Error Level 1
C	At least one prior quarterly emissions file for at least one location in this monitoring configuration has not been submitted and has been authorized for resubmission. You must submit all prior quarterly emissions files in order to submit this quarterly emissions file to be loaded on EPA's host system.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report Summary Value Initialization

**Check Code:** HOURGEN-13

**Check Name:** Determine If File Can Be Submitted

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Specifications:**

Locate the Emission Submission Access record for the configuration and reporting period.

If not found, or the Submission Availability Code is null,  
return result A.

else if the Submission Availability Code is not equal to "GRANTED" or "REQUIRE",  
return result B.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The emissions quarterly report cannot be submitted, either because the EPA has not yet opened the submission window, you have not logged into the EPA host system, or you are no longer a representative or agent for this facility. If you are a representative or agent for this facility, when EPA opens the submission window you should log in to the EPA host system to receive automatic permission to submit. You will then need to reevaluate this file prior to submitting.	Informational Message
B	The emissions quarterly report cannot be resubmitted until you contact the EPA for permission. After the EPA grants permission, you will need to log in to the EPA host system to retrieve the permission record. You will then need to reevaluate this file prior to submitting.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---

**Check Code:** HOURGEN-14

**Check Name:** Ignored Offline Daily Calibration Check

**Related Former Checks:**

**Applicability:**

**Description:**

**Specifications:**

If (*Ignored Daily Calibration Tests* == true)  
    set *Ignored Daily Calibration Tests* to false  
    return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported one or more daily calibration tests that will not fulfill your daily calibration testing requirement, because these tests were performed while the unit was not operating and you have not reported a prior online-offline calibration demonstration. These tests have been assigned a CalculatedTestResult of "IGNORED", and they can be viewed on the Daily Calibration tab of the View Detailed Emissions Screen. If you intend to use offline tests to fulfill your daily calibration testing requirement, you must conduct an online-offline calibration demonstration.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Evaluation
---	-------------------	---



**Check Code:** HOURGEN-15

**Check Name:** Expiring Test Check

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Specifications:**

Set *Expired Systems* and *Expiring Systems* to null.

Set *Expiration Text* to "have expired"

If *FLOW System ID Array* for the location is not null,

For each SystemID in the *FLOW System ID Array* for the location:

Locate the latest *RATATestRecordsByLocationForQASStatus* for the location where the SystemID is equal to the SystemID being checked and the number of operating levels the OpLevelCodeList is equal to 3,

If found,

If *RATATestRecordsByLocationForQASStatus*.TestReasonCode equal to "INITIAL" then

Locate the latest *QACertEventsForEMEvaluation* where SystemID is equal to the SystemID being checked and QACertEventCode equal to "305"

If *QACertEventforEMEvaluation*.TestCompletionDate is after the  
*RATATestRecordsByLocationForQASStatus*.EndDate

Set *ExpirationDate* to five years after the end of the quarter of the  
*QACertEventforEMEvaluation*.TestCompletionDate

Else

Set *ExpirationDate* to five years after the end of the quarter of the  
*RATATestRecordsByLocationForQASStatus*.EndDate

Else

Set *ExpirationDate* to five years after the end of the quarter of the  
*RATATestRecordsByLocationForQASStatus*.EndDate.

If *ExpirationDate* is prior to the current calendar date,

Append the SystemIdentifier being checked to *Expired Systems*.

else if *ExpirationDate* is on or before the last day of the *Current Reporting Period*,

Set *Expiration Text* to "will be expiring at the end of the reporting period".

Append the SystemIdentifier being checked to *Expired Systems*.

else if *ExpirationDate* is on or before the last day of the quarter following the *Current Reporting Period*,

Append the SystemIdentifier being checked to *Expiring Systems*.

If both *Expired Systems* and *Expiring Systems* are not null,

return result A

else if *Expired Systems* is not null,

return result B

else if *Expiring Systems* is not null,

return result C

else if *NOXE System ID Array* for the location is not null,

For each SystemID in the *NOXE System ID Array* for the location:

Locate the latest *AppendixETestRecordsByLocationForQASStatus* for the location where the SystemID is equal to the SystemID being checked,

If found,

Set *ExpirationDate* to five years after the end of the quarter of the *AppendixETestRecordsByLocationForQASStatus.EndDate*.

If *ExpirationDate* is prior to the current calendar date,

Append the SystemIdentifier being checked to *Expired Systems*.

else if *ExpirationDate* is on or before the last day of the *Current Reporting Period*,

Set Expiration Text to "will be expiring at the end of the reporting period".

Append the SystemIdentifier being checked to *Expired Systems*.

else if *ExpirationDate* is on or before the last day of the quarter following the *Current Reporting Period*,

Append the SystemIdentifier being checked to *Expiring Systems*.

If both *Expired Systems* and *Expiring Systems* are not null,

return result D

else if *Expired Systems* is not null,

return result E

else if *Expiring Systems* is not null,

return result F

else if *LME Fuel Array* for the location is not null,

For each FuelCode in the *LME Fuel Array* for the location:

Locate the latest *UnitDefaultTestRecordsByLocationForQASStatus* for the location where the FuelCode is equal to the FuelCode being checked,

If found,

Set *ExpirationDate* to five years after the end of the quarter of the *UnitDefaultTestRecordsByLocationForQASStatus.EndDate*.

If *ExpirationDate* is prior to the current calendar date,

Append the FuelCode being checked to *Expired Systems*.

else if *ExpirationDate* is on or before the last day of the *Current Reporting Period*,

Set Expiration Text to "will be expiring at the end of the reporting period".

Append the FuelCode being checked to *Expired Systems*.

else if *ExpirationDate* is on or before the last day of the quarter following the *Current Reporting Period*,

Append the FuelCode being checked to *Expiring Systems*.

If both *Expired Systems* and *Expiring Systems* are not null,

return result G

else if *Expired Systems* is not null,

return result H

else if *Expiring Systems* is not null,

return result I

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	Warning: The three-level RATA conducted for each of the following monitoring systems [TEXT]: System ID(s) [EXPIRED]. Except for a 720 operating-hour grace period extension, you will need monitor stack flow with another FLOW system or report substitute data until you perform another three-level RATA. In addition, the three-level RATA conducted for each of the following monitoring systems will expire at the end of the next reporting period: System ID(s) [EXPIRING]. Three-level RATAs expire after five years.	Informational Message
B	Warning: The three-level RATA conducted for each of the following monitoring systems [TEXT]: System ID(s) [EXPIRED]. Except for a 720 operating-hour grace period extension, you will need monitor stack flow with another FLOW system or report substitute data until you perform another three-level RATA. Three-level RATAs expire after five years.	Informational Message
C	Prior Notice: The three-level RATA conducted for each of the following monitoring systems will expire at the end of the next reporting period: System ID(s) [EXPIRING]. Three-level RATAs expire after five years.	Informational Message
D	Warning: The Appendix E test conducted to determine the NOx correlation curve for each of the following monitoring systems [TEXT]: System ID(s) [EXPIRED]. In subsequent reporting periods, you will need report substitute data until you perform another Appendix E test. In addition, the Appendix E test conducted for each of the following monitoring systems will expire at the end of the next reporting period: System ID(s) [EXPIRING]. Appendix E tests expire after five years.	Informational Message
E	Warning: The Appendix E test conducted to determine the NOx correlation curve for each of the following monitoring systems [TEXT]: System ID(s) [EXPIRED]. In subsequent reporting periods, you will need report substitute data until you perform another Appendix E test. Appendix E tests expire after five years.	Informational Message
F	Prior Notice: The Appendix E test conducted to determine the NOx correlation curve for each of the following monitoring systems will expire at the end of the next reporting period: System ID(s) [EXPIRING]. Appendix E tests expire after five years.	Informational Message
G	Warning: The LME Unit Default Test conducted to determine the default NOx emission rate for each of the following fuels [TEXT]: Fuel Code(s) [EXPIRED]. In subsequent reporting periods, you will need report substitute data until you perform another Unit Default Test. In addition, the Unit Default Test conducted for each of the following fuels will expire at the end of the next reporting period: Fuel Code(s) [EXPIRING]. LME Unit Default Tests expire after five years.	Informational Message
H	Warning: The LME Unit Default Test conducted to determine the default NOx emission rate for each of the following fuels [TEXT]: Fuel Code(s) [EXPIRED]. In subsequent reporting periods, you will need report substitute data until you perform another Unit Default Test. LME Unit Default Tests expire after five years.	Informational Message
I	Prior Notice: The LME Unit Default Test conducted to determine the default NOx emission rate for each of the following fuels will expire at the end of the next reporting period: Fuel Code(s) [EXPIRING]. LME Unit Default Tests expire after five years.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Evaluation
---	-------------------	---

**Check Code:** HOURGEN-16

**Check Name:** Ignored Offline Daily Interference Check

**Related Former Checks:**

**Applicability:** CEM Check

**Description:**

**Specifications:**

If (*Ignored Daily Interference Tests* == true)  
return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported one or more daily interference checks that will not fulfill your daily testing requirement for your stack flow monitors, because these tests were performed while the unit was not operating. These tests have been assigned a CalculatedTestResult of "IGNORED". They can be viewed on the Other Daily Tests tab of the View Detailed Emissions Screen.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Evaluation
---	-------------------	---

**Check Code:** HOURGEN-17

**Check Name:** Missing Peaking or Gas Fired Qualification Percent Check

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check determines whether qualification percent rows are missing for a Year Round or Ozone Season Monitor Qualification record.

**Specifications:**

If *MpSuccessfullyEvaluated* equals true,

Set *QualificationPercentMissingList* = null.

For each *QualificationRecord* record in *MpQualificationRecords* where *QualificationTypeCode* is equal to "PK", "SK" or "GF", *BeginDate* is on or before *CurrentReportingPeriodEndHour*, and *EndDate* is null or is on or after *CurrentReportingPeriodBeginHour*:

Locate the *QualificationPercentRecord* record in *MpQualificationPercentRecords* where *MonitorQualificationId* is equal to *QualificationRecord.MonitorQualificationId*, and *QualificationDataYear* is equal to *CurrentReportingPeriodYear*.

If not found,

If *QualificationRecord.QualificationTypeCode* is equal to "GF",

Add "Gas-Fired Unit " concatenated with *QualificationRecord.LocationId* to *QualificationPercentMissingList*.

Else if *QualificationRecord.QualificationTypeCode* is equal to "PK",

Add "Year-Round Peaking Unit " concatenated with *QualificationRecord.LocationId* to *QualificationPercentMissingList*.

Else if *QualificationRecord.QualificationTypeCode* is equal to "SK",

Add "Ozone-Season Peaking Unit " concatenated with *QualificationRecord.LocationId* to *QualificationPercentMissingList*.

If *QualificationPercentMissingList* is not null,  
return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a current year percent record for [QualPctMissingList].	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---

**Check Code:** HOURGEN-18

**Check Name:** Validate Unit Fuel

**Related Former Checks:**

**Applicability:**

**Description:** Validate that the fuel designated as primary is used at least 60 percent for the entire year of the time for a unit which has operated greater 168 op hours

**Specifications:**

If Quarter of the **Current Reporting Period** is equal to 1,

For each unit in **MonitoringPlanLocationRecords**

Locate all **Facility Unit Fuel Records** for the unit where :

- 1) Indicator Code is equal to "P"
- 2) BeginDate is prior to the end date of **Current Reporting Period**.
- 3) EndDate is null OR is after the begin date of **Current Reporting Period**.

If found,

Set *Sum of Op Hours* to 0

Locate all **Facility Operating Supp Data Records** for the unit where:

- a) The calendar year is the year prior to the calendar year of **Current Reporting Period**.
- b) Parameter Code is equal to "OPHOURS".
- c) Fuel Code is equal to NULL.

For each located record

Increment *Sum of Op Hours* by **Facility Operating Supp Data Records**.OpValue

If *Sum of Op Hours* > 168

Set *Sum of Op Hours by Fuel* to null

Locate all **Facility Operating Supp Data Records** for the unit where:

- a) The calendar year is the year prior to the calendar year of **Current Reporting Period**.
- b) Parameter Code is equal to "OPHOURS".
- c) Fuel Code is **NOT** equal to NULL.

For each located record

Increment *Sum of Op Hours by Fuel* for **Facility Operating Supp Data Records**.FuelCode by **Facility Operating Supp Data Records**.OpValue

For each FuelCode in *Sum of Op Hours by Fuel*

If (*Sum of Op Hours by Fuel* / *Sum of Op Hours* is greater than or equal to 0.60)

For each located **Facility Unit Fuel Records** record

If **Facility Unit Fuel Records**.FuelCode is not equal to the FuelCode for *Sum of Op Hours by Fuel*

return A

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The current active primary fuel type defined in the monitoring plan is inconsistent with the prior year operating hours by fuel type. Please update the primary fuel type in the monitoring plan to match the prior year predominant fuel type by operating hours.	Informational Message

Usage:

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---

Check Code:                   HOURGEN-19

Check Name:                 Initialize Sorbent Trap Check Parameters

Related Former Checks:

Applicability:

Description:               Initializes Sorbent Trap Dictionary and Sorbent Trap Record. Sorbent Trap Record is always initialized to null, but is initialized here so that it always exists and is owned by an ancestor category.

Specifications:

Initialize *MatsSorbentTrapDictionary* to an empty dictionary.  
Initialize *MatsSamplingTrainDictionary* to an empty dictionary.  
Initialize *MatsSorbentTrapListByLocationArray* with the number of elements equal to *CurrentLocationCount*.  
  
Set *MatsSorbentTrapEvaluationNeeded* to false.

If Count of records in *MatsSorbentTrapRecords* where SupplementalDataIndicator is false is greater than 0,

Set *MatsSorbentTrapEvaluationNeeded* to true.

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

Usage:

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---



**Check Code:** HOURGEN-20

**Check Name:** Initialize Weekly System Integrity Test Dictionary

**Related Former Checks:**

**Applicability:**

**Description:** Initializes the weekly system integrity test dictionary to have a ComponentId key and an entry with the following fields:

- 1) MostRecentTestRecord to hold a CurrentWeeklySystemIntegrity record.
- 2) LastEvaluatedTestRecord to hold a CurrentWeeklySystemIntegrity record.
- 3) OperatingDateList to hold a date list.
- 4) LastOperatingDate to hold a date.

**Specifications:**

Initialize *WsiTestDictionary* with a string key for ComponentId, and an entry with the following fields:

- 1) MostRecentTestRecord to hold a *CurrentWeeklySystemIntegrity* record.
- 2) LastEvaluatedTestRecord to hold a *CurrentWeeklySystemIntegrity* record.
- 3) OperatingDateList to hold a date list.

**Results:**

Result

Response

Severity

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---

**Check Code:** HOURGEN-21

**Check Name:** Initialize General Information

**Related Former Checks:**

**Applicability:** General Check

**Description:** Initializes list used during the evaluation process by individual checks.

**Validation Tables:**

Test Result Code (Lookup Table)

**Specifications:**

Append each *TestResultCodeLookupTable*.TestResultCode to *TestResultCodeList* delimited by a comma.

Initialize *MissingDataPmaTracking* to track MissingDataHourCount and LastPercentAvailable for:

- 1) Each location.
- 2) DHV: CO2C, H2O and NOXR parameters.
- 3) MHV: CO2C, FLOW, H2O, NOXC, O2D, O2W and SO2C parameters.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---

**Check Code:** HOURGEN-22

**Check Name:** Initialize System Parameters

**Related Former Checks:**

**Applicability:** General Check

**Description:** Initializes values based on system parameters.

**Validation Tables:**

Vw System Parameter (Lookup Table)

**Specifications:**

Set *MatsDailyCalRequiredDate* to null.

Locate *SystemParameterLookupTable* record where Sys\_Param\_Name is equal to 'MATS\_RULE.

If found,

Set *MatsDailyCalRequiredDate* to the located *SystemParameterLookupTable*.Param\_Value2.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---

**Check Code:** HOURGEN-23

**Check Name:** Initialize Program Lists

**Related Former Checks:**

**Applicability:** General Check

**Description:** Initializes program code lists that contain programs that:

- 1) Are ozone season programs
- 2) Use RUEs.
- 3) Require SO2 System certification.
- 4) Require NOX System certification.
- 5) Require NOX Concentration System certification.

**Specifications:**

Set *ProgramIsOzoneSeasonList* to "".

Set *ProgramRequiresNoxSystemCertificationList* to "".

Set *ProgramRequiresNoxcSystemCertificationList* to "".

Set *ProgramRequiresSo2SystemCertificationList* to "".

Set *ProgramUsesRueList* to "".

For each *ProgramCodeRow* in *ProgramCodeTable*,

If *ProgramCodeRow.OzoneSeasonIndicator* is equal to 1,

Append *ProgramCodeRow.ProgramCode* to *ProgramIsOzoneSeasonList*.

If *ProgramCodeRow.NoxCertificationRequiredIndicator* is equal to 1,

Append *ProgramCodeRow.ProgramCode* to *ProgramRequiresNoxSystemCertificationList*.

If *ProgramCodeRow.NoxcCertificationRequiredIndicator* is equal to 1,

Append *ProgramCodeRow.ProgramCode* to *ProgramRequiresNoxcSystemCertificationList*.

If *ProgramCodeRow.So2CertificationRequiredIndicator* is equal to 1,

Append *ProgramCodeRow.ProgramCode* to *ProgramRequiresSo2SystemCertificationList*.

If *ProgramCodeRow.UsesRueIndicator* is equal to 1,

Append *ProgramCodeRow.ProgramCode* to *ProgramUsesRueList*.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---

**Check Code:** HOURGEN-24

**Check Name:** Store Constant Values

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check stores values that will not change during the evaluation session, but are not readily accessible.

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

Set *MwLoadHourlyTolerance* to Tolerance from the *HourlyEmissionsTolerancesCrossCheckTable* record where Parameter equals "LOAD" and UOM equals "MW".

Initialize the number of elements in *LocationNameArray* to the number of records in *MonitorPlanLocationRecords*.

Set each element in *LocationNameArray* to either LocationName in the corresponding record in *MonitorPlanLocationRecords*.

Set *ConfigChangeCount* to the count of records in *EmUnitStackConfigurationRecords* where:

- 1) BeginDate is greater than *CurrentReportingPeriodBeginDate* and less than or equal to *CurrentReportingPeriodEndDate*.  
or
- 2) EndDate is NOT null, and is less than *CurrentReportingPeriodEndDate* and greater than or equal to *CurrentReportingPeriodBeginDate*.

If ( *ConfigChangeCount* is greater than 0 )

Set *ConfigurationChangeOccurredDuringQuarter* to true.

Else

Set *ConfigurationChangeOccurredDuringQuarter* to false.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---

**Check Code:** HOURGEN-25

**Check Name:** Return Results for Invalid Daily Calibration Cylinder Ids

**Related Former Checks:**

**Applicability:** General Check

**Description:** Returns a result when invalid cylinder ids were encountered during daily calibration evaluation.

**Specifications:**

Set *FormattedCylinderIdList* to "".

When *InvalidCylinderIdList* is not null and contains ids,

Append each id in *InvalidCylinderIdList* to *FormattedCylinderIdList*.

Return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The format is invalid for daily calibration cylinder id(s) [CylinderIdList]. A cylinder id can only contain alphanumeric capitalized characters, hyphens, and periods.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Evaluation
---	-------------------	---

**Check Code:** HOURGEN-26

**Check Name:** Initialize QA Certification Event Supplemental Data Storage

**Related Former Checks:**

**Applicability:** General Check

**Description:** Initializes the storage for QA Certification Event Supplemental Data.

**Specifications:**

Initialize *QaCertEventSuppDataDictionaryArray* to an array with the number of elements matching the number of records in *MonitoringPlanLocationRecords*.

Initialize *QaCertEventSuppDataDictionaryBySystem* to an empty dictionary.

Initialize *QaCertEventSuppDataDictionaryByComponent* to an empty dictionary.

For each *LocationPosition* in *MonitoringPlanLocationRecords*,

Set *MonitoringPlanLocationRecord* to the record at *LocationPosition*.

Initialize the *QaCertEventSuppDataDictionaryArray* element at *LocationPosition* to an empty dictionary.

For each *QaCertEventRecord* in *QaCertEventsForEmEvaluation* records where:

- 1) *MonitorLocationKey* is equal to *MonitoringPlanLocationRecord.MonitorLocationKey*.
- 2a) *QaCertEventDate* is between *CurrentReportingPeriodBeginDate* and *CurrentReportingPeriodEndDate*, OR
- 2b) *ConditionalDataBeginDate* is between *CurrentReportingPeriodBeginDate* and *CurrentReportingPeriodEndDate*.

Perform the following for both *QaCertEventRecord.QaCertEventDatehour* and *QaCertEventRecord.ConditionalDataBeginDatehour*.

For *QaCertEventRecord.QaCertEventDatehour* :

- 1) Set *TargetDatehourCode* = "QaCertEventDate".
- 2) Set *TargetDatehourValue* to *QaCertEventRecord.QaCertEventDatehour*
- 3) Set *TimeType* to "Date".
- 4) Note that *QaCertEventDatehour* will never have a null value.

For *QaCertEventRecord.ConditionalDataBeginDatehour*:

- 1) Set *TargetDatehourCode* = "ConditionalDataBeginHour".
- 2) Set *TargetDatehourValue* to *QaCertEventRecord.ConditionalDataBeginDatehour*
- 3) Set *TimeType* to "Hour".
- 4) Note that *ConditionalDataBeginDatehour* may have a null value.

If *TargetDatehourValue* is not null AND the quarter of *TargetDatehourValue* matches *CurrentReportingPeriodYear/CurrentReportingPeriodQuarter*,

Create *QaCertEventSuppDataRecord* with:

- 1) *QaCertEventKey* set to *QaCertEventRecord.QaCertEventKey*.
- 2) *MonitorLocationKey* set to *QaCertEventRecord.MonitorLocationKey*.
- 3) *ReportingPeriodKey* set to *CurrentReportingPeriod*.
- 4) *TargetDatehourCode* set to *TargetDatehourCode*.
- 5) *TargetDatehourValue* set to *TargetDatehourValue*.
- 6) *TimeType* set to *TimeType*.
- 7) *OpCount* set to 0.
- 8) *SystemQualityAssuredCount* set to 0 if *QaCertEventRecord.MonSysKey* is not null, otherwise set to null.

- 9) ComponentQualityAssuredCount set to 0 if *QaCertEventRecord.ComponentKey* is not null, otherwise set to null.
- 10) MayAndJuneOpCount set to 0 if ***CurrentReportingPeriodQuarter*** is equal to 2, otherwise set to null.
- 11) MayAndJuneSystemQualityAssuredCount set to 0 if ***CurrentReportingPeriodQuarter*** is equal to 2 AND *QaCertEventRecord.MonSysKey* is not null, otherwise set to null.
- 12) MayAndJuneComponentQualityAssuredCount set to 0 ***CurrentReportingPeriodQuarter*** is equal to 2 AND *QaCertEventRecord.ComponentKey* is not null, otherwise set to null.

Add *QaCertEventSuppDataRecord* to the dictionary at *LocationPosition* in ***QaCertEventSuppDataDictionaryArray*** using *QaCertEventRecord.QaCertEventKey* and *TargetDatehourCode* as the key.

If *QaCertEventRecord.MonSysKey* is not null,  
If ***QaCertEventSuppDataDictionaryBySystem*** does not contain a key equal to *QaCertEventRecord.MonSysKey* ,  
Add *QaCertEventRecord.MonSysKey* to ***QaCertEventSuppDataDictionaryBySystem*** with an empty list.

Add *QaCertEventSuppDataRecord* to the list in ***QaCertEventSuppDataDictionaryBySystem*** for *QaCertEventRecord.MonSysKey* ,

If *QaCertEventRecord.ComponentKey* is not null,  
If ***QaCertEventSuppDataDictionaryByComponent*** does not contain a key equal to *QaCertEventRecord.ComponentKey* ,  
Add *QaCertEventRecord.ComponentKey* to ***QaCertEventSuppDataDictionaryByComponent*** with an empty list.

Add *QaCertEventSuppDataRecord* to the list in ***QaCertEventSuppDataDictionaryByComponent*** for *QaCertEventRecord.ComponentKey* ,

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---



**Check Code:** HOURGEN-27

**Check Name:** Initialize System Operating Supplemental Data Storage

**Related Former Checks:**

**Applicability:** General Check

**Description:** Initializes the storage for System Operating Supplemental Data.

**Specifications:**

Initialize ***SystemOperatingSuppDataDictionaryArray*** to an array with the number of elements matching the number of records in ***MonitoringPlanLocationRecords***.

For each *LocationPosition* in ***MonitoringPlanLocationRecords***,

Set *MonitoringPlanLocationRecord* to the record at *LocationPosition*.

Initialize the ***SystemOperatingSuppDataDictionaryArray*** element at *LocationPosition* to an empty dictionary.

For each *MonitorSystemRecord* in ***MonitorSystemsForEmEvaluation*** records where:

- 1) *MonitorLocationID* is equal to *MonitoringPlanLocationRecord.MonitorLocationID*.
- 2) *SystemTypeCode* is in the set { "CO2", "FLOW", "GAS", "H2O", "H2OM", "H2OT", "HCL", "HF", "HG", "NOX", "NOXC", "NOXE", "NOXP", "O2", "SO2", "ST", "OILM", "OILV" }.
- 3) *BeginDate* is on or before ***CurrentReportingPeriodEndDate***.
- 4) *EndDate* is null OR is on or after ***CurrentReportingPeriodBeginDate***.

If *SupplementalDataDictionary* does NOT contain key *MonitorSystemRecord.MonitoringSystemID*,

Create *SystemOperatingtSuppDataRecord* with:

- 1) *MonitoringSystemID* set to *MonitorSystemRecord.MonitoringSystemID*.
- 2) *ReportingPeriodID* set to ***CurrentReportingPeriod***.
- 3) *MonitorLocationID* set to *MonitorSystemRecord.MonitoringLocationID*
- 4) *OpDays* set to 0.
- 5) *OsDays* set to 0.
- 6) *OpHours* set to 0.
- 7) *OsHours* set to 0.

Add a *SystemOperatingtSuppDataRecord* to the dictionary at *LocationPosition* in ***SystemOperatingSuppDataDictionaryArray*** using *SystemOperatingtSuppDataRecord.MonitoringSystemID* as the key.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---

**Check Code:** HOURGEN-28

**Check Name:** Initialize Component Operating Supplemental Data Storage

**Related Former Checks:**

**Applicability:** General Check

**Description:** Initializes the storage for Component Operating Supplemental Data.

**Specifications:**

Initialize ***ComponentOperatingSuppDataDictionaryArray*** to an array with the number of elements matching the number of records in ***MonitoringPlanLocationRecords***.

For each *LocationPosition* in ***MonitoringPlanLocationRecords***,

Set *MonitoringPlanLocationRecord* to the record at *LocationPosition*.

Set *SupplementalDataDictionary* to an empty dictionary.

Initialize the ***ComponentOperatingSuppDataDictionaryArray*** element at *LocationPosition* to *SupplementalDataDictionary* .

For each *MonitorSystemComponentRecord* in ***MonitorSystemComponentsForEmEvaluation*** records where:

- 1) *MonitorLocationID* is equal to *MonitoringPlanLocationRecord.MonitorLocationID*.
- 2) *ComponentTypeCode* is in the set { "CO2", "FLOW", "HCL", "HF", "HG", "H2O", "NOX", "O2", "SO2" }.
- 3) *BeginDate* is on or before ***CurrentReportingPeriodEndDate***.
- 4) *EndDate* is null OR is on or after ***CurrentReportingPeriodBeginDate***.

If *SupplementalDataDictionary* does NOT contain key *MonitorSystemComponentRecord.ComponentID*,

Create *ComponentOperatingtSuppDataRecord* with:

- 1) *ComponentID* set to *MonitorSystemComponentRecord.ComponentID* .
- 2) *ReportingPeriodID* set to ***CurrentReportingPeriod***.
- 3) *MonitorLocationID* set to *MonitorSystemComponentRecord.MonitorLocationID*.
- 4) *OpDays* set to 0.
- 5) *OsDays* set to 0.
- 6) *OpHours* set to 0.
- 7) *OsHours* set to 0.

Add a *ComponentOperatingtSuppDataRecord* to *SupplementalDataDictionary* using *ComponentOperatingtSuppDataRecord.ComponentID* as the key.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---

**Check Code:** HOURGEN-29

**Check Name:** Initialize Last Quality Assured Value Supplemental Data Storage

**Related Former Checks:**

**Applicability:** General Check

**Description:** Initializes the storage for Last Quality Assured Value Supplemental Data.

**Specifications:**

Initialize *LastQualityAssuredValueSuppDataDictionaryArray* to an array with the number of elements matching the number of records in *MonitoringPlanLocationRecords*.

For each *LastQualityAssuredValueSuppDataDictionary* in *LastQualityAssuredValueSuppDataDictionaryArray*,

    Initialize the *LastQualityAssuredValueSuppDataDictionary* to an empty dictionary.

<b>Results:</b>		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
<b>Usage:</b>		
1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization

**Check Code:**                  HOURGEN-30

**Check Name:**              Initialize Primary Bypass Information

**Related Former Checks:**

**Applicability:**          General Check

**Description:**              Initializes check parameters used to indicate whether processing primary bypass stacks implemented as systems should occur, and initializes information needed by that processing.

**Specifications:**

Set *PrimaryBypassActiveInQuarter* to false.

Locate records in *MonitorSystemsForEmEvaluation* where:

- 1) SystemDesignationCode equals "PB".
- 2) BeginDate is on or before *CurrentReportingPeriodEndDate*.
- 3) EndDate is on or after *CurrentReportingPeriodBeginDate*.

If found,

Set *PrimaryBypassActiveInQuarter* to true.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---

**Check Code:** HOURGEN-31

**Check Name:** Initialize No- Op Linearity Checking

**Related Former Checks:**

**Applicability:** General Check

**Description:** Initializes the check parameters used to aid the checking for linearity test that occurred with begin or end hours during non-op hours.

**Specifications:**

Initialize ***LinearityExistsLocationArray*** as a boolean array with an element for each row in ***MonitoringPlanLocationRecords***.

For each *LocationPosition* in ***MonitoringPlanLocationRecords***,

Set *LocationKey* to the MonitorLocationKey in the record at *LocationPosition* in ***MonitoringPlanLocationRecords***.

When ***LinearityTestRecordsByLocationForQaStatus*** records exist where the MonitorLocationKey equals *LocationKey*.

Set ***LinearityExistsLocationArray*** at *LocationPostion* to true.

Else

Set ***LinearityExistsLocationArray*** at *LocationPostion* to false.

**Results:**

Result

Response

Severity

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---

**Check Code:** HOURGEN-32

**Check Name:** CheckMissing Data Counts against Last PMA for DHV and MHV Parameters

**Related Former Checks:**

**Applicability:** General Check

**Description:** Checks theMissing Data Counts for DHV and MHV parameters against the last PMA for the individual parameters.

**Specifications:**

Set *MissingDataPmaProblemDerivedList* to null.

Set *MissingDataPmaProblemMonitorList* to null.

If ( *AnnualReportingRequirement* is NOT true ) AND ( *OsReportingRequirement* is true )

Set *MissingDataPmaPeriodHours* to 3672.

Set *MissingDataPmaReporterType* to "ozone season"

Else

Set *MissingDataPmaPeriodHours* to 8760 .

Set *MissingDataPmaReporterType* to "year"

For each *MissingDataPmaTrackingInfo* in *MissingDataPmaTracking* for *CurrentMonitorPlanLocationPosition*,

If ( *MissingDataPmaTrackingInfo*.MissingDataCount > 0 ) AND ( *MissingDataPmaTrackingInfo*.LastPercentAvailable is NOT null )

Set *MaxMissingDataHours* to *MissingDataPmaPeriodHours* - ( *MissingDataPmaPeriodHours* \* *MissingDataPmaTrackingInfo*.LastPercentAvailable / 100 )

If ( *MissingDataPmaTrackingInfo*.MissingDataCount > *MaxMissingDataHours* + 5 )

If ( *MissingDataPmaTrackingInfo*.IsDerived equals True )

Append *MissingDataPmaTrackingInfo*.ParameterDescription to *MissingDataPmaProblemDerivedList*.

Else If ( *MissingDataPmaTrackingInfo*.IsMonitored equals True )

Append *MissingDataPmaTrackingInfo*.ParameterDescription to *MissingDataPmaProblemMonitorList*.

If ( *MissingDataPmaProblemDerivedList* does NOT equal null ) AND ( *MissingDataPmaProblemMonitorList* does NOT equal null )

return result A

Else If ( *MissingDataPmaProblemDerivedList* does NOT equal null )

return result B

Else If ( *MissingDataPmaProblemMonitorList* does NOT equal null )

return result C

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	Based on the PMA for the last operating hour of the current quarter, the missing data hours within the current quarter for derived parameter(s) [derivedParams] and monitored parameter(s) [monitoredParams] exceed the maximum number of missing data hours for the [period].	Informational Message
B	Based on the PMA for the last operating hour of the current quarter, the missing data hours within the current quarter for derived parameter(s) [derivedParams] exceed the maximum number of missing data hours for the [period].	Informational Message
C	Based on the PMA for the last operating hour of the current quarter, the missing data hours within the current quarter for monitored parameter(s) [monitoredParams] exceed the maximum number of missing data hours for the [period].	Informational Message

Usage:

1	Process/Category:	Emissions Data Evaluation Report Summary Value Evaluation
---	-------------------	---

**Check Code:** HOURGEN-33

**Check Name:** Unit Fuel Quarterly Information

**Related Former Checks:**

**Applicability:** General Check

**Description:** Sets the Unit Fuel quarter information needed to indicate whether the checks can avoid hourly Unit Fuel values, and to set the quarterly values to use instead of hourly values.

**Validation Tables:**

F-Factor Range Checks (Cross Check Table)

Fuel Type Reality Checks for FC FACTOR (Cross Check Table)

**Specifications:**

Set *LocationCount* to the number of rows in ***MonitoringPlanLocationRecords***.

Set ***FcValidationSpansQuarter*** to true.

Size ***FcValidationInfoByLocationArray*** to *LocationCount* setting each element to an element where

- 1) IsFuelSpecific is set to false.
- 2) MinValue is set to LowerValue in the ***FFactorRangeChecks*** crosscheck table row where Factor is equal to "FC".
- 3) MaxValue is set to UpperValue in the ***FFactorRangeChecks*** crosscheck table row where Factor is equal to "FC".

For each *LocationPostion* in ***MonitoringPlanLocationRecords***,

Set *MonitoringPlanLocationRecord* to the record at *LocationPostion* in ***MonitoringPlanLocationRecords***.

Set *FuelRangeCd* to null.

Set *DslFound* to false.

Set *PngOrNngFound* to false.

Set *OtherFound* to false.

If ( *MonitoringPlanLocationRecord*.UnitID is NOT null )

Locate *UnitFuelRecords* in ***FacilityUnitFuelRecords*** where:

- 1):UnitID is equal to *MonitoringPlanLocationRecord*.UnitID.
- 2) BeginDate is less than or equal to ***CurrentReportingPeriodEndDate***.
- 3) EndDate is null or greater than or equal to ***CurrentReportingPeriodBeginDate***.
- 4) IndicatorCd is equal to "P" or "S".

For each *UnitFuelRecord* in *UnitFuelRecords*,

If ( *UnitFuelRecord*.BeginDate is greater than ***CurrentReportingPeriodBeginDate*** ) OR ( *UnitFuelRecord*.EndDate is NOT null and is less than ***CurrentReportingPeriodEndDate*** )

Set ***FcValidationSpansQuarter*** to false.  
exit loop.

Else If ( *UnitFuelRecord*.FuelCode is equal to "NNG" or "PNG" )

Set *PngOrNngFound* to true.

Else If ( *UnitFuelRecord*.FuelCode is equal to "DSL" )

Set *DslFound* to true.



Else

Set *OtherFound* to true.

Else

Locate *UnitStackConfigurationRecords* in ***EmUnitStackConfigurationRecords*** where:

- 1) StackPipeID is equal to *MonitoringPlanLocationRecord*.StackPipeID.
- 2) BeginDate is less than or equal to ***CurrentReportingPeriodEndDate***.
- 3) EndDate is null or greater than or equal to ***CurrentReportingPeriodBeginDate***.

For each *UnitStackConfigurationRecord* in *UnitStackConfigurationRecords*,

If ( *UnitStackConfigurationRecord*.BeginDate is greater than ***CurrentReportingPeriodBeginDate*** ) OR ( *UnitStackConfigurationRecord*.EndDate is NOT null and is less than ***CurrentReportingPeriodEndDate*** )

Set ***FcValidationSpansQuarter*** to false.

Locate *UnitFuelRecords* in ***FacilityUnitFuelRecords*** where:

- 1):UnitID is equal to *UnitStackConfigurationRecord*.UnitID.
- 2) BeginDate is less than or equal to ***CurrentReportingPeriodEndDate***.
- 3) EndDate is null or greater than or equal to ***CurrentReportingPeriodBeginDate***.
- 4) IndicatorCd is equal to "P" or "S".

For each *UnitFuelRecord* in *UnitFuelRecords*,

If ( *UnitFuelRecord*.BeginDate is greater than ***CurrentReportingPeriodBeginDate*** ) OR ( *UnitFuelRecord*.EndDate is NOT null and is less than ***CurrentReportingPeriodEndDate*** )

Set ***FcValidationSpansQuarter*** to false.

Set the *FuelRangeCd* to null.

exit *UnitFuelRecord* loop.

Else If ( *UnitFuelRecord*.FuelCode is equal to "NNG" or "PNG" )

Set *PngOrNngFound* to true.

Else If ( *UnitFuelRecord*.FuelCode is equal to "DSL" )

Set *DslFound* to true.

Else

Set *OtherFound* to true.

If ( *OtherFound* is true ) OR ( ***FcValidationSpansQuarter*** is false )

exit *UnitStackConfigurationRecord* loop.

If ( ***FcValidationSpansQuarter*** is false )

exit *LocationPostion* loop.

if ( *OtherFound* is false )

Set the values in the ***FcValidationInfoByLocationArray*** element at *LocationPostion* to the following:

- 1) IsFuelSpecific is set to true.
- 2) MinValue is set to the lowest LowerValue in the ***FuelTypeRealityChecksForFcFactor*** crosscheck table row where Factor is equal to either "GAS", if *PngOrNngFound* is true, OR "OIL", if *DslFound* is true.
- 3) MaxValue is set to the highest UpperValue in the ***FuelTypeRealityChecksForFcFactor*** crosscheck table row where Factor is equal to either "GAS", if *PngOrNngFound* is true, OR "OIL", if *DslFound* is true.

If ( *FcValidationSpansQuarter* is false )

For each *LocationPostion* in ***MonitoringPlanLocationRecords***,

Set the the ***FcValidationInfoByLocationArray*** element at *LocationPostion* to null.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---

**Check Code:** HOURGEN-4

**Check Name:** Emission Comment Reporting Period Valid

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check determines whether or not Emission Comment Reporting Period is valid.

**Specifications:**

For a Emission Comment record:

    If ReportingPeriod is null,  
        return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Fatal

**Usage:**

1      Process/Category:      Emissions Data Entry Screen Evaluation Emission Comments Evaluation

**Check Code:** HOURGEN-5

**Check Name:** Submission Comment Valid

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Specifications:**

For the Emission Comment record:

    If SubmissionComment is null,  
        return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide [fieldname], which is required for [key].	Fatal

**Usage:**

1	Process/Category:	Emissions Data Entry Screen Evaluation Emission Comments Evaluation
---	-------------------	---

**Check Code:** HOURGEN-6

**Check Name:** Duplicate Emission Comment Records

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check determines if there is another EmissionComment record with the same key fields.

**Specifications:**

For a Emission Comment record:

Locate another EmissionComment record for the monitoring plan with a ReportingPeriod equal to the ReportingPeriod in the current record.

If found,  
return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	Another [recordtype] record already exists with the same [fieldnames].	Fatal

Usage:		
1	Process/Category:	Emissions Data Entry Screen Evaluation Emission Comments Evaluation

**Check Category:**

**Hourly Monitor Data**

**Check Code:** HOURMHV-1

**Check Name:** Initialize SO2C Hourly Monitor Data

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check sets generic parameters and output parameters for subsequent monitor hourly checks for SO2C.

**Specifications:**

*Current MHV Parameter* = "SO2C"

*SO2C Calculated Adjusted Value* = null

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
1	Process/Category: Emissions Data Evaluation Report ----- SO2 Monitor Hourly Evaluation	

**Usage:**

**Check Code:** HOURMHV-2

**Check Name:** Initialize H2O Hourly Monitor Data

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check sets generic parameter and output parameter for subsequent monitor hourly checks for H2O.

**Specifications:**

*Current MHV Parameter* = "H2O"  
*H2O MHV Calculated Adjusted Value* = null

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- H2O Monitor Hourly Evaluation
---	-------------------	--



**Check Code:** HOURMHV-3

**Check Name:** Initialize NOXC Hourly Monitor Data

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check sets generic parameter and output parameter for subsequent monitor hourly checks for NOXC.

**Specifications:**

*Current MHV Parameter* = "NOXC"

*NOXC Calculated Adjusted Value* = null

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- NOx Concentration Monitor Hourly Evaluation
---	-------------------	--

**Check Code:** HOURMHV-4

**Check Name:** Initialize Flow Hourly Monitor Data

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check sets generic parameters and output parameters for subsequent monitor hourly checks for FLOW.

**Specifications:**

*Current MHV Parameter* = "FLOW"  
*FLOW Calculated Adjusted Value* = null

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- FLOW Monitor Hourly Evaluation
---	-------------------	---

**Check Code:** HOURMHV-5

**Check Name:** Initialize CO2C Hourly Monitor Data

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check sets generic parameter and output parameter for subsequent monitor hourly checks for CO2C.

**Specifications:**

*Current MHV Parameter* = "CO2C"  
*CO2C MHV Calculated Adjusted Value* = null

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Monitor Hourly Evaluation
---	-------------------	--

**Check Code:** HOURMHV-6

**Check Name:** Initialize O2 Dry Hourly Monitor Data

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check sets generic parameter and output parameter for subsequent monitor hourly checks for O2 Dry.

**Specifications:**

*Current MHV Parameter* = "O2D"

*O2 Dry Calculated Adjusted Value* = null

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Monitor Hourly Evaluation
---	-------------------	---

**Check Code:** HOURMHV-7

**Check Name:** Initialize O2 Wet Hourly Monitor Data

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check sets generic parameter and output parameter for subsequent monitor hourly checks for O2C Wet.

**Specifications:**

*Current MHV Parameter* = "O2W"  
*O2 Wet Calculated Adjusted Value* = null

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Monitor Hourly Evaluation
---	-------------------	---

**Check Code:** HOURMHV-8

**Check Name:** Check MODC in MHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Basic check to ensure that MODC reported in the MHV record is valid for the parameter. Also initializes variables for the category.

**Specifications:**

*Monitor Hourly Modc Status* = false

*Current MHV Parameter Description* = *Current MHV Parameter*

*Complete MHV Record Needed* = true

case (*Current MHV Parameter*)

SO2C: *Current MHV Record* = *Current SO2 Monitor Hourly Record*

*Current MHV Component Type* = 'SO2'

*Current MHV System Type* = 'SO2'

*Current MHV Default Parameter* = 'SO2X'

If (*Current MHV Record.ModeCode* == "23")

    If (*SO2 Bypass Code* == "BYMAXFS")

*Current MHV Fuel Specific Hour* = true

    else

*Current MHV Fuel Specific Hour* = false

else if (*SO2 Fuel Specific Missing Data* == true)

*Current MHV Fuel Specific Hour* = true

else

*Current MHV Fuel Specific Hour* = false

If (*Current MHV Record.ModeCode* not in set {01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 53, 54, 55})

    return result A

Else

*Monitor Hourly Modc Status* = true

NOXC: *Current MHV Record* = *Current NOx Conc Monitor Hourly Record*

*Current MHV System Type* = 'NOXC'

*Current MHV Component Type* = 'NOX'

*Current MHV Default Parameter* = 'NOCX'

*NOx Conc MODC* = null

If (*Current MHV Record.ModeCode* in set {23, 24})

    If (*NOx Mass Bypass Code* == "BYMAXFS")

*Current MHV Fuel Specific Hour* = true

    else

*Current MHV Fuel Specific Hour* = false

else if (*NOx Mass Fuel Specific Missing Data* == true)

*Current MHV Fuel Specific Hour* = true

else

*Current MHV Fuel Specific Hour* = false

If (*NOx Conc Needed for Nox Mass Calc* == true)

    If (*Current MHV Record.ModeCode* not in set {01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 15, 17, 18, 19, 20, 21, 22, 23, 24, 53, 54, 55})

        return result A

```

Else
    Monitor Hourly Modc Status = true
Else
    Complete MHV Record Needed = false

If (Current MHV Record.ModcCode not in set {01, 02, 03, 04, 17, 18, 19, 20, 21, 22, 53, 54})

    If ( Current MHV Record.ModcCode == 46 )
        Monitor Hourly Modc Status = true
    Else
        return result B
Else
    Monitor Hourly Modc Status = true
    NOx Conc MODC = Current MHV Record.ModcCode

```

FLOW: **Current MHV Record** = **Current Stack Flow Hourly Record**  
**Current MHV Component Type** = 'FLOW'  
**Current MHV System Type** = 'FLOW'  
**Current MHV Default Parameter** = 'FLOX'

```

If (SO2 Fuel Specific Missing Data == true OR CO2 Fuel Specific Missing Data == true OR NOx Mass Fuel Specific Missing Data == true OR Heat Input Fuel Specific Missing Data == true)
    Current MHV Fuel Specific Hour = true
else
    Current MHV Fuel Specific Hour = false

```

```

If ( FlowNeededForPart75 is true )

```

```

    If (Current MHV Record.ModcCode not in set {01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 20, 53, 54, 55})
        return result A
    Else
        Monitor Hourly Modc Status = true

```

```

Else /* Flow Needed for MATS */

```

```

    If (Current MHV Record.ModcCode not in set {01, 02, 03, 04, 20, 46, 53, 54})
        return result F
    Else
        Monitor Hourly Modc Status = true

```

CO2C: **Current MHV Record** = **Current CO2 Conc Monitor Hourly Record**  
**Current MHV Component Type** = 'CO2'  
**Current MHV System Type** = 'CO2'  
**Current MHV Default Parameter** = 'CO2X'

```

CO2C MHV MODC = Current CO2 Conc Monitor Hourly Record.ModcCode

```

```

If ((CO2 Fuel Specific Missing Data == true AND CO2 Conc Checks Needed for CO2 Mass Calc == true) OR (Heat Input Fuel Specific Missing Data == true AND CO2 Conc Checks Needed for Heat Input == true))
    Current MHV Fuel Specific Hour = true
else
    Current MHV Fuel Specific Hour = false

```

```

If ((CO2 Conc Checks Needed for Heat Input == true) OR (CO2 Conc Checks Needed for CO2 Mass Calc == true))
    If (Current MHV Record.ModcCode not in set {01, 02, 03, 04, 06, 07, 08, 09, 10, 12, 17, 20, 21, 23, 53, 54, 55})
        return result A
    Else

```

**Monitor Hourly Modc Status** = true

If ( **Current CO2 Conc Missing Data Monitor Hourly Record** is not null )

If ((**CO2 Diluent Checks Needed for NOx Rate Calc** == true) OR (**CO2 Diluent Needed for MATS** == true)) AND (**Current MHV Record.ModcCode** not in set {01, 02, 03, 04, 17, 20, 21, 53, 54})

return result E

Else

**Complete MHV Record Needed** = false

If ( **Current MHV Record.ModcCode** not in set {01, 02, 03, 04, 17, 20, 21, 53, 54} )

If ( **Current MHV Record.ModcCode** == 46 )

**Monitor Hourly Modc Status** = true

Else

return result C

Else

**Monitor Hourly Modc Status** = true

O2D: **Current MHV Record** = **Current O2 Dry Monitor Hourly Record**

**Current MHV Component Type** = 'O2'

**Current MHV System Type** = null

**Current MHV Default Parameter** = 'O2N'

**O2 Dry MODC** = **Current O2 Dry Monitor Hourly Record.ModcCode**

If (**Current MHV Record.MoistureBasis** is null)

**Current MHV Parameter Description** = "O2C"

else

**Current MHV Parameter Description** = "O2C with a MoistureBasis of " + **Current MHV Record.MoistureBasis**

If (**Heat Input Fuel Specific Missing Data** == true AND **O2 Dry Checks Needed for Heat Input** == true)

**Current MHV Fuel Specific Hour** = true

else

**Current MHV Fuel Specific Hour** = false

If (**O2 Dry Checks Needed for Heat Input** == true)

If (**Current MHV Record.ModcCode** not in set {01, 02, 03, 04, 06, 07, 08, 09, 10, 12, 17, 20, 53, 54, 55})

return result A

Else

**Monitor Hourly Modc Status** = true

If ( **Current O2 Dry Missing Data Monitor Hourly Record** is not null )

If (((**O2 Dry Checks Needed for NOx Rate Calc** == true) OR (**O2 Dry Needed for MATS** == true)) AND (**Current MHV Record.ModcCode** not in set {01, 02, 03, 04, 17, 20, 53, 54}))

return result E

Else

**Complete MHV Record Needed** = false

If ( **Current MHV Record.ModcCode** not in set {01, 02, 03, 04, 17, 20, 53, 54} )

If ( **Current MHV Record.ModcCode** == 46 )

**Monitor Hourly Modc Status** = true

Else

return result D

Else



***Monitor Hourly Modc Status*** = true

O2W: ***Current MHV Record*** = ***Current O2 Wet Monitor Hourly Record***  
***Current MHV Component Type*** = 'O2'  
***Current MHV System Type*** = null  
***Current MHV Default Parameter*** = 'O2N'

***O2 Wet MODC*** = ***Current O2 Wet Monitor Hourly Record***.ModcCode

If (***Current MHV Record***.MoistureBasis is null)

***Current MHV Parameter Description*** = "O2C"

else

***Current MHV Parameter Description*** = "O2C with a MoistureBasis of " + ***Current MHV Record***.MoistureBasis

If (***Heat Input Fuel Specific Missing Data*** == true AND ***O2 Wet Checks Needed for Heat Input*** == true)

***Current MHV Fuel Specific Hour*** = true

else

***Current MHV Fuel Specific Hour*** = false

If (***O2 Wet Checks Needed for Heat Input*** == true)

If (***Current MHV Record***.ModcCode not in set {01, 02, 03, 04, 06, 07, 08, 09, 10, 12, 17, 20, 53, 54, 55})

return result A

Else

***Monitor Hourly Modc Status*** = true

If ( ***Current O2 Wet Missing Data Monitor Hourly Record*** is not null )

If (((***O2 Wet Checks Needed for NOx Rate Calc*** == true) OR (***O2 Wet Needed for MATS*** == true)) AND (***Current MHV Record***.ModcCode not in set {01, 02, 03, 04, 17, 20, 53, 54}))

return result E

Else

***Complete MHV Record Needed*** = false

If ( ***Current MHV Record***.ModcCode not in set {01, 02, 03, 04, 17, 20, 53, 54} )

If ( ***Current MHV Record***.ModcCode == 46 )

***Monitor Hourly Modc Status*** = true

Else

return result D

Else

***Monitor Hourly Modc Status*** = true

H2O: ***Current MHV Record*** = ***Current H2O Monitor Hourly Record***  
***Current MHV Parameter*** = 'H2O'

***H2O MHV MODC*** = ***Current H2O Monitor Hourly Record***.ModcCode

If (***H2O Method Code*** == "MMS")

***Current MHV Component Type*** = "H2O"

else

***Current MHV Component Type*** = "DAHS"

***Current MHV System Type*** = null

***Current MHV Default Parameter*** = null'

If (***H2O Fuel Specific Missing Data*** == true)

*Current MHV Fuel Specific Hour* = true  
else  
*Current MHV Fuel Specific Hour* = false  
  
If (*Current MHV Record.ModeCode* not in set {01, 02, 03, 04, 06, 07, 08, 09, 10, 12, 21, 53, 54, 55})  
return result A  
else  
*Monitor Hourly Modc Status* = true

CO2CSD:

*Current MHV Record* = *Current CO2 Conc Missing Data Monitor Hourly Record*  
*Current MHV Component Type* = 'CO2'  
*Current MHV System Type* = 'CO2'  
*Current MHV Default Parameter* = 'CO2X'  
*Current MHV Parameter Description* = "CO2C (Substitute Data)"  
  
If ((*CO2 Fuel Specific Missing Data* == true AND *CO2 Conc Checks Needed for CO2 Mass Calc* == true) OR (*Heat Input Fuel Specific Missing Data* == true AND *CO2 Conc Checks Needed for Heat Input* == true))  
*Current MHV Fuel Specific Hour* = true  
else  
*Current MHV Fuel Specific Hour* = false  
  
If (*Current MHV Record.ModeCode* not in set {06, 07, 08, 09, 10, 12, 55})  
return result A  
Else  
*Monitor Hourly Modc Status* = true

O2CSD:

if (*Current O2 Dry Missing Data Monitor Hourly Record* is not null)  
*Current MHV Record* = *Current O2 Dry Missing Data Monitor Hourly Record*  
else  
*Current MHV Record* = *Current O2 Wet Missing Data Monitor Hourly Record*  
  
*Current MHV Component Type* = 'O2'  
*Current MHV System Type* = null  
*Current MHV Default Parameter* = 'O2N'  
*Current MHV Parameter Description* = "O2C (Substitute Data)"  
  
If (*Heat Input Fuel Specific Missing Data* == true AND *O2 Dry Checks Needed for Heat Input* == true)  
*Current MHV Fuel Specific Hour* = true  
else  
*Current MHV Fuel Specific Hour* = false  
  
If (*Current MHV Record.ModeCode* not in set {06, 07, 08, 09, 10, 12, 55})  
return result A  
Else  
*Monitor Hourly Modc Status* = true

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The MODCCode reported in the MHV record for [param] is invalid.	Critical Error Level 1
B	You reported a MODCCode of [MODC] in the MHV record for NOXC, but this MODC is not appropriate when NOX concentration is used in a NOx-diluent system to calculate the NOx emission rate.	Critical Error Level 1
C	You reported a MODCCode of [MODC] in the MHV record for CO2C, but this MODC is not appropriate when CO2 concentration is only used to calculate a heat input based emission rate.	Critical Error Level 1
D	You reported a MODCCode of [MODC] in the MHV record for [param], but this MODC is not appropriate when O2 concentration is not used to calculate the heat input rate.	Critical Error Level 1
E	You reported a MODCCode of [MODC] in the MHV record for [param], but this MODC is not appropriate when this value is used in a diluent system to calculate the heat input based emission rate.	Critical Error Level 1
F	You reported a MODCCode of [MODC] in the MHV record for [param], but this MODC is not appropriate for MATS-only units.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- CO2C Monitor Hourly Evaluation for Substitute Data
3	Process/Category:	Emissions Data Evaluation Report ----- FLOW Monitor Hourly Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- H2O Monitor Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOx Concentration Monitor Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Monitor Hourly Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Monitor Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- O2C Monitor Hourly Evaluation for Substitute Data
9	Process/Category:	Emissions Data Evaluation Report ----- SO2 Monitor Hourly Evaluation

**Check Code:** HOURMHV-9

**Check Name:** Check Percent Monitor Availability in MHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Performs a series basic checks to ensure that the reported monitor percent available is between 0 and 100, inclusive, then checks to see that percent available is within permitted ranges for specific MODC codes

**Specifications:**

*Monitor Hourly Pma Status* = false

*Monitor Hourly Missing Data Status* = true

If (*Monitor Hourly Modc Status* == true)

    If ( *Current MHV Record*.PercentAvailable is NULL)

        if (*Complete MHV Record Needed* == false)

*Monitor Hourly Pma Status* = true

        else

            if (*Current MHV Record*.ModcCode not in set {01, 02, 03, 04, 16, 17, 18, 19, 20, 21, 22, 53, 54} AND *Legacy Data Evaluation* == true)

*Monitor Hourly Pma Status* = true

                return result A

            else

                return result B

    else

        if (*Complete MHV Record Needed* == false)

            return result C

    else if (*Current MHV Record*.PercentAvailable > 100.0 OR

*Current MHV Record*.PercentAvailable < 0.0)

        return result D

Else

    case ( *Current MHV Record*.ModcCode )

        = 06:

        If *Current MHVRecord*.PercentAvailable >= 90.0

*Monitor Hourly Pma Status* = true

        Else

            return result E

        = 08:

        If *Current MHV Record*.PercentAvailable >= 95.0

*Monitor Hourly Pma Status* = true

        Else

            return result E

        = 09:

        If *Current MHV Record*.PercentAvailable >= 90.0 AND *Current MHV Record*.PercentAvailable < 95.0

*Monitor Hourly Pma Status* = true

        Else

            return result E

        = 10:

        If *Current MHV Record*.PercentAvailable >= 80.0 AND *Current MHV Record*.PercentAvailable < 90.0

*Monitor Hourly Pma Status* = true

        Else if *Current MHV Parameter* in {FLOW,NOXC} and *Current MHV Record*.PercentAvailable >= 90.0

*Monitor Hourly Pma Status* = true

            return result F

```

Else
    return result E

= 11:
If Current MHV Record.PercentAvailable >=90.0
    Monitor Hourly Pma Status = true
Else
    return result E

All other MODC Codes:
    Monitor Hourly Pma Status = true

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an MODCCode of [ModcCode] in the MHV record for [param], but you did not report a value for PercentAvailable. While this is not required for legacy EDR data, it is required in all MHV records for ECMPS.	Informational Message
B	You did not report PercentAvailable in the MHV record for [param].	Critical Error Level 1
C	You reported PercentAvailable in the MHV record for [param], but this value should not be reported when the monitoring system is only being used to calculate the NOX emission rate, moisture, and/or CO2 concentration. In that case, the percent monitor availability should be reported in the appropriate DHV record.	Non-Critical Error
D	The PercentAvailable reported in the MHV record for [param] is invalid. This value must be between 0 and 100.	Critical Error Level 1
E	You reported an MODCCode of [modcCode] in the MHV record for [param], but the PercentAvailable is not appropriate for this MODC.	Critical Error Level 1
F	You reported an MODCCode of 10 in the [type] record for [param], but the PercentAvailability is greater than or equal to 90. When the PMA is greater than or equal to 90, you should only report an MODC of 10 to indicate that you used the maximum hourly value in the lookback period for the next available higher load bin, because there were no quality-assured data in the bin corresponding to the current load range. (See Part 75.33(c)(5).)	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- CO2C Monitor Hourly Evaluation for Substitute Data
3	Process/Category:	Emissions Data Evaluation Report ----- FLOW Monitor Hourly Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- H2O Monitor Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOx Concentration Monitor Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Monitor Hourly Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Monitor Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- O2C Monitor Hourly Evaluation for Substitute Data
9	Process/Category:	Emissions Data Evaluation Report ----- SO2 Monitor Hourly Evaluation

**Check Code:** HOURMHV-10

**Check Name:** Check Prior QA'd Hours for MODC 07

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** For Method of Determination Code 07, all prior hours in reporting period are checked to ensure that total of QA'd hours is below a certain threshold

**Specifications:**

```

if (Monitor Hourly Modc Status == true AND Monitor Hourly PMA Status == true)
  if (Current MHV Record.ModcCode == 07)

    if (Current MHV Parameter in set {O2D, O2W, O2CSD})
      Prior QA Hours = count MonitorHourlyValueData records where
        MonitorHourlyValueData.ModcCode in set {01, 02, 04, 17, 20, 53} AND
        MonitorHourlyValueData.ParameterCode = "O2C" AND
        (MonitorHourlyValueData.MoistureBasis = Current MHV Record.MoistureBasis OR
        MonitorHourlyValueData.MoistureBasis is null) AND
        ( MonitorHourlyValueData.BeginDate < Current Date OR
        (MonitorHourlyValueData.BeginDate = Current Date AND MonitorHourlyValueData.BeginHour <
        Current Hour))

    else if (Current MHV Parameter == "CO2CSD")
      Prior QA Hours = count MonitorHourlyValueData records where
        MonitorHourlyValueData.ModcCode in set {01, 02, 04, 17, 20, 21, 53} AND
        MonitorHourlyValueData.ParameterCode = "CO2C" AND
        ( MonitorHourlyValueData.BeginDate < Current Date OR
        (MonitorHourlyValueData.BeginDate = Current Date AND MonitorHourlyValueData.BeginHour <
        Current Hour))

    else
      case (Current MHV Parameter)

        SO2C:  MODC Set = {01, 02, 04, 16, 17, 19, 20, 21, 22, 53}
        NOXC:  MODC Set = {01, 02, 04, 17, 19, 20, 21, 22, 53}
        CO2C:  MODC Set = {01, 02, 04, 17, 20, 21, 53}
        FLOW:  MODC Set = {01, 02, 04, 20, 53}
        H2O:   MODC Set = {01, 02, 04, 21, 53}

      Prior QA Hours = count MonitorHourlyValueData records where
        MonitorHourlyValueData.ModcCode in set MODC Set AND
        MonitorHourlyValueData.ParameterCode = Current MHV Record.ParameterCode AND
        ( MonitorHourlyValueData.BeginDate < Current Date OR
        (MonitorHourlyValueData.BeginDate = Current Date AND MonitorHourlyValueData.BeginHour <
        Current Hour))

    if (Current MHV Parameter in set {NOXC, FLOW})
      if (Prior QA Hours > 2160)
        Monitor Hourly Missing Data Status = false
        return result A
    else
      if (Prior QA Hours > 720)
        Monitor Hourly Missing Data Status = false
        return result A

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an MODCCode of 07 in the MHV record for [param], but too many prior quality assured hours exist in evaluation period for use of this missing data approach.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- CO2C Monitor Hourly Evaluation for Substitute Data
3	Process/Category:	Emissions Data Evaluation Report ----- FLOW Monitor Hourly Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- H2O Monitor Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOx Concentration Monitor Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Monitor Hourly Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Monitor Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- O2C Monitor Hourly Evaluation for Substitute Data
9	Process/Category:	Emissions Data Evaluation Report ----- SO2 Monitor Hourly Evaluation

**Check Code:** HOURMHV-11

**Check Name:** Check Extraneous Data in MHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check ensures that certain fields are null in the MHV record.

**Specifications:**

*Monitor Hourly Null Status* = false

*Hourly Extraneous Fields* = null

if (*Current MHV Record*.AdjustedHourlyValue is not null AND *Current MHV Parameter* not in set {SO2C, NOXC, FLOW})  
append "AdjustedHourlyValue" to *Hourly Extraneous Fields*

if (*Current MHV Record*.MoistureBasis is not null AND *Current MHV Parameter* not in set {O2D, O2W, O2CSD})  
append "MoistureBasis" to *Hourly Extraneous Fields*

if (*Hourly Extraneous Fields* is not null)  
return result A

else

*Monitor Hourly Null Status* = true

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported [fieldnames] in the MHV record for [param]. This data should be blank.	Non-Critical Error

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- CO2C Monitor Hourly Evaluation for Substitute Data
3	Process/Category:	Emissions Data Evaluation Report ----- FLOW Monitor Hourly Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- H2O Monitor Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOx Concentration Monitor Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Monitor Hourly Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Monitor Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- O2C Monitor Hourly Evaluation for Substitute Data
9	Process/Category:	Emissions Data Evaluation Report ----- SO2 Monitor Hourly Evaluation



**Check Code:** HOURMHV-12

**Check Name:** Check For Correct Use of MODCs

**Related Former Checks:**

**Applicability:** CEM Check

**Description:**

**Specifications:**

**Current MHV HBHA Value** = null

if (**Monitor Hourly Modc Status** == true AND **Monitor Hourly PMA Status** == true)

if (**Current MHV Record**.ModcCode in set {06, 08, 09})

if (**Current MHV Parameter** in set {O2D, O2W, O2CSD})

*Prior MHV Record* = latest MonitorHourlyValueData record where  
 MonitorHourlyValueData.ModcCode in set {01, 02, 03, 04, 17, 20, 53, 54} AND  
 MonitorHourlyValueData.ParameterCode = "O2C" AND  
 (MonitorHourlyValueData.MoistureBasis = Current MHV Record.MoistureBasis OR  
 MonitorHourlyValueData.MoistureBasis is null) AND  
 [MonitorHourlyValueData.Date < **Current Date** OR  
 (MonitorHourlyValueData.Date = **Current Date** AND MonitorHourlyValueData.Hour < **Current Hour** )]

If *Prior MHV Record* is not null and is in current reporting period

*Next MHV Record* = earliest MonitorHourlyValueData record where  
 MonitorHourlyValueData.ModcCode in set {01, 02, 03, 04, 17, 20, 53, 54} AND  
 MonitorHourlyValueData.ParameterCode = "O2C" AND  
 (MonitorHourlyValueData.MoistureBasis = Current MHV Record.MoistureBasis OR  
 MonitorHourlyValueData.MoistureBasis is null) AND  
 [MonitorHourlyValueData.Date > **Current Date** OR  
 (MonitorHourlyValueData.Date = **Current Date** AND MonitorHourlyValueData.Hour > **Current Hour** )]

If *Next MHV Record* is not null and is in current reporting period

If *Prior MHV Record*.UnadjustedHourlyValue >= 0 AND *Next MHV Record*.UnadjustedHourlyValue >= 0

**Current MHV HBHA Value** = (*Prior MHV Record*.UnadjustedHourlyValue + *Next MHV Record*.UnadjustedHourlyValue) / 2, ROUNDED to a single decimal.

else

**Monitor Hourly Missing Data Status** = false  
 return result A

else

case (**Current MHV Parameter**)

SO2C:	<i>MODC Set</i> = {01, 02, 03, 04, 16, 17, 19, 20, 21, 22, 53, 54}
NOXC:	<i>MODC Set</i> = {01, 02, 03, 04, 17, 19, 20, 21, 22, 53, 54}
FLOW:	<i>MODC Set</i> = {01, 02, 03, 04, 20, 53, 54}
CO2C OR CO2CSD:	<i>MODC Set</i> = {01, 02, 03, 04, 17, 20, 21, 53, 54}
H2O:	<i>MODC Set</i> = {01, 02, 03, 04, 21, 53, 54}

if (**Current MHV Parameter** in set {H2O, CO2C})

*Prior Record* = latest MonitorHourlyValueData record or DerivedHourlyValueData record where  
 ParameterCode = **Current MHV Parameter** AND  
 ModcCode in set *MODC Set* AND  
 (Date < **Current Date** OR  
 (Date = **Current Date** AND Hour < **Current Hour** ))

If *Prior Record* is not null and is in current reporting period

*Next Record* = earliest MonitorHourlyValueData record or DerivedHourlyValueData record where  
 ParameterCode = **Current MHV Parameter** AND  
 ModcCode in set *MODC Set* AND  
 (Date > **Current Date** OR  
 (Date = **Current Date** AND Hour > **Current Hour** ))

If *Next Record* is not null and is in current reporting period

If *Prior Record*.UnadjustedHourlyValue >= 0 AND *Next Record*.UnadjustedHourlyValue >= 0

**Current MHV HBHA Value** = (*Prior Record*.UnadjustedHourlyValue + *Next Record*.UnadjustedHourlyValue) / 2, ROUNDED to a single decimal.

else

**Monitor Hourly Missing Data Status** = false  
 return result A

else if (**Current MHV Parameter** == "CO2CSD")

*Prior MHV Record* = latest MonitorHourlyValueData record where  
 MonitorHourlyValueData.ParameterCode = "CO2C" AND  
 MonitorHourlyValueData.ModcCode in set *MODC Set* AND  
 [MonitorHourlyValueData.Date < **Current Date** OR  
 (MonitorHourlyValueData.Date = **Current Date** AND MonitorHourlyValueData.Hour < **Current Hour** )]

If *Prior MHV Record* is not null and is in current reporting period

*Next MHV Record* = earliest MonitorHourlyValueData record where  
 MonitorHourlyValueData.ParameterCode = "CO2C" AND  
 MonitorHourlyValueData.ModcCode in set *MODC Set* AND  
 [MonitorHourlyValueData.Date > **Current Date** OR  
 (MonitorHourlyValueData.Date = **Current Date** AND MonitorHourlyValueData.Hour > **Current Hour** )]

If *Next MHV Record* is not null and is in current reporting period

If *Prior MHV Record*.UnadjustedHourlyValue >= 0 AND *Next MHV Record*.UnadjustedHourlyValue >= 0

**Current MHV HBHA Value** = (*Prior MHV Record*.UnadjustedHourlyValue + *Next MHV Record*.UnadjustedHourlyValue) / 2, ROUNDED to a single decimal.

else

**Monitor Hourly Missing Data Status** = false  
 return result A

else

*Prior MHV Record* = latest MonitorHourlyValueData record where

MonitorHourlyValueData.ParameterCode = **Current MHV Parameter** AND  
 MonitorHourlyValueData.ModeCode in set *MODC Set* AND  
 [MonitorHourlyValueData.Date < **Current Date** OR  
 (MonitorHourlyValueData.Date = **Current Date** AND MonitorHourlyValueData.Hour < **Current Hour** )]

If *Prior MHV Record* is not null and is in current reporting period

*Next MHV Record* = earliest MonitorHourlyValueData record where  
 MonitorHourlyValueData.ParameterCode = **Current MHV Parameter** AND  
 MonitorHourlyValueData.ModeCode in set *MODC Set* AND  
 [MonitorHourlyValueData.Date > **Current Date** OR  
 (MonitorHourlyValueData.Date = **Current Date** AND MonitorHourlyValueData.Hour > **Current Hour** )]

If *Next MHV Record* is not null and is in current reporting period

If *Prior MHV Record*.AdjustedHourlyValue >= 0 AND *Next MHV Record*.AdjustedHourlyValue >= 0

if (**Current MHV Parameter** == "FLOW")  
     **Current MHV HBHA Value** = (*Prior MHV Record*.AdjustedHourlyValue + *Next MHV Record*.AdjustedHourlyValue) / 2, **ROUNDED** to the nearest 1000.

else  
     **Current MHV HBHA Value** = (*Prior MHV Record*.AdjustedHourlyValue + *Next MHV Record*.AdjustedHourlyValue) / 2, **ROUNDED** to a single decimal.

else  
     **Monitor Hourly Missing Data Status** = false  
     return result B

else if (**Current MHV Record**.ModeCode == "11")

case (**Current MHV Parameter**)

NOXC: *MODC Set* = {01, 02, 03, 04, 17, 19, 20, 21, 22, 53, 54}  
 FLOW: *MODC Set* = {01, 02, 03, 04, 20, 53, 54}

*Prior Measured MHV Record* = MonitorHourlyValueData record at latest time for the location where  
 MonitorHourlyValueData.ModeCode in set *MODC Set* AND  
 MonitorHourlyValueData.ParameterCode = **Current MHV Parameter** AND  
 (MonitorHourlyValueData.BeginDate < **Current Date** OR  
 (MonitorHourlyValueData.BeginDate = **Current Date** AND MonitorHourlyValueData.BeginHour < **Current Hour** )  
 )

If *Prior Measured MHV Record* is not null and is in the current reporting period

*PriorDate* = *Prior Measured MHV Record*.BeginDate  
*PriorHour* = *Prior Measured MHV Record*.BeginHour

else

*PriorDate* = the day prior to the beginning of the current reporting period  
*PriorHour* = 23

*Next Measured MHV Record* = MonitorHourlyValueData record at earliest time for the location where  
 MonitorHourlyValueData.ModeCode in set *MODC Set* AND  
 MonitorHourlyValueData.ParameterCode = **Current MHV Parameter** AND

(MonitorHourlyValueData.BeginDate > **Current Date** OR  
 (MonitorHourlyValueData.BeginDate = **Current Date** AND MonitorHourlyValueData.BeginHour > **Current Hour** )

If *Next Measured MHV Record* is not null and is in the current reporting period

*NextDate* = *Next Measured MHV Record*.BeginDate

*NextHour* = *Next Measured MHV Record*.BeginHour

else

*NextDate* = the day after the end of the current reporting period

*NextHour* = 0

*Missing Data Period Length* = Count of MonitorHourlyValueData records for the location where

MonitorHourlyValueData.ParameterCode = **Current MHV Parameter** AND

(MonitorHourlyValueData.BeginDate > *PriorDate* OR

(MonitorHourlyValueData.BeginDate = *PriorDate* AND MonitorHourlyValueData.BeginHour > *PriorHour*) ) AND

(MonitorHourlyValueData.BeginDate < *NextDate* OR

(MonitorHourlyValueData.BeginDate = *NextDate* AND MonitorHourlyValueData.BeginHour < *NextHour*) )

if (**Current MHV Record**.PercentAvailable is null OR **Current MHV Record**.PercentAvailable >= 95.0)

if (*Missing Data Period Length* > 24)

**Monitor Hourly Missing Data Status** = false

return result C

else

if (*Missing Data Period Length* > 8)

**Monitor Hourly Missing Data Status** = false

return result C

else if (**Current MHV Record**.ModcCode == "17" AND **Monitor Hourly System Status** == true)

*Hours of Use of Like Kind Analyzer* = Count of MonitorHourlyValueData records for the location and reporting period where

MonitorHourlyValueData.ParameterCode = **Current MHV Parameter** AND

MonitorHourlyValueData.ModcCode == "17" AND

(MonitorHourlyValueData.BeginDate < **Current Date** OR

(MonitorHourlyValueData.BeginDate = **Current Date** AND MonitorHourlyValueData.BeginHour < **Current Hour**) )

If *Hours of Use of Like Kind Analyzer* >= 720

*First Use of Like Kind Analyzer Record* = MonitorHourlyValueData record at earliest time for the location and and reporting period where

MonitorHourlyValueData.ParameterCode = **Current MHV Parameter** AND

MonitorHourlyValueData.ModcCode == "17" AND

(MonitorHourlyValueData.BeginDate < **Current Date** OR

(MonitorHourlyValueData.BeginDate = **Current Date** AND MonitorHourlyValueData.BeginHour < **Current Hour**) )

If **Current MHV Record**.MonitoringSystemID is not null,

Locate a **RATATestRecordsByLocationForQAStatus** for the location

where the MonitoringSystemID is equal to **Current MHV Record**.MonitoringSystemID, the

TestResultCode begins with "PASS", and the EndDate/EndHour is after the *First Use of Like Kind Analyzer Record*.Date/Hour and on or prior to the **Current Date/Current Hour**.

If not found,

return result D

else

Locate all **Monitor System Component Records for Hour and Location** where the ComponentID is equal to **Current MHV Record.ComponentID**.

Locate a **RATATestRecordsByLocationForQASatus** for the location where the MonitoringSystemID is equal to any MonitoringSystemID in the retrieved Monitor System Component records, the TestResultCode begins with "PASS", and the EndDate/EndHour is after the *First Use of Like Kind Analyzer Record.Date/Hour* and on or prior to the **Current Date/Current Hour**.

If not found,  
return result D

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The UnadjustedHourlyValue reported in the MHV record for [param] either before or after the current hour is invalid.	Critical Error Level 1
B	The AdjustedHourlyValue reported in the MHV record for [param] either before or after the current hour is invalid.	Critical Error Level 1
C	You reported an MODCCode of 11 in the MHV record for [param], but the length of the missing data period exceeds the allowable value for use of this missing data procedure.	Critical Error Level 1
D	You reported an MODCCode of 17 in the MHV record for [param], indicating the use of a like-kind analyzer, but you have used a like-kind analyzer to monitor this parameter for more than 720 hours during this reporting period. You are not allowed to use a like-kind analyzer for more than 720 hours during a calendar year, unless the analyzer is identified as a non-redundant backup and a RATA is performed.	Critical Error Level 1

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- CO2C Monitor Hourly Evaluation for Substitute Data
3	Process/Category:	Emissions Data Evaluation Report ----- FLOW Monitor Hourly Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- H2O Monitor Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOx Concentration Monitor Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Monitor Hourly Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Monitor Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- O2C Monitor Hourly Evaluation for Substitute Data
9	Process/Category:	Emissions Data Evaluation Report ----- SO2 Monitor Hourly Evaluation

**Check Code:** HOURMHV-13

**Check Name:** Check System in MHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check ensures that a valid Monitoring System is indicated in the MHV record.

**Specifications:**

*Current MHV Mon Sys Record* = null

*Monitor Hourly System Status* = false

If (*Current MHV Parameter* == "NOXC" AND *NOx Conc Checks Needed for Nox Mass* == false)

if (*Current MHV Record*.MonitoringSystemID is NOT null AND *Legacy Data Evaluation* == false)

return result A

else

*Monitor Hourly System Status* = true

else if ( *Current MHV Parameter* == "CO2C" AND *CO2 Conc Checks Needed for Heat Input* == false AND *CO2 Conc Checks Needed for CO2 Mass Calc* == false AND *CO2 Diluent Needed for MATS* == false )

if (*Current MHV Record*.MonitoringSystemID is NOT null AND *Legacy Data Evaluation* == false)

return result B

else

*Monitor Hourly System Status* = true

else if ( *Current MHV Parameter* == "O2W" AND *O2 Wet Checks Needed for Heat Input* == false AND *O2 Wet Checks Needed to Support CO2 Calculation* == false AND *O2 Wet Needed for MATS* == false ) OR

( *Current MHV Parameter* == "O2D" AND *O2 Dry Checks Needed for Heat Input* == false AND *O2 Dry Checks Needed to Support CO2 Calculation* == false AND *O2 Dry Needed for MATS* == false )

if (*Current MHV Record*.MonitoringSystemID is NOT null AND *Legacy Data Evaluation* == false)

return result G

else

*Monitor Hourly System Status* = true

else

If (*Monitor Hourly MODC Status* == true)

if *Current MHV Record*.MonitoringSystemID is null

case (*Current MHV Parameter*)

SO2C: *MODC Set* = {01, 02, 03, 04, 16, 17, 18, 19, 20, 21, 22}

NOXC: *MODC Set* = {01, 02, 03, 04, 17, 18, 19, 20, 21, 22}

CO2C, O2D, or O2W: *MODC Set* = {01, 02, 03, 04, 17, 18, 20, 21}

FLOW: *MODC Set* = {01, 02, 03, 04, 20}

H2O: *MODC Set* = {01, 02, 03, 04, 21}

CO2CSD or O2CSD: *MODC Set* = {}

if (*Current MHV Record*.ModcCode in set *MODC Set*)

return result C

else

return result H

else

*Current MHV Mon Sys Record* = find active MonitoringSystemData record for location where

---

MonitoringSystemData.MonitoringSystemID = **Current MHV Record**.MonitoringSystemID

if **Current MHV Mon Sys Record** is null  
     return result D

else

    if (**Current MHV Parameter** in set {O2D, O2W, O2CSD})

        if (**Legacy Data Evaluation** == true

            if (**Current MHV Mon Sys Record**.SystemTypeCode not in set  
         {H2O,O2,CO2,NOXC,NOX})

                return result E

        else

**Monitor Hourly System Status** = true

    else if (**Current MHV Mon Sys Record**.SystemTypeCode not in {O2, CO2})  
         return result E

    else

**Monitor Hourly System Status** = true

else if (**Current MHV Parameter** = "H2O")

    if (**Current MHV Mon Sys Record**.SystemTypeCode not in {H2OT, H2OM})  
         return result E

    else

**Monitor Hourly System Status** = true

else

    if (**Current MHV Mon Sys Record**.SystemTypeCode  $\diamond$  **Current MHV System Type**)

        If (**Current MHV Parameter** in {"CO2C", "CO2CSD"} AND **Legacy Data Evaluation**  
         == true AND

**Current MHV Mon Sys Record**.SystemTypeCode == "NOX")

**Monitor Hourly System Status** = true

        else

            return result E

    else

**Monitor Hourly System Status** = true

else

**Monitor Hourly System Status** = true

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported a MonitoringSystemID in the MHV record for NOXC, but this field should be blank when the NOX concentration is used to calculate the NOX emission rate as part of a NOX-diluent system.	Critical Error Level 1
B	You reported a MonitoringSystemID in the MHV record for CO2C, but this field should be left blank when CO2 concentration is not used to calculate CO2 mass, heat input, or a MATS value.	Critical Error Level 1
C	You did not report a MonitoringSystemID in the MHV record for [param]. This information is required when you report measured data.	Critical Error Level 1
D	You reported MonitoringSystemID [ID] in the MHV record for [param], but there is no Monitoring System record for this system in your monitoring plan that was active during the hour.	Critical Error Level 1
E	You reported MonitoringSystemID [ID] in the MHV record for [param], but this SystemTypeCode for this monitoring system is not appropriate.	Critical Error Level 1
F	You reported a MonitoringSystemID in the MHV record for [param], but this is not appropriate when substitute data is used.	Non-Critical Error
G	You reported a MonitoringSystemID in the MHV record for [param], but this field should be left blank when O2 concentration is not used to calculate CO2 concentration, heat input, or a MATS value.	Critical Error Level 1
H	You did not report a MonitoringSystemID in the MHV record for [param]. This information is required when you report for missing data substitution.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- CO2C Monitor Hourly Evaluation for Substitute Data
3	Process/Category:	Emissions Data Evaluation Report ----- FLOW Monitor Hourly Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- H2O Monitor Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOx Concentration Monitor Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Monitor Hourly Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Monitor Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- O2C Monitor Hourly Evaluation for Substitute Data
9	Process/Category:	Emissions Data Evaluation Report ----- SO2 Monitor Hourly Evaluation



**Check Code:** HOURMHV-14

**Check Name:** Check System Designation Code for System in MHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check ensures that the SystemDesignationCode of the monitoring system is compatible with reported MODC.

**Specifications:**

If (*Monitor Hourly Modc Status* == true AND *Monitor Hourly System Status* == true AND *Current MHV Mon Sys Record* is not null)  
case (*Current MHV Record*.ModcCode)

01 OR 17: If (*Current MHV Mon Sys Record*. SystemDesignationCode NOT in set {P, PB})  
return result A

02: If (*Current MHV Mon Sys Record*. SystemDesignationCode NOT in set {B, RB, DB})  
return result B

04: If (*Current MHV Mon Sys Record*. SystemDesignationCode <> "RM")  
return result C

22: If (*Current MHV Mon Sys Record*. SystemDesignationCode <> "CI")  
return result D

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an MODCCode of [modcCode] in the MHV record for [param], but MonitoringSystemID [ID] is not a primary system.	Critical Error Level 1
B	You reported an MODCCode of 02 in the MHV record for [param], but MonitoringSystemID [ID] is not a backup system.	Critical Error Level 1
C	You reported an MODCCode of 04 in the MHV record for [param], but MonitoringSystemID [ID] is not a reference method system.	Critical Error Level 1
D	You reported an MODCCode of 22 in the MHV record for [param], but MonitoringSystemID [ID] is not a certified inlet system.	Critical Error Level 1

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- FLOW Monitor Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- H2O Monitor Hourly Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- NOx Concentration Monitor Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Monitor Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Monitor Hourly Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- SO2 Monitor Hourly Evaluation

**Check Code:** HOURMHV-15

**Check Name:** Check Component in MHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check ensures that the component in the MHV record is valid.

**Specifications:**

*Monitor Hourly Component Status* = false

*Flow Averaging Component List* = { empty }

If (*Monitor Hourly MODC Status* == true)

if *Current MHV Record*.ComponentID is null

case (*Current MHV Parameter*)

SO2C: *MODC Set* = {01, 02, 03, 04, 16, 17, 18, 19, 20, 21, 22, 53}

NOXC: *MODC Set* = {01, 02, 03, 04, 17, 18, 19, 20, 21, 22, 53}

CO2C, O2D, O2W: *MODC Set* = {01, 02, 03, 04, 17, 18, 20, 21, 53}

FLOW: *MODC Set* = {01, 02, 03, 04, 20, 53}

H2O: *MODC Set* = {01, 02, 03, 04, 21, 53}

CO2CSD, O2CSD: *MODC Set* = { }

If (*Current MHV Parameter* == "FLOW" and *Current MHV Record*.MonitoringSystemID is not null)

*Flow Averaging Component Records* = Active MonitoringSystemComponent record for location where:

1) MonitoringSystemID = *Current MHV Record*.MonitoringSystemID.

2) ComponentTypeCode = "FLOW".

If ( Count of *Flow Averaging Component Records* < 2 )

If (*Current MHV Record*.ModcCode in set *MODC Set*)

return result A

Else

return result F

Else

Add each record in *Flow Averaging Component Records* to *Flow Averaging Component List*

*Monitor Hourly Component Status* = true

Otherwise,

If (*Current MHV Record*.ModcCode in set *MODC Set*)

return result A

Else

return result F

else

*Current MHV Component Record* = find ComponentData record where ComponentData.ComponentID = *Current MHV Record*.ComponentID

If *Current MHV Component Record*.ComponentTypeCode <> *Current MHV Component Type*

return result B

else if *Current MHV Record*.ModcCode == 17 AND *Current MHV Component Record*.ComponentIdentifier does not begin with "LK"

return result C

else if *Current MHV Component Record*.ComponentIdentifier begins with "LK" AND *Current MHV Record*.ModcCode in

```
set { 01, 02, 03, 04, 05 }
return result G
```

else if (**Monitor Hourly System Status** == true AND **Current MHV Mon Sys Record** is not null)

*Count Mon Sys Comp Record* = count active MonitoringSystemComponent record for location where  
MonitoringSystemComponentData.ComponentID = **Current MHV Record**.ComponentID AND  
MonitoringSystemComponentData.MonitoringSystemID = **Current MHV Record**.MonitoringSystemID

If *Count Mon Sys Comp Record* = 0  
return result D

Else

**Monitor Hourly Component Status** = true

Else

**Monitor Hourly Component Status** = true

#### Results:

Result	Response	Severity
A	You did not report a ComponentID in the MHV record for [param].	Critical Error Level 1
B	You reported ComponentID [ID] in the MHV record for [param], but this is not an [comptype] component.	Critical Error Level 1
C	You reported an MODCCode of 17 in the MHV record for [param], which indicates that the component is a like-kind analyzer, but the ComponentID does not begin with LK.	Critical Error Level 1
D	You reported MonitoringSystemID [sys] ComponentID [ID] in the MHV record for [param], but there is no MonitorSystemComponent record for this system and component in your monitoring plan that was active during the hour.	Critical Error Level 1
E	You reported a ComponentID in the MHV record for [param], but this field should be blank whenever missing data substitution is performed.	Non-Critical Error
F	You did not report a ComponentID in the MHV record for [param]. The ComponentID is required when you report for missing data substitution.	Critical Error Level 1
G	You reported a ComponentID in the [param] MHV record that begins with "LK", but did not report an MODCCode of 17. You must report an MODCCode of 17 when a like-kind analyzer is used.	Critical Error Level 1

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- CO2C Monitor Hourly Evaluation for Substitute Data
3	Process/Category:	Emissions Data Evaluation Report ----- FLOW Monitor Hourly Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- H2O Monitor Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOx Concentration Monitor Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Monitor Hourly Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Monitor Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- O2C Monitor Hourly Evaluation for Substitute Data
9	Process/Category:	Emissions Data Evaluation Report ----- SO2 Monitor Hourly Evaluation

**Check Code:** HOURMHV-16

**Check Name:** Check Unadjusted Value

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check ensures that the UnadjustedValue in the MHV record for SO<sub>2</sub>C, NO<sub>X</sub>C, and FLOW is valid.

**Specifications:**

*Monitor Hourly Preadjusted Value Status* = false

SO<sub>2</sub>C: *MODC Set* = {01, 02, 03, 04, 16, 17, 18, 19, 20, 21, 22, 53, 54}

NO<sub>X</sub>C: *MODC Set* = {01, 02, 03, 04, 17, 18, 19, 20, 21, 22, 53, 54}

FLOW: *MODC Set* = {01, 02, 03, 04, 20, 53, 54}

If (*Current MHV Record*.ModcCode in set *MODC Set*)

If (*Current MHV Record*.UnadjustedHourlyValue is null AND  
     *Current MHV Record*.ModcCode not in set {04, 19, 20, 53, 54})  
     return result A

else if (*Current MHV Record*.UnadjustedHourlyValue < 0.0 AND  
     *Current MHV Record*.ModcCode not in set {16, 21} )  
     return result A

else if (*Current MHV Record*.UnadjustedHourlyValue == 2 AND  
     *Current MHV Record*.ModcCode == 16 )  
     return result G

else if (*Current MHV Record*.UnadjustedHourlyValue > 2 AND  
     *Current MHV Record*.ModcCode == 16 )  
     return result B

else if (*Current MHV Record*.UnadjustedHourlyValue > 0 AND  
     *Current MHV Record*.ModcCode == 21 )  
     return result C

else if (*Current MHV Parameter* in set {SO<sub>2</sub>C, NO<sub>X</sub>C} and *Current MHV Record*.UnadjustedHourlyValue is not rounded to 1 decimal place)  
     return result F

else if (*Current MHV Parameter* == "FLOW" and *Current MHV Record*.UnadjustedHourlyValue is not rounded to the nearest 1000)  
     return result F

else  
     *Monitor Hourly Preadjusted Value Status* = true

if (*Current MHV Max Min Value* is not null)  
     if (*Current MHV Record*.UnadjustedHourlyValue > *Current MHV Max Min Value*)  
         return result D

else if (*Monitor Hourly Modc Status* == true)

If (*Current MHV Record*.UnadjustedHourlyValue is not null)  
     If ( *Current MHV Record*.ModcCode == "46" )  
         return result H  
     Else  
         return result E

Else

***Monitor Hourly Preadjusted Value Status*** = true**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The UnadjustedHourlyValue reported in the MHV record for [param] is missing or invalid.	Critical Error Level 1
B	You reported an MODCCode of 16 in the MHV record for [param], but the UnadjustedHourlyValue exceeds 2.	Critical Error Level 1
C	You reported an MODCCode of 21 in the MHV record for [param], but the UnadjustedHourlyValue is greater than 0.	Critical Error Level 1
D	Warning: The UnadjustedHourlyValue reported in the MHV record for [param] is in excess of the maximum value listed in the monitoring plan. Sources are required to periodically (at least once annually) evaluate the appropriateness of these maximum values in the monitoring plan and make proper adjustments when necessary. Adjustments may include the need to update Span and/or Default values. You should investigate the cause of these exceedances and determine whether adjustments to your monitoring systems or monitoring plan are necessary.	Informational Message
E	You reported an MODCCode of [modeCode] in the MHV record for [param], so you should not have reported a value for the UnadjustedHourlyValue.	Critical Error Level 1
F	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1
G	You reported an MODCCode of 16 in the MHV record for [param], but the UnadjustedHourlyValue is equal to 2. According to Part 75.11(e)(3)(iii) any bias-adjusted hourly average SO2 concentration of less than 2.0 ppm recorded by the SO2 monitoring system shall be adjusted to a default value of 2.0 ppm, for reporting purposes.	Informational Message
H	You reported an MODCCode of [modeCode] in the MHV record for [param], so you should not have reported a value for the UnadjustedHourlyValue.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- FLOW Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- NOx Concentration Monitor Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- SO2 Monitor Hourly Evaluation

**Check Code:** HOURMHV-17

**Check Name:** Verify Consistency Between NOx Emission Rate and NOx Concentration

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check ensures consistency between NOx emission rate records and NOx Concentration records based on the MODC and reported values.

**Specifications:**

If (*NOx Conc Needed for NOx Rate Calc* == true AND *Monitor Hourly Modc Status* == true)

if (*Current MHV Record*.MODCCode not in set {01, 02, 03, 04, 17, 18, 19, 20, 21, 22, 46, 53} )

if ( *NOx Emission Rate MODC* in set {01, 02, 03, 04, 14, 21, 22, 53, 54} )

return result A

else if (*Current MHV Record*.MODCCode == 21 AND *NOx Emission Rate MODC* not in set {14, 21})

return result A

else if (*Current MHV Record*.MODCCode == 22 AND *NOx Emission Rate MODC* not in set {14, 22})

return result A

else if (*Current MHV Record*.MODCCode == 46 AND *NOx Emission Rate MODC* in set {01, 02, 03, 04, 05, 14, 21, 22, 53, 54})

return result B

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an MODCCode of [MODC] in the MHV record for NOXC that is inconsistent with MODCCode of [NOX ER MODC] reported in the DHV record for NOXR.	Critical Error Level 1
B	You reported an MODCCode of [MODC] in the MHV record for NOXC that is inconsistent with MODCCode of [NOX ER MODC] reported in the DHV record for NOXR.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- NOx Concentration Monitor Hourly Evaluation

**Check Code:** HOURMHV-18

**Check Name:** Determine Maximum or Minimum Value for Parameter in MHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check determines the maximum or minimum value for the parameter from the span or default table based on MODC.

**Specifications:**

*Current MHV Max Min Value* = null

If (*Current MHV Parameter* == "H2O")

    If (*H2O Missing Data Approach* == "MAX")

*Current MHV Default Parameter* = "H2OX"

    Else If (*H2O Missing Data Approach* == "MIN")

*Current MHV Default Parameter* = "H2ON"

    else if (*Current MHV Record*.ModcCode == 12)

        return result A

If (*Monitor Hourly Modc Status* == true AND *Current MHV Default Parameter* is not null)

    If (*Current MHV Record*.ModcCode in set {12, 23} AND *Current MHV Fuel Specific Hour* = true)

        If *Current Hourly Op Record*.FuelCode is not null

*Current MHV Missing Data Fuel* = *Current Hourly Op Record*.FuelCode

        Count active MonitoringDefaultData record for location where

            ParameterCode = *Current MHV Default Parameter*

            FuelCode = *Current Hourly Op Record*.FuelCode

            DefaultPurposeCode = "MD"    // Missing Data

            OperatingCode in set {A,U}    // Not Controlled

        if (*count* > 1)

            return result B

        else if (*count* == 0)

            return result C

        else

*Default Record* = the single matched record

        if (*Default Record*.DefaultValue > 0)

*Current MHV Max Min Value* = *Default Record*.DefaultValue

        else

            return result D

    else if (*Current MHV Record*.ModcCode in set {13, 24} AND *Current MHV Fuel Specific Hour* == true)

        If *Current Hourly Op Record*.FuelCode is not null

*Current MHV Missing Data Fuel* = *Current Hourly Op Record*.FuelCode

        Count active MonitoringDefaultData record for location where

            ParameterCode = *Current MHV Default Parameter*

            FuelCode = *Current Hourly Op Record*.FuelCode

            DefaultPurposeCode = "MD"    // Missing Data

            OperatingCode in == "C"    // Controlled

        if (*count* > 1)

```

        return result B
    else if (count == 0)
        return result C
    else
        Default Record = the single matched record

        if (Default Record.DefaultValue > 0)
            Current MHV Max Min Value = Default Record.DefaultValue
        else
            return result D

else if (Current MHV Record.ModcCode <> 15)

    If (Current MHV Parameter in set {H2O, O2W, O2D, O2CSD})

        if (Current MHV Default Parameter is not null)

            Current MHV Missing Data Fuel = "NFS"

            if (Current MHV Parameter in set {O2W, O2D} AND Current MHV Record.ModcCode == 20)
                Current MHV Default Parameter = "O2X"

                Count active MonitoringDefaultData record for location where
                    ParameterCode = Current MHV Default Parameter
                    FuelCode = "NFS"
                    DefaultPurposeCode = "DC" // diluent cap

            else

                Count active MonitoringDefaultData record for location where
                    ParameterCode = Current MHV Default Parameter
                    FuelCode = "NFS"
                    DefaultPurposeCode = "MD" // missing data

            if (count > 1)
                return result B

            else if (((Current MHV Parameter == "O2D" AND O2 Dry Checks Needed for Heat Input == false) OR
                (Current MHV Parameter == "O2W" AND O2 Wet Checks Needed for Heat Input == false))
                Current MHV Max Min Value = 0

            else if (count == 0)
                return result C

            else
                Default Record = the single matched record

                if (Default Record.DefaultValue > 0)
                    Current MHV Max Min Value = Default Record.DefaultValue
                else
                    return result D

        else

            If (Current MHV Component Type == "FLOW")
                Current MHV Span Description = "FLOW"
                Monitor Span Record Count = Find active MonitoringSpanData records for location where
                    MonitoringSpanData .ComponentTypeCode = "FLOW"

```



```

else
    Current MHV Span Description = Current MHV Component Type + " with a SpanScale of H"
    Monitor Span Record Count = Find active MonitoringSpanData records for location where
        MonitoringSpanData .ComponentTypeCode = Current MHV Component Type AND
        MonitoringSpanData.SpanScaleCode = "H"

    if (Monitor Span Record Count > 1)
        return result E
    else if (Monitor Span Record Count = 0)
        return result F
    else
        Current Monitor Span Record = the single matched record

        If (Current MHV Record.ModcCode == 19)

            if Current Monitor Span Record.DefaultHighRange > 0)
                Current MHV Max Min Value = Current Monitor Span Record.DefaultHighRange
            else
                return result G

        else if ((Current Monitor Span Record.DefaultHighRange is null AND Current MHV Record.ModcCode
        not in set {13, 24}) or Current MHV Record.ModcCode == 12)

            if (Current MHV Record.ModcCode == 20)
                if (Current MHV Parameter == "FLOW")
                    if Current Monitor Span Record.FlowFullScaleRange > 0)
                        Current MHV Max Min Value = Current Monitor Span
                        Record.FlowFullScaleRange * 2
                    else
                        return result G
                else
                    if Current Monitor Span Record.FullScaleRange > 0)
                        Current MHV Max Min Value = Current Monitor Span
                        Record.FullScaleRange * 2
                    else
                        return result G

            else
                if (Current MHV Parameter == "FLOW")
                    if Current Monitor Span Record.MPFValue > 0)
                        Current MHV Max Min Value = Current Monitor Span
                        Record.MPFValue
                    else
                        return result G
                else
                    if Current Monitor Span Record.MPCValue > 0)
                        Current MHV Max Min Value = Current Monitor Span
                        Record.MPCValue
                    else
                        return result G

        else if (Current MHV Parameter in set {SO2C, NOXC})

            Current MHV Span Description = Current MHV Component Type + " with a SpanScale of L"
            Monitor Span Record Count = Find active MonitoringSpanData records for location where
                MonitoringSpanData .ComponentTypeCode = Current MHV Component Type AND
                MonitoringSpanData.SpanScaleCode = "L"

```

```

if (Monitor Span Record Count > 1)
    return result E

else if (Monitor Span Record Count = 0)
    return result F

else
    Current Monitor Span Record = the single matched record

    if (Current MHV Record.ModcCode == 20)

        if Current Monitor Span Record.FullScaleRange > 0)
            Current MHV Max Min Value = Current Monitor Span Record.FullScaleRange * 2
        else
            return result G

    else if (Current MHV Record.ModcCode in set {13, 24})
        if Current Monitor Span Record.MECValue > 0)
            Current MHV Max Min Value = Current Monitor Span Record.MECValue
        else
            return result G

    else
        if Current Monitor Span Record.SpanValue > 0)
            Current MHV Max Min Value = Current Monitor Span Record.SpanValue
        else
            return result G

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The missing data default parameter for H2O could not be determined, because you used both Standard and Inverse Part 75 missing data approaches during the hour.	Critical Error Level 2
B	You reported more than one applicable [param] Default record with a FuelCode of [FuelCode] in your monitoring plan for the hour.	Critical Error Level 1
C	You did not report an applicable [param] Default record with a FuelCode of [FuelCode].	Critical Error Level 1
D	The values reported in the applicable [param] Default record with a FuelCode of [FuelCode] are invalid.	Critical Error Level 1
E	You reported more than one active span record for [key] in your monitoring plan for the hour.	Critical Error Level 1
F	You did not report an active span record for [key] in your monitoring plan for the hour.	Critical Error Level 1
G	The values reported in the applicable span record for [key] are invalid.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- CO2C Monitor Hourly Evaluation for Substitute Data
3	Process/Category:	Emissions Data Evaluation Report ----- FLOW Monitor Hourly Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- H2O Monitor Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOx Concentration Monitor Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Monitor Hourly Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Monitor Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- O2C Monitor Hourly Evaluation for Substitute Data
9	Process/Category:	Emissions Data Evaluation Report ----- SO2 Monitor Hourly Evaluation

**Check Code:** HOURMHV-19

**Check Name:** Check Adjusted Hourly Value in MHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This checks ensures that AdjustedHourlyValue is valid and does not conflict with the reported MODC codes.

**Specifications:**

*Monitor Hourly Adjusted Value Status* = false

if (*Monitor Hourly Modc Status* == true AND *Monitor Hourly Missing Data Status* == true AND  
     (*Monitor Hourly Pma Status* == true OR *Current MHV Record*.ModcCode NOT in set {06, 07, 08, 09, 10, 11}))

    If (*Current MHV Parameter* <> "NOXC" OR *NOx Conc Needed for Nox Mass Calc* == true)

        If (*Current MHV Parameter* == "FLOW")

            set *Current MHV Precision* to -3.

        else

            set *Current MHV Precision* to 1.

    case (*Current MHV Record*.ModcCode )

        = 21: *Current MHV Calculated Adjusted Value* = 0

            if (*Current MHV Record*.AdjustedHourlyValue == 0)

*Monitor Hourly Adjusted Value Status* = true

            else

                return result A

        = 16: *Current MHV Calculated Adjusted Value* = 2

            if (*Current MHV Record*.AdjustedHourlyValue == 2)

*Monitor Hourly Adjusted Value Status* = true

            else

                return result B

        = 12 OR = 23:

            If (*Current MHV Max Min Value* is not null)

*Current MHV Calculated Adjusted Value* = *Current MHV Max Min Value*

            if (*Current MHV Record*.AdjustedHourlyValue == *Current MHV Max Min Value* )

*Monitor Hourly Adjusted Value Status* = true

            else

                return result C

        = 13 OR 24:

            If (*Current MHV Max Min Value* is not null)

*Current MHV Calculated Adjusted Value* = *Current MHV Max Min Value*

            if (*Current MHV Record*.AdjustedHourlyValue == *Current MHV Max Min Value* )

*Monitor Hourly Adjusted Value Status* = true

            else

                return result D

        = 06: If (*Current MHV HBHA Value* is not null)

*Current MHV Calculated Adjusted Value* = *Current MHV HBHA Value*

            If (*Current MHV Record*.AdjustedHourlyValue >= 0)

                if ( *Current MHV Record*.AdjustedHourlyValue == *Current MHV Calculated Adjusted Value*)

*Monitor Hourly Adjusted Value Status* = true

            else

```

        return result G
    else
        return result H

else
    If (Current MHV Record.AdjustedHourlyValue >= 0)
        If (Current MHV Record.AdjustedHourlyValue is not rounded to Current MHV Precision)
            return result L
        else
            Current MHV Calculated Adjusted Value = Current MHV Record.AdjustedHourlyValue
            Monitor Hourly Adjusted Value Status = true

            If (Current MHV Max Min Value is not null)
                if (Current MHV Record.AdjustedHourlyValue > Current MHV Max Min Value
                )
                    If (Current MHV Parameter == "SO2C" and Current MHV
Record.AdjustedHourlyValue > Current MHV Max Min Value * 2)
                        return result O
                    Otherwise,
                        return result K

            Else
                return result H

= 08 OR 09:

    If (Current MHV Record.AdjustedHourlyValue >= 0)

        If (Current MHV HBHA Value is not null AND Current MHV HBHA Value > Current MHV
Record.AdjustedHourlyValue AND (Unit is Load Based == true or Current MHV Parameter <>
"NOXC"))
            Current MHV Calculated Adjusted Value = Current MHV HBHA Value
            return result I
        else
            If (Current MHV Record.AdjustedHourlyValue is not rounded to Current MHV Precision)
                return result L
            else
                Current MHV Calculated Adjusted Value = Current MHV Record.AdjustedHourlyValue
                Monitor Hourly Adjusted Value Status = true

                If (Current MHV Max Min Value is not null)
                    if (Current MHV Record.AdjustedHourlyValue > Current MHV Max Min Value
                    )
                        If (Current MHV Parameter == "SO2C" and Current MHV
Record.AdjustedHourlyValue > Current MHV Max Min Value * 2)
                            return result O
                        Otherwise,
                            return result K

                Else
                    return result H

= 04, 05, 07, 10, 11, 15, 53, 54, OR 55:

    If (Current MHV Record.AdjustedHourlyValue >= 0)
        If (Current MHV Record.AdjustedHourlyValue is not rounded to Current MHV Precision)
            return result L
        else

```

***Current MHV Calculated Adjusted Value = Current MHV Record.AdjustedHourlyValue***  
***Monitor Hourly Adjusted Value Status = true***

If (***Current MHV Max Min Value*** is not null)  
     if (***Current MHV Record.AdjustedHourlyValue > Current MHV Max Min Value***)  
         If (***Current MHV Parameter == "SO2C"*** and ***Current MHV Record.AdjustedHourlyValue > Current MHV Max Min Value \* 2***)  
             If the ***Current MHV Record.ModeCode == 10***  
                 return result P  
             Otherwise,  
                 return result O  
         Otherwise,  
             return result K

Else  
     return result H

= All Other Codes:

If (***Current MHV Record.AdjustedHourlyValue >= 0***)  
     ***If (Current MHV Record.ModeCode in set {19, 20} AND Current MHV Record.UnadjustedHourlyValue is null)***

    If (***Current MHV Max Min Value*** is not null)  
         if (***Current MHV Record.AdjustedHourlyValue == Current MHV Max Min Value***)  
             ***Current MHV Calculated Adjusted Value = Current MHV Record.AdjustedHourlyValue***  
             ***Monitor Hourly Adjusted Value Status = true***  
         else  
             if (***Current MHV Record.ModeCode == "19"***)  
                 return result M  
             else  
                 return result N

    else if (***Current MHV Record.AdjustedHourlyValue*** is not rounded to ***Current MHV Precision***)  
         return result L

    else  
         ***Monitor Hourly Adjusted Value Status = true***

Else  
     return result H

else

If (***Current MHV Record.AdjustedHourlyValue*** is not null)  
     return result J

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an MODCCode of 21 in the MHV record for [param], but the AdjustedHourlyValue does not equal 0.	Critical Error Level 1
B	You reported an MODCCode of 16 in the MHV record for [param], but the AdjustedHourlyValue does not equal 2.	Critical Error Level 1
C	You reported an MODCCode of [modcCode] in the MHV record for [param], but the AdjustedHourlyValue does not equal the maximum potential value reported in the [comptype] span or fuel-specific default record in your monitoring plan.	Critical Error Level 1
D	You reported an MODCCode of 13 or 24 in the MHV record for [param], but the AdjustedHourlyValue does not equal the maximum expected value reported in the [comptype] span or fuel-specific default record in your monitoring plan.	Critical Error Level 1
G	You reported an MODCCode of 06 in the MHV record for [param], but the AdjustedHourlyValue does not equal average of measured hour before and measured hour after.	Critical Error Level 1
H	The AdjustedHourlyValue reported in the MHV record for [param] is invalid.	Critical Error Level 1
I	You reported an MODCCode of [MODCCode] in the MHV record for [param], but you reported an AdjustedHourlyValue that is less than the average of the measured hour before and measured hour after.	Critical Error Level 1
J	You reported an AdjustedHourlyValue in the MHV record for NOXC. This field should be blank when the NOX concentration is used to calculate the NOX emission rate as part of a NOX system.	Critical Error Level 1
K	Warning: The AdjustedHourlyValue reported in the MHV record for [param] is in excess of the maximum value listed in the monitoring plan. Sources are required to periodically (at least once annually) evaluate the appropriateness of these maximum values in the monitoring plan and make proper adjustments when necessary. Adjustments may include the need to update Span and/or Default values. You should investigate the cause of these exceedances and determine whether adjustments to your monitoring systems or monitoring plan are necessary.	Informational Message
L	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1
M	You reported an MODCCode of 19 in the MHV record for [param], but the AdjustedHourlyValue does not equal the DefaultHighRange reported in the [comptype] span record in your monitoring plan.	Critical Error Level 1
N	You reported an MODCCode of 20 in the MHV record for [param], but the AdjustedHourlyValue does not equal 200 percent of the FullScaleRange reported in the [comptype] span record in your monitoring plan.	Critical Error Level 1
O	The AdjustedHourlyValue reported in the MHV record for [param] is in excess of the maximum value listed in the monitoring plan. Sources are required to periodically (at least once annually) evaluate the appropriateness of these maximum values in the monitoring plan and make proper adjustments when necessary. Adjustments may include the need to update Span and/or Default values. You should investigate the cause of these exceedances and determine whether adjustments to your monitoring systems or monitoring plan are necessary.	Critical Error Level 2
P	The AdjustedHourlyValue reported in the MHV record for [param] is in excess of the maximum value listed in the monitoring plan. Sources are required to periodically (at least once annually) evaluate the appropriateness of these maximum values in the monitoring plan and make proper adjustments when necessary. Adjustments may include the need to update Span and/or Default values. You should investigate the cause of these exceedances and determine whether adjustments to your monitoring systems or monitoring plan are necessary.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- FLOW Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- NOx Concentration Monitor Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- SO2 Monitor Hourly Evaluation

**Check Code:** HOURMHV-20

**Check Name:** Check Unadjusted Hourly Value in MHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This checks ensures that UnadjustedHourlyValue is valid and does not conflict with the reported MODC codes.

**Specifications:**

**Monitor Hourly Unadjusted Value Status** = false

if (**Monitor Hourly Modc Status** == true AND **Monitor Hourly Missing Data Status** == true AND  
(**Monitor Hourly Pma Status** == true OR **Current MHV Record**.ModcCode NOT in set {06, 07, 08, 09, 10, 11}))

**Calculated Unadjusted Value** = null

case (**Current MHV Record**.ModcCode )

= 21: **Calculated Unadjusted Value** = 0

if (**Current MHV Record**.UnadjustedHourlyValue == 0)

    If (**Current MHV Parameter** == "CO2C" and **Current Hourly Op Record**.LoadRange is greater than 1,  
        return result L

    else

**Monitor Hourly Unadjusted Value Status** = true

else

    return result A

= 12 OR = 23:

    If (**Current MHV Max Min Value** is not null)

**Calculated Unadjusted Value** = **Current MHV Max Min Value**

    if (**Current MHV Record**.UnadjustedHourlyValue == **Current MHV Max Min Value** )

**Monitor Hourly Unadjusted Value Status** = true

    else

        return result B

= 20: If (**Current MHV Record**.UnadjustedHourlyValue >= 0)

    If (**Current MHV Max Min Value** is not null)

        If (**Current MHV Parameter** begins with "O2" AND **Current MHV Record**.UnadjustedHourlyValue >  
20.9)

**Calculated Unadjusted Value** = **Current MHV Max Min Value**

        return result K

    else if **Current MHV Parameter** == "CO2C" AND **Current MHV Record**.UnadjustedHourlyValue >  
**Current MHV Max Min Value**)

**Calculated Unadjusted Value** = **Current MHV Max Min Value**

        return result C

    elseif (**Current MHV Record**.UnadjustedHourlyValue is not rounded to one decimal place)  
        return result I

    else

**Calculated Unadjusted Value** = **Current MHV Record**.UnadjustedHourlyValue

**Monitor Hourly Unadjusted Value Status** = true

else

    return result E

= 06: If (**Current MHV HBHA Value** is not null)

**Calculated Unadjusted Value** = **Current MHV HBHA Value**



```

    If (Current MHV Record.UnadjustedHourlyValue >= 0)
        if ( Current MHV Record.UnadjustedHourlyValue == Calculated Unadjusted Value)
            Monitor Hourly Unadjusted Value Status = true
        else
            return result D
    else
        return result E

else
    If (Current MHV Record.UnadjustedHourlyValue >= 0)
        If (Current MHV Record.UnadjustedHourlyValue is not rounded to one decimal place)
            return result I
        else
            Calculated Unadjusted Value = Current MHV Record.UnadjustedHourlyValue
            Monitor Hourly Unadjusted Value Status = true

            if (Current MHV Max Min Value is not null)
                If ((Current MHV Parameter == "H2O" AND H2O Missing Data Approach == "MIN")
                OR Current MHV Parameter begins with "O2")
                    if (Current MHV Record.UnadjustedHourlyValue < Current MHV Max Min Value)
                        return result H
                    else
                        if (Current MHV Record.UnadjustedHourlyValue > Current MHV Max Min Value)
                            return result F

            Else
                return result E

```

= 08 OR = 09:

```

    If (Current MHV Record.UnadjustedHourlyValue >= 0)

        If (Current MHV HBHA Value is not null AND ((Current MHV Parameter == "H2O" AND H2O Missing Data Approach == "MIN") OR Current MHV Parameter begins with "O2") AND Current MHV HBHA Value < Current MHV Record.UnadjustedHourlyValue)
            Calculated Unadjusted Value = Current MHV HBHA Value
            return result J

        else if (Current MHV HBHA Value is not null AND ((Current MHV Parameter == "H2O" AND H2O Missing Data Approach == "MAX") OR Current MHV Parameter does not begin with "O2" or "H2O") AND Current MHV HBHA Value > Current MHV Record.UnadjustedHourlyValue)
            Calculated Unadjusted Value = Current MHV HBHA Value
            return result G

        else
            if (Current MHV Record.UnadjustedHourlyValue is not rounded to one decimal place)
                return result I
            else
                Calculated Unadjusted Value = Current MHV Record.UnadjustedHourlyValue
                Monitor Hourly Unadjusted Value Status = true

                if (Current MHV Max Min Value is not null)
                    If ((Current MHV Parameter == "H2O" AND H2O Missing Data Approach == "MIN")
                    OR Current MHV Parameter begins with "O2")
                        if (Current MHV Record.UnadjustedHourlyValue < Current MHV Max Min Value)
                            return result H
                        else

```

if (***Current MHV Record.UnadjustedHourlyValue*** > ***Current MHV Max Min Value***)

return result F

Else

return result E

= 46:

If (***Current MHV Record.UnadjustedHourlyValue*** != null)

return result M

= All Other Codes:

If (***Current MHV Record.UnadjustedHourlyValue*** >= 0)

If (***Current MHV Parameter*** in set {"H2O", "CO2C", "O2D", "O2W", "CO2CSD", "O2CSD"}) AND ***Current MHV Record.UnadjustedHourlyValue*** > 100)

return result E

else if (***Current MHV Record.UnadjustedHourlyValue*** is not rounded to one decimal place)

return result I

else if (***Current MHV Record.UnadjustedHourlyValue*** == 0 AND ***Current MHV Parameter*** == "CO2C" and ***Current Hourly Op Record.LoadRange*** is greater than 1,

return result L

else

***Calculated Unadjusted Value*** = ***Current MHV Record.UnadjustedHourlyValue***

***Monitor Hourly Unadjusted Value Status*** = true

if (***Current MHV Max Min Value*** is not null)

If ((***Current MHV Parameter*** == "H2O" AND ***H2O Missing Data Approach*** == "MIN") OR ***Current MHV Parameter*** begins with "O2")

if (***Current MHV Record.UnadjustedHourlyValue*** < ***Current MHV Max Min Value***)

return result H

else

if (***Current MHV Record.UnadjustedHourlyValue*** > ***Current MHV Max Min Value***)

return result F

Else

return result E

Whether or not there is a result returned:

If (***Calculated Unadjusted Value*** is not null)

case (***Current MHV Parameter***)

CO2C: ***CO2C MHV Calculated Adjusted Value*** = ***Calculated Unadjusted Value***

O2W: ***O2 Wet Calculated Adjusted Value*** = ***Calculated Unadjusted Value***

O2D: ***O2 Dry Calculated Adjusted Value*** = ***Calculated Unadjusted Value***

H2O: ***H2O MHV Calculated Adjusted Value*** = ***Calculated Unadjusted Value***

CO2CSD: ***CO2C SD Calculated Adjusted Value*** = ***Calculated Unadjusted Value***

O2CSD: ***O2C SD Calculated Adjusted Value*** = ***Calculated Unadjusted Value***

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an MODCCode of 21 in the MHV record for [param], but the UnadjustedHourlyValue does not equal 0.	Critical Error Level 1
B	You reported an MODCCode of [modc] in the MHV record for [param], but the UnadjustedHourlyValue does not equal the maximum potential value reported in the [comptype] span or default record in your monitoring plan.	Critical Error Level 1
C	You reported an MODCCode of 20 in the MHV record for [param], but the UnadjustedHourlyValue does not equal 200 percent of the FullScaleRange reported in the CO2 span record in your monitoring plan.	Critical Error Level 1
D	You reported an MODCCode of 06 in the MHV record for [param], but the UnadjustedHourlyValue does not equal average of measured hour before and measured hour after.	Critical Error Level 1
E	The UnadjustedHourlyValue reported in the MHV record for [param] is missing or invalid.	Critical Error Level 1
F	Warning: The UnadjustedHourlyValue reported in the MHV record for [param] is in excess of the maximum value listed in the monitoring plan. Sources are required to periodically (at least once annually) evaluate the appropriateness of these maximum values in the monitoring plan and make proper adjustments when necessary. Adjustments may include the need to update Span and/or Default values. You should investigate the cause of these exceedances and determine whether adjustments to your monitoring systems or monitoring plan are necessary.	Informational Message
G	You reported an MODCCode of [MODC] in the MHV record for [param], but you reported an UnadjustedHourlyValue that is less than the average of the measured hour before and measured hour after.	Critical Error Level 1
H	Warning: The UnadjustedHourlyValue reported in the MHV record for [param] is lower than the minimum value listed in the monitoring plan. Sources are required to periodically (at least once annually) evaluate the appropriateness of these minimum values in the monitoring plan and make proper adjustments when necessary. Adjustments may include the need to update Default values. You should investigate the cause of these low values and determine whether adjustments to your monitoring systems or monitoring plan are necessary.	Informational Message
I	You reported [fieldname] in the [type] record for [param] that is not rounded to the appropriate precision for that parameter.	Critical Error Level 1
J	You reported an MODCCode of [MODC] in the MHV record for [param], but you reported an UnadjustedHourlyValue that is greater than the average of the measured hour before and measured hour after.	Critical Error Level 1
K	You reported an MODCCode of 20 in the MHV record for [param], but the UnadjustedHourlyValue does not equal the default value reported in the O2X default record in your monitoring plan.	Critical Error Level 1
L	You have reported an UnadjustedHourlyValue of 0 in the MHV record for [param], but the LoadRange is greater than 1. Emissions for [param] should be greater than 0 when the unit (or stack) is operating at this load level.	Critical Error Level 1
M	You reported an UnadjustedHourlyValue with a MODCCode of [MODC] in the MHV record for [param]. MODCCode [MODC] requires a null UnadjustedHourlyValue.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- CO2C Monitor Hourly Evaluation for Substitute Data
3	Process/Category:	Emissions Data Evaluation Report ----- H2O Monitor Hourly Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Monitor Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Monitor Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- O2C Monitor Hourly Evaluation for Substitute Data

**Check Code:** HOURMHV-21

**Check Name:** Determine BAF Value for Monitoring System in MHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check retrieves and sets as an output parameter the Bias Adjustment factor for the Monitoring System

**Specifications:**

*Current SO2 System BAF* = null

*Current NOXC System BAF* = null

*Current FLOW System BAF* = null

*Continue* = true

If (*Current MHV Parameter* == "NOXC")

    If (*NOx Conc Needed for Nox Mass Calc* == false)

*Continue* == false

If (*Continue* == true AND *Monitor Hourly System Status* == true AND *Monitor Hourly Preadjusted Value Status* == true AND (*Current MHV Record.ModeCode* in set {01, 02, 03, 17, 18, 22, 53} OR (*Current MHV Record.ModeCode* in set {19, 20} AND *Current MHV Record.UnadjustedHourlyValue* is not null AND *Current MHV Max Min Value* is not null)))

    If (*RATA Status BAF* is not null)

        case (*Current MHV Parameter*)

            SO2C: *Current SO2 System BAF* = *RATA Status BAF*

            NOXC: *Current NOXC System BAF* = *RATA Status BAF*

            FLOW: *Current FLOW System BAF* = *RATA Status BAF*

    else

        return result A

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The BAF for [ParamCode] MonitoringSystemID [ID] cannot be determined, because the prior RATA had critical errors or because of a RATA Status error listed on this report.	Critical Error Level 1

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- NOXC RATA Status Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- SO2 RATA Status Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- Stack Flow RATA Status Evaluation

**Check Code:** HOURMHV-22

**Check Name:** Calculate Bias Adjusted Value in MHV Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check ensures that the reported Unadjusted Hourly Value multiplied by the BAF results in the reported Adjusted Hourly Value

**Specifications:**

case (*Current MHV Parameter*)

SO2C: *Current BAF* = *Current SO2 System BAF*

NOXC: *Current BAF* = *Current NOXC System BAF*

FLOW: *Current BAF* = *Current FLOW System BAF*

if (*Current BAF* is not null)

  If (*Current MHV Parameter* == "FLOW")

*Tolerance* = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
       Parameter = *Current MHV Parameter* AND  
       UOM = "SCFH"

*Calculated Adjusted Value* = *Current MHV Record*.UnadjustedHourlyValue \* *Current BAF*, and the result to the nearest 1000.

  else

*Tolerance* = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
       Parameter = *Current MHV Parameter* AND  
       UOM = "PPM"

*Calculated Adjusted Value* = *Current MHV Record*.UnadjustedHourlyValue \* *Current BAF*, and the result to one decimal place (0.1).

  If (*Current MHV Record*.ModcCode in set {19, 20} AND *Calculated Adjusted Value* > *Current MHV Max Min Value*)

    case (*Current MHV Parameter*)

      SO2C: *SO2C Calculated Adjusted Value* = *Current MHV Max Min Value*

      NOXC: *NOXC Calculated Adjusted Value* = *Current MHV Max Min Value*

      FLOW: *FLOW Calculated Adjusted Value* = *Current MHV Max Min Value*

    if (*Monitor Hourly Adjusted Value Status* == true)

      if (*Current MHV Record*.AdjustedHourlyValue <> *Current MHV Max Min Value*)

        If (*Current MHV Record*.ModcCode == 20)

          return result A

        else

          return result C

    else

    case (*Current MHV Parameter*)

      SO2C: *SO2C Calculated Adjusted Value* = *Calculated Adjusted Value*

      NOXC: *NOXC Calculated Adjusted Value* = *Calculated Adjusted Value*

      FLOW: *FLOW Calculated Adjusted Value* = *Calculated Adjusted Value*

    if (*Monitor Hourly Adjusted Value Status* == true)

      if ABS(*Calculated Adjusted Value* - *Current MHV Record*.AdjustedHourlyValue) > *Tolerance*

        return result B

  else

    case (*Current MHV Parameter*)

      SO2C: *SO2C Calculated Adjusted Value* = *Current MHV Calculated Adjusted Value*

      NOXC: *NOXC Calculated Adjusted Value* = *Current MHV Calculated Adjusted Value*

      FLOW: *FLOW Calculated Adjusted Value* = *Current MHV Calculated Adjusted Value*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an MODCCode of 20 in the MHV record for [param], but the AdjustedHourlyValue does not equal 200 percent of the FullScaleRange reported in the [comptype] span record in your monitoring plan.	Critical Error Level 1
B	The AdjustedHourlyValue reported in the MHV record for [param] is not equal to the UnadjustedHourlyValue times the BAF for the [systype] MonitoringSystemID [ID].	Critical Error Level 1
C	You reported an MODCCode of 19 in the MHV record for [param], but the AdjustedHourlyValue does not equal the DefaultHighRange reported in the [comptype] span record in your monitoring plan.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- NOXC RATA Status Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- SO2 RATA Status Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- Stack Flow RATA Status Evaluation

**Check Code:** HOURMHV-23

**Check Name:** Initialize CO2C Hourly Monitor for Substitute Data

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check sets generic parameter and output parameter for subsequent monitor hourly checks for CO2C for substitute data when two CO2C are submitted for the hour.

**Specifications:**

*Current MHV Parameter* = "CO2CSD"  
*CO2C SD Calculated Adjusted Value* = null

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2C Monitor Hourly Evaluation for Substitute Data
---	-------------------	---

**Check Code:** HOURMHV-24  
**Check Name:** Initialize O2C Hourly Monitor for Substitute Data

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check sets generic parameter and output parameter for subsequent monitor hourly checks for O2C for substitute data when two O2C with the same moisture basis are submitted for the hour.

**Specifications:**

*Current MHV Parameter* = "O2CSD"  
*O2C SD Calculated Adjusted Value* = null

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- O2C Monitor Hourly Evaluation for Substitute Data
---	-------------------	--



**Check Code:** HOURMHV-26

**Check Name:** Determine if MHV Record Needs QA Status Evaluation

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Determine if MHV Record Needs QA Status Evaluation

**Specifications:**

Set *LinearityStatusRequired* = false.  
 Set *Current Linearity Status* = null.  
 Set *RATAStatusRequired* = false.  
 Set *Current RATA Status* = null.  
 Set *RATA Status BAF* = null.  
 Set *DailyCalStatusRequired* = false  
 Set *Current Daily Cal Status* = null.  
 Set *F2L Status Required* = false.  
 Set *Daily Int Status Required* = false  
 Set *Leak Status Required* = false

Set *QaStatusComponentId* = *CurrentMHVRecord.ComponentId*  
 Set *QaStatusComponentIdentifier* = *CurrentMHVRecord.ComponentIdentifier*  
 Set *QaStatusComponentTypeCode* = *CurrentMHVRecord.ComponentTypeCode*  
 Set *QaStatusSystemDesignationCode* = *CurrentMHVRecord.SystemDesignationCode*  
 Set *QaStatusSystemId* = *CurrentMHVRecord.SystemId*  
 Set *QaStatusSystemIdentifier* = *CurrentMHVRecord.SystemIdentifier*  
 Set *QaStatusSystemTypeCode* = *CurrentMHVRecord.SystemTypeCode*

If ( *PrimaryBypassActiveForHour* is false )

Set *QaStatusPrimaryOrPrimaryBypassSystemId* = null.

Else If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord* is not null )

Set *QaStatusPrimaryOrPrimaryBypassSystemId* = *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.SystemId*.

Else If ( *CurrentNoxRateDerivedHourlyRecord* is not null )

Count records in *MonitorSystemComponentRecordsByHourLocation* where:

- 1) ComponentId equals *QaStatusComponentId*.
- 2) SystemId equals *CurrentNoxRateDerivedHourlyRecord.SystemId*.

If ( count is greater than 0 )

Set *QaStatusPrimaryOrPrimaryBypassSystemId* = *CurrentNoxRateDerivedHourlyRecord.SystemId*.

Else

Set *QaStatusPrimaryOrPrimaryBypassSystemId* = null.

Else

Set *QaStatusPrimaryOrPrimaryBypassSystemId* = null.

Locate the record in *MonitorSystemComponentRecordsByHourLocation* with the earliest BeginDate/BeginHour and ComponentId equal to *QaStatusComponentId*.

If found,

Set *QaStatusComponentBeginDate* = *MonitorSystemComponentRecordsByHourLocation.BeginDate*

Set *QaStatusComponentBeginDatehour* = *MonitorSystemComponentRecordsByHourLocation.BeginDatehour*

Else

Set *QaStatusComponentBeginDate* = null.  
Set *QaStatusComponentBeginDatehour* = null.

if (*Monitor Hourly Mode Status* == true AND  
    (*CurrentMHVRecord*.ModeCode in set {01, 02, 03, 17, 18, 21, 22, 47, 53} OR  
    (*CurrentMHVRecord*.ModeCode in set {19, 20} AND *CurrentMHVRecord*.UnadjustedHourlyValue is not null AND  
    *Current MHV Max Min Value* is not null)))

if (*MonitorHourlyComponentStatus* = true AND *CurrentMHVRecord*.ComponentID is not null AND *CurrentMHVParameter* in  
set {SO2C, NOXC, CO2C, O2D, O2W} )

    Set *LinearityStatusRequired* = true.  
    Set *DailyCalStatusRequired* = true.

if (*MonitorHourlyComponentStatus* = true AND *CurrentMHVRecord*.ComponentID is not null AND *CurrentMHVParameter* in  
set {FLOW} )

    Set *DailyCalStatusRequired* = true.  
    Set *Daily Int Status Required* = true.

    If *CurrentMHVRecord*.SampleAcquisitionMethodCd = "DP"  
        Set *Leak Status Required* = true.

if (*MonitorHourlySystemStatus* = true AND *CurrentMHVRecord*.MonitoringSystemID is not null AND  
*CurrentMHVRecord*.SystemTypeCode is in {SO2, NOXC, FLOW, H2OM} )

    Set *RATAStatusRequired* = true.  
    Set *CurrentHourlyRecordforRATAStatus* = *Current MHV Record*.

    if *CurrentMHVRecord*.SystemTypeCode is equal to 'FLOW',

        Set *F2L Status Required* = true.

else if ((*CO2 Conc Checks Needed for Heat Input* == true AND *CurrentMHVParameter* == "CO2C") OR (*O2 Wet Checks  
Needed for Heat Input* == true AND *CurrentMHVParameter* == "O2W") OR (*O2 Dry Checks Needed for Heat Input* == true  
AND *CurrentMHVParameter* == "O2D"))

    Set *CO2RATAResultRequired* = true.

if (*RATA Status Required* == false AND *Current MHV Parameter* in {SO2C, NOXC, FLOW})

    case (*Current MHV Parameter*)

        SO2C: *SO2C Calculated Adjusted Value* = *Current MHV Calculated Adjusted Value*  
        NOXC: *NOXC Calculated Adjusted Value* = *Current MHV Calculated Adjusted Value*  
        FLOW: *FLOW Calculated Adjusted Value* = *Current MHV Calculated Adjusted Value*

if (*LinearityStatusRequired* == true OR *DailyCalStatusRequired* == true)

    Set *DualRangeStatus* = false.  
    Set *CurrentAnalyzerRangeUsed* = null.  
    Set *ApplicableSystemIDs* = null.  
    Set *HighRangeComponentID* = null.  
    Set *LowRangeComponentID* = null.

if (*CurrentMHVParameter* == "FLOW")

```
    Set ApplicableComponentID = Current MHV Record.ComponentID
else

    Set ApplicableComponentID = null.

    Locate a record in AnalyzerRangeRecordsByHourLocation for the hour and location where the ComponentID is equal to
    the CurrentMHVRecord.ComponentID.

    if (AnalyzerRangeRecordsByHourLocation is not found OR if more than one AnalyzerRangeRecordsByHourLocation is
    found)

        set Linearity Status Required == false
        set DailyCalStatusRequired = false
        return result A

    else

        if (AnalyzerRangeRecordsByHourLocation.DualRangeIndicator = 1)

            Set DualRangeStatus = true.

            if (Analyzer Range Record.AnalyzerRangeCode = "A")

                Locate the record in MonitorSpanRecordsByHourLocation for the hour and location where the
                ComponentTypeCode is equal to the CurrentMHVRecord.ComponentTypeCode and the
                SpanScaleCode is equal to "L".

                if (MonitorSpanRecordsByHourLocation is not found OR if more than one
                MonitorSpanRecordsByHourLocation is found OR if the
                MonitorSpanRecordsByHourLocation.ScaleTransitionPoint is null or <= 0)

                    set Linearity Status Required == false
                    set DailyCalStatusRequired = false
                    return result B

                else if (MonitorSpanRecordsByHourLocation is found AND
                CurrentMHVRecord.UnadjustedHourlyValue >
                MonitorSpanRecordsByHourLocation.ScaleTransitionPoint AND
                CurrentMHVRecord.ModeCode <> "18")

                    Set CurrentAnalyzerRangeUsed = "H".
                    Set HighRangeComponentID = CurrentMHVRecord.Component ID.
                    Set LowRangeComponentID = CurrentMHVRecord.Component ID.

                else

                    Set CurrentAnalyzerRangeUsed = "L".
                    Set HighRangeComponentID = CurrentMHVRecord.Component ID.
                    Set LowRangeComponentID = CurrentMHVRecord.Component ID.

                else

                    Set CurrentAnalyzerRangeUsed =
                    AnalyzerRangeRecordsByHourLocation.AnalyzerRangeCode.

                    if (AnalyzerRangeRecordsByHourLocation.AnalyzerRangeCode = "H")

                        Locate a record in AnalyzerRangeRecordsByHourLocation for the hour and location
```

where the *ComponentTypeCode* is equal to the *CurrentMHVRecord.ComponentTypeCode* and the *AnalyzerRangeCode* is equal to "L" AND the *ComponentSerialNumber* is equal to the *CurrentMHVRecord.ComponentSerialNumber* (removing the phrases "HIGH", "HI", "LOW", and "LO").

if (*AnalyzerRangeRecordsByHourLocation* is not found OR if more than one *AnalyzerRangeRecordsByHourLocation* is found)

set *Linearity Status Required* == false  
 set *DailyCalStatusRequired* = false  
 return result C

else If (*AnalyzerRangeRecordsByHourLocation* is found)

Set *HighRangeComponentID* = *CurrentMHVRecord.Component ID*.  
 Set *LowRangeComponentID* =  
*AnalyzerRangeRecordsByHourLocation.Component ID*.

else if (*CurrentMHVRecord.AnalyzerRangeCode* = "L")

Locate a record in *AnalyzerRangeRecordsByHourLocation* for the *CurrentMHVRecord.Hour* where the *ComponentTypeCode* is equal to the *CurrentMHVRecord.ComponentTypeCode* and the *AnalyzerRangeCode* is equal to "H" AND the *ComponentSerialNumber* is equal to the *CurrentMHVRecord.ComponentSerialNumber* (removing the phrases "HIGH", "HI", "LOW", and "LO").

if (*AnalyzerRangeRecordsByHourLocation* is not found OR if more than one *AnalyzerRangeRecordsByHourLocation* is found)

set *Linearity Status Required* == false  
 set *DailyCalStatusRequired* = false  
 return result C

else If (*AnalyzerRangeRecordsByHourLocation* is found)

Set *LowRangeComponentID* = *CurrentMHVRecord.Component ID*.  
 Set *HighRangeComponentID* =  
*AnalyzerRangeRecordsByHourLocation.Component ID*.

else

Set *CurrentAnalyzerRangeUsed* = *AnalyzerRangeRecordsByHourLocation.AnalyzerRangeCode*.

if (*CurrentAnalyzerRangeUsed* = "H")

Set *HighRangeComponentID* = *CurrentMHVRecord.Component ID*.

else

Set *LowRangeComponentID* = *CurrentMHVRecord.Component ID*.

if (*CurrentAnalyzerRangeUsed* = "H")

Set *ApplicableComponentID* = *HighRangeComponentID*.

else

Set *ApplicableComponentID* = *LowRangeComponentID*.

For each record in *MonitorSystemComponentRecordsByHourLocation* where the *ComponentID* is equal to the

***ApplicableComponentID***

Append ***MonitorSystemComponentRecordsByHourLocation***.SystemID to ***ApplicableSystemIDs***.

if (***MonitorSystemComponentRecordsByHourLocation*** is not found)

set ***Linearity Status Required*** == false

set ***DailyCalStatusRequired*** = false

return result D

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report one (and only one) valid Analyzer Range record in your monitoring plan for ComponentID [COMPID] for this hour. The QA Status of the linearity and/or daily calibration tests for this component will not be evaluated.	Critical Error Level 1
B	You reported that ComponentID [COMPID] is a dual-range analyzer, but you did not report one (and only one) active low-scale [COMPTYPE] span record with a valid ScaleTransitionPoint in your monitoring plan for this hour. The QA Status of the linearity and/or daily calibration tests for this component will not be evaluated.	Critical Error Level 1
C	You reported that ComponentID [COMPID] is a dual-range analyzer, but the program could not identify the alternate range component in your monitoring plan. The QA Status of the linearity and/or daily calibration tests for this component will not be evaluated.	Critical Error Level 1
D	You did not report any System Component records for ComponentID [compid] in your monitoring plan for the hour. The QA Status of the linearity and/or daily calibration tests for this component will not be evaluated.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- FLOW Monitor Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- H2O Monitor Hourly Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- NOx Concentration Monitor Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOXR Unused P-PB Monitor Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Monitor Hourly Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Monitor Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- SO2 Monitor Hourly Evaluation

**Check Code:** HOURMHV-27

**Check Name:** Determine MHV Measure Code

**Related Former Checks:**

**Applicability:** CEM Check

**Description:**

**Specifications:**

If (*Current MHV Parameter* == "CO2CSD")  
     Set *Monitor Measure Code Array* for "CO2C" to "SUB"

else If (*Current MHV Parameter* == "O2CSD")  
     Set *Monitor Measure Code Array* for "O2D" to "SUB"  
     Set *Monitor Measure Code Array* for "O2W" to "SUB"

else if (*Current MHV Parameter* in set {SO2C, NOXC, CO2C, O2D, O2W, FLOW, H2O} AND *Monitor Measure Code Array* for the *Current MHV Parameter* is null)  
     If (*Current MHV Record.ModeCode* in set {01, 02, 03, 04, 05, 16, 17, 19, 20, 21, 22, 53, 54})  
         Set *Monitor Measure Code Array* for the *Current MHV Parameter* to "MEASURE"  
     else if (*Current MHV Record.ModeCode* in set {06, 07, 08, 09, 10, 11, 12, 13, 15, 23, 24, 55})  
         Set *Monitor Measure Code Array* for the *Current MHV Parameter* to "SUB"  
     else if (*Current MHV Record.ModeCode* == "18")  
         Set *Monitor Measure Code Array* for the *Current MHV Parameter* to "MEASSUB"

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- CO2C Monitor Hourly Evaluation for Substitute Data
3	Process/Category:	Emissions Data Evaluation Report ----- FLOW Monitor Hourly Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- H2O Monitor Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOx Concentration Monitor Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Monitor Hourly Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Monitor Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- O2C Monitor Hourly Evaluation for Substitute Data
9	Process/Category:	Emissions Data Evaluation Report ----- SO2 Monitor Hourly Evaluation

**Check Code:** HOURMHV-28

**Check Name:** Check Maximum Concentration Percentage Threshold

**Related Former Checks:**

**Applicability:** General Check

**Description:** Checks the percentage reported for CO2C and O2C to ensure they do not exceed 16% and 22% respectively.

**Specifications:**

When *CurrentMhvParameter* equals

"CO2C" or "CO2CSD" then,

If *CurrentMhvRecord*.ModcCode is equal to "01" or "02", AND *CurrentMhvRecord*.UnadjustedHourlyValue is greater than 16%,

return result A.

"O2D", "O2W" or "O2CSD" then,

If *CurrentMhvRecord*.ModcCode is equal to "01" or "02", AND *CurrentMhvRecord*.UnadjustedHourlyValue is greater than 22%,

return result B.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The CO2 concentration cannot exceed 16%.	Informational Message
B	The O2 concentration cannot exceed 22%.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- CO2C Monitor Hourly Evaluation for Substitute Data
3	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Monitor Hourly Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Monitor Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- O2C Monitor Hourly Evaluation for Substitute Data

**Check Code:** HOURMHV-29

**Check Name:** NOxR Primary/Primary Bypass: Initialization by Parameter Code

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Initializes check parameters based on the ParameterCode of the NOxR Primary/Primary Bypass MHV record.

**Specifications:**

Set *CurrentMhvRecord* to *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.

Set *CurrentMhvComponentType* to null.

Set *CurrentMhvDefaultParameter* to null.

Set *CurrentMhvParameter* to null.

Set *CurrentMhvParameterDescription* to null.

Set *CurrentMhvParameterStatus* to false.

Set *CompleteMhvRecordNeeded* to false.

Set *CurrentMhvFuelSpecificHour* to false.

Set *CurrentMhvHbHaValue* to null.

Set *CurrentMhvSystemType* to null.

Set *MonitorHourlyModcStatus* to true.

When *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.ParameterCd equals

"CO2C":

If ( *Co2DiluentChecksNeededForNoxRateCalc* is true )

Set *CurrentMhvComponentType* to "CO2".

Set *CurrentMhvDefaultParameter* to "CO2X".

Set *CurrentMhvParameter* to "CO2C".

Set *CurrentMhvParameterDescription* to "CO2C".

Set *CurrentMhvParameterStatus* to true.

Else

Return result B.

"NOXC":

Set *CurrentMhvComponentType* to "NOX".

Set *CurrentMhvDefaultParameter* to "NOCX".

Set *CurrentMhvParameter* to "NOXC".

Set *CurrentMhvParameterDescription* to "NOXC".

Set *CurrentMhvParameterStatus* to true.

"O2C":

If ( *O2DryChecksNeededForNoxrRateCalc* is true ) AND ( *O2WetChecksNeededForNoxrRateCalc* is NOT true )

Set *CurrentMhvComponentType* to "O2".

Set *CurrentMhvDefaultParameter* to "O2N".

Set *CurrentMhvParameter* to "O2D".

Set *CurrentMhvParameterDescription* to "O2 Dry".

Set *CurrentMhvParameterStatus* to true.



Else If ( *O2DryChecksNeededForNoxrRateCalc* is NOT true ) AND ( *O2WetChecksNeededForNoxrRateCalc* is true )

Set *CurrentMhvComponentType* to "O2".  
Set *CurrentMhvDefaultParameter* to "O2N".  
Set *CurrentMhvParameter* to "O2W".  
Set *CurrentMhvParameterDescription* to "O2 Wet".

Set *CurrentMhvParameterStatus* to true.

Else

Return result C.

Otherwise

Return result A.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	MODC [modcCd] is invalid for MHV parameter [parameterCd].	Critical Error Level 1
B	You reported a [parameterCd] MHV record for MODC [modcCd], but [parameterCd] is not required for NOXR.	Critical Error Level 1
C	You reported a [parameterCd] MHV record for MODC [modcCd], but [parameterCd] is not required for NOXR.	Critical Error Level 1

#### Usage:

1      Process/Category:      Emissions Data Evaluation Report ----- NOXR Unused P-PB Monitor Hourly Evaluation

**Check Code:** HOURMHV-30

**Check Name:** NOxR Primary/Primary Bypass: Component Check

**Related Former Checks:** HOURMHV-15

**Applicability:** CEM Check

**Description:** Validates the component for the MHV record.

**Specifications:**

Set *MonitorHourlyComponentStatus* to false.

Set *MonitorHourlySystemStatus* to false.

If ( *CurrentMhvParameterStatus* is true )

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.ComponentId* is null )

Return result A.

Else If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.ComponentTypeCode* does NOT equal *CurrentMhvComponentType* )

Return result B.

Else

Set *MonitorHourlyComponentStatus* to true.

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.NotReportedNoxrSystemCount* does NOT equal 1 )

Return result C.

Else

Set *MonitorHourlySystemStatus* to true.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not reported a ComponentID in the MHV record for [parameterCd] and MODC [modcCd].	Critical Error Level 1
B	You reported [reportedComponentType] ComponentID [componentIdentifier] in the MHV record for [parameterCd] and MODC [modcCd], but a [expectedComponentType] component is expected.	Critical Error Level 1
C	You reported ComponentID [componentIdentifier] in the MHV record for [parameterCd] and MODC [modcCd]. This component was used to determine the reported value in the NOx emission rate DHV record and therefore cannot report MODC "47" or "48".	Critical Error Level 1

#### Usage:

1      Process/Category:      Emissions Data Evaluation Report ----- NOXR Unused P-PB Monitor Hourly Evaluation

**Check Code:** HOURMHV-31

**Check Name:** NOxR Primary/Primary Bypass: Determine Maximum Allowed Parameter Value

**Related Former Checks:** HOURMHV-18

**Applicability:** CEM Check

**Description:** Determines the maximum value allowed value for CO2C, NOXC or O2C for MODC 47.

**Specifications:**

Set *CurrentMhvMaxMinValue* to null.

Set *CurrentNoxrPrimaryOrPrimaryBypassMhvMaxValueDescription* to null

If ( *CurrentMhvParameterStatus* is true ) AND ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.ModcCode equals "47" )

When *CurrentMhvParameter* equals

"CO2C":

Set *CurrentNoxrPrimaryOrPrimaryBypassMhvMaxValueDescription* to "CO2 Span High Range".

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.HighSpanCount equals 0 )

Return result A.

Else If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.HighSpanCount is greater than 1 )

Return result B.

Else

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.HighSpanFullScaleRange is NOT null )

Set *MaxValue* to ( 2 \*

*CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.HighSpanFullScaleRange ).

Else

Set *MaxValue* to null.

If ( *MaxValue* is null ) OR (

*CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.HighSpanDefaultHighRange is not null and is greater than *MaxValue* )

Set *MaxValue* to

*CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.HighSpanDefaultHighRange.

If ( *MaxValue* is NOT null AND is greater than 0 )

Set *CurrentMhvMaxMinValue* to *MaxValue*.

Else

Return result C.

"NOXC":

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.HighSpanCount equals 0 ) AND ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.LowSpanCount equals 0 )

Set *CurrentNoxrPrimaryOrPrimaryBypassMhvMaxValueDescription* to "NOX Span".

Return result D.

Else If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.HighSpanCount is greater than 1 ) OR ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.LowSpanCount is greater than 1 )

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.HighSpanCount is greater than 1 ) AND ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.LowSpanCount equals 0 )

Set *CurrentNoxrPrimaryOrPrimaryBypassMhvMaxValueDescription* to "NOX Span High Range".

Else If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.HighSpanCount equals 0 ) AND (

---

**CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.LowSpanCount** is greater than 1 )  
Set **CurrentNoxrPrimaryOrPrimaryBypassMhvMaxValueDescription** to "NOX Span Low Range".

Else  
Set **CurrentNoxrPrimaryOrPrimaryBypassMhvMaxValueDescription** to "NOX Span".

Return result E.

Else

If ( **CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.HighSpanDefaultHighRange** is not null )

Set **CurrentNoxrPrimaryOrPrimaryBypassMhvMaxValueDescription** to "NOX Span Low Range".

If ( **CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.LowSpanFullScaleRange** is NOT null )  
Set **MaxValue** to ( 2 \*  
**CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.LowSpanFullScaleRange** ).

Else  
Set **MaxValue** to null.

If ( **MaxValue** is null ) OR ( **CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.HighSpanDefaultHighRange** is greater than **MaxValue** )

Set **CurrentNoxrPrimaryOrPrimaryBypassMhvMaxValueDescription** to "NOX Span High Range".  
Set **MaxValue** to  
**CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.HighSpanDefaultHighRange**.

Else  
Set **CurrentNoxrPrimaryOrPrimaryBypassMhvMaxValueDescription** to "NOX Span High Range".

If ( **CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.HighSpanFullScaleRange** is NOT null )  
Set **MaxValue** to ( 2 \*  
**CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.HighSpanFullScaleRange** ).

Else  
Set **MaxValue** to null.

If ( **MaxValue** is NOT null AND is greater than 0 )

Set **CurrentMhvMaxMinValue** to **MaxValue**.

Else  
Return result F.

"O2D" or "O2W":

Set **CurrentMhvMaxMinValue** to 0.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report an applicable [description] record in your monitoring plan that is active for the hour.	Critical Error Level 1
B	You reported more than one applicable [description] record in your monitoring plan that is active for the hour.	Critical Error Level 1
C	The values reported in the applicable [description] record are invalid.	Critical Error Level 1
D	You did not report an applicable [description] record in your monitoring plan that is active for the hour.	Critical Error Level 1
E	You reported more than one applicable [description] record in your monitoring plan that is active for the hour.	Critical Error Level 1
F	The values reported in the applicable [description] record are invalid.	Critical Error Level 1
G	You did not report an applicable [description] record in your monitoring plan that is active for the hour.	Critical Error Level 1
H	You reported more than one applicable [description] record in your monitoring plan that is active for the hour.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- NOXR Unused P-PB Monitor Hourly Evaluation

**Check Code:** HOURMHV-32

**Check Name:** NOxR Primary/Primary Bypass:Extraneous Data Check

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Ensures that unexpected data is not reported.

**Specifications:**

Set *CurrentMhvExtraneousFields* to "".

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.AdjustedHourlyValue is NOT null )  
Append "AdjustedHourlyValue" to *CurrentMhvExtraneousFields*.

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.MositureBasis is NOT null )  
Append "MositureBasis" to *CurrentMhvExtraneousFields*.

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.MonitorSystemID is NOT null )  
Append "MonitorSystemID" to *CurrentMhvExtraneousFields*.

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.PercentAvailable is NOT null )  
Append "PercentAvailable" to *CurrentMhvExtraneousFields*.

If ( *CurrentMhvExtraneousFields* does NOT equal "" )  
Return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported [extraneousFields] in the MHV record for [parameterCd] and MODC [modcCd]. This data should be blank.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- NOXR Unused P-PB Monitor Hourly Evaluation
---	-------------------	---

**Check Code:** HOURMHV-33

**Check Name:** NOxR Primary/Primary Bypass:Unadjusted Value Check

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Checks the reported unadjusted hourly value.

**Specifications:**

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.UnadjustedHourlyValue is null )

    If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.ModcCode equals "47"

        Return result A.

Otherwise

    If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.ModcCode equals "48" )

        Return result B.

    Else If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.UnadjustedHourlyValue is less than 0.0 )

        Return result C.

    Else If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.UnadjustedHourlyValue is NOT rounded to 1 decimal place )

        Return result D.

    Else If ( *CurrentMhvParameter* equals "CO2C" ) AND ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.UnadjustedHourlyValue is greater than 16.0 )

        Return result E.

    Else If ( *CurrentMhvParameter* in set { "O2D", "O2W" } ) AND ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.UnadjustedHourlyValue is greater than 22.0 )

        Return result F.

    Else If ( *CurrentMhvParameter* equals "CO2C" ) AND ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.UnadjustedHourlyValue equals 0.0 ) AND ( *CurrentHourlyOpRecord*.LoadRange is greater than 1 )

        Return result G.

    Else If ( *CurrentMhvParameter* in set { "CO2C", "NOXC" } ) AND ( *CurrentMhvMaxMinValue* is NOT null ) AND ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.UnadjustedHourlyValue is greater than *CurrentMhvMaxMinValue* )

        Return result H.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	An UnadjustedHourlyValue is required for [parameterCd] with MODC [modcCd].	Critical Error Level 1
B	An UnadjustedHourlyValue is not appropriate for [parameterCd] with MODC [modcCd].	Critical Error Level 1
C	The reported UnadjustedHourlyValue of [unadjustedHourlyValue] in the MHV record with parameter [parameterCd] and MODC [modcCd] has a negative value.	Critical Error Level 1
D	The reported UnadjustedHourlyValue of [unadjustedHourlyValue] in the MHV record with parameter [parameterCd] and MODC [modcCd] is not rounded to one decimal place.	Critical Error Level 1
E	The reported concentration of [unadjustedHourlyValue] in the MHV record with parameter [parameterCd] and MODC [modcCd] cannot exceed 16%.	Critical Error Level 1
F	The reported concentration of [unadjustedHourlyValue] in the MHV record with parameter [parameterCd] and MODC [modcCd] cannot exceed 22%.	Critical Error Level 1
G	The UnadjustedHourlyValue of 0 was reported in the MHV record with parameter [parameterCd] and MODC [modcCd], but the LoadRange is greater than 1. Emissions for [parameterCd] should be greater than 0 when the unit (or stack) is operating at this load level.	Critical Error Level 1
H	Warning: The reported UnadjustedHourlyValue of [unadjustedHourlyValue] in the MHV record with parameter [parameterCd] and MODC [modcCd] is in excess of the maximum value listed in the monitoring plan. Sources are required to periodically (at least once annually) evaluate the appropriateness of these maximum values in the monitoring plan and make proper adjustments when necessary. Adjustments may include the need to update Span and/or Default values. You should investigate the cause of these exceedances and determine whether adjustments to your monitoring systems or monitoring plan are necessary.	Informational Message

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- NOXR Unused P-PB Monitor Hourly Evaluation



**Check Code:** HOURMHV-34

**Check Name:** NOxR Primary/Primary Bypass:Primary Bypass Active Check

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Ensures that an active Primary Bypass NOx system exists for the current loaction and hour.

**Specifications:**

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.PrimaryBypassExistsIndicator does NOT equal 1 )

Return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	An MHV record for [parameterCd] with MODC [modcCd] was reported, but reporting MODC [modcCd] is only appropriate when a primary bypass system exists at the unit.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- NOXR Unused P-PB Monitor Hourly Evaluation

**Check Code:** HOURMHV-35

**Check Name:** NOxR Primary/Primary Bypass:Missing Expected MHV Records Check

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Indicates whether expected used and unused NOXC and diluent MHV records are missing.

**Specifications:**

Set *CurrentMhvMissing* to "".

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.PrimaryBypassExistsIndicator* equals 1 )

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.UsedNoxcCount* equals 0 )

Append "Used NOXC" to *CurrentMhvMissing*.

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.UsedDiluentCount* equals 0 )

Append "Used CO2C/O2C" to *CurrentMhvMissing*.

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.UnusedNoxcCount* equals 0 )

Append "Unused NOXC" to *CurrentMhvMissing*.

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.UnusedDiluentCount* equals 0 )

Append "Unused CO2C/O2C" to *CurrentMhvMissing*.

If ( *CurrentMhvMissing* does NOT equal "" )

Return result A.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	A MHV record for NOXC or diluent (CO2C/O2C) included MODC "47" or "48", but [missingList] MHV was/were not reported. Reporting MODC "47" or "48" requires the reporting of both a NOXC and diluent MHV with the same "unused" MODC, either "47" or "48". It also requires the reporting of NOXC and diluent MHV that do not contain MODC "47" or "48".	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- NOXR Unused P-PB Monitor Hourly Evaluation

**Check Code:** HOURMHV-36

**Check Name:** NOxR Primary/Primary Bypass:Duplicate Expected MHV Records Check

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Indicates whether multiple expected used and unused NOXC and diluent MHV records were reported.

**Specifications:**

Set *CurrentMhvDuplicate* to "".

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.PrimaryBypassExistsIndicator equals 1 )

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.UsedNoxcCount is greater than 1 )  
Append "Used NOXC" to *CurrentMhvDuplicate*.

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.UsedDiluentCount is greater than 1 )  
Append "Used CO2C/O2C" to *CurrentMhvDuplicate*.

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.UnusedNoxcCount is greater than 1 )  
Append "Unused NOXC" to *CurrentMhvDuplicate*.

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.UnusedDiluentCount is greater than 1 )  
Append "Unused CO2C/O2C" to *CurrentMhvDuplicate*.

If ( *CurrentMhvDuplicate* does NOT equal "" )  
Return result A.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	A MHV record for NOXC or diluent (CO2C/O2C) included MODC "47" or "48", but duplicate MHV records were reported for [duplicateList]. Reporting MODC "47" or "48" requires the reporting of both a NOXC and diluent MHV with the same "unused" MODC, either "47" or "48". It also requires the reporting of NOXC and diluent MHV that do not contain MODC "47" or "48". However, only one record is required for each.	Critical Error Level 1

#### Usage:

1      Process/Category:      Emissions Data Evaluation Report ----- NOXR Unused P-PB Monitor Hourly Evaluation

**Check Code:** HOURMHV-37

**Check Name:** NOxR Primary/Primary Bypass:Compare Unused MODC

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Ensures that the unused MODC for NOXC and CO2C/O2C MHV are the same.

**Specifications:**

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.PrimaryBypassExistsIndicator* equals 1 )

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.UnusedNoxcCount* equals 1 ) AND ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.UnusedDiluentCount* equals 1 )

If ( *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.UnusedNoxcModcCode* does NOT equal *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord.UnusedDiluentModcCode* )

Return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The MHV records for NOXC and a diluent (CO2C/O2C) reported MODC "47" or "48", but did not report the same MODC which is required.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- NOXR Unused P-PB Monitor Hourly Evaluation
---	-------------------	---

**Check Code:** HOURMHV-38

**Check Name:** NOxR Primary/Primary Bypass:Update Supplemental Counts

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Performs System Op Supp Data (and QA Cert Event Supp Data) updates for the NOXR system that was not reported.

Performs Component Op Supp Data (and QA Cert Event Supp Data) updates for the component reported in the MODC 47 or 48 MHV record.

Performs Last QA Value Supp Data updates for the component reported in the MODC 47 record.

**Specifications:**

If *DerivedHourlyChecksNeeded* is true AND *CurrentOperatingTime* is greater than 0,

If ( *MonitorHourlySystemStatus* equals true )

Perform the updates in HOUROP-48 for *SystemOperatingSuppDataDictionaryArray* with:

- 1) *HourlyRecord*..MonitoringSystemID replaced by *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*..NotReportedNoxMonitoringSystemID.
- 2) *HourlyRecord*..ModcCode replaced by *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*..ModcCode.

If ( *MonitorHourlySystemStatus* equals true )

Perform the updates in HOUROP-49 for *ComponentOperatingSuppDataDictionaryArray* with:

- 1) *HourlyRecord*..ComponentID replaced by *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*..ComponentID.
- 2) *HourlyRecord*..ModcCode replaced by *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*..ModcCode.

Perform the updates in HOUROP-50 for *LastQaValueSuppDataDictionaryArray* with:

- 1) *HourlyRecord*..MonitoringSystemID replaced by null.
- 3) *HourlyRecord*..ModcCode replaced by *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*..ModcCode.
- 4) *HourlyTypeCode* set to "MONITOR".
- 5) *MoistureBasis* set to *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*..MoistureBasis.
- 6) *ComponentKey* set to *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*..ComponentID.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- NOXR Unused P-PB Monitor Hourly Evaluation
---	-------------------	---

**Check Code:** HOURMHV-39

**Check Name:** NOxR Primary/Primary Bypass:Set Not Reported NOXR QA Status Information

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Sets the check parameters needed to perform RATA status checks for the "not reported" NOX system for NOXR.

**Specifications:**

Set *QaStatusComponentId* to null.

Set *QaStatusComponentIdentifier* to null.

Set *QaStatusComponentTypeCode* to null.

Set *QaStatusHourlyParameterCd* to "NOXR".

Set *QaStatusSystemDesignationCode* to *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.NotReportedSystemDesignationCode.

Set *QaStatusSystemId* to *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.NotReportedSystemId.

Set *QaStatusSystemIdentifier* to *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.NotReportedSystemIdentifier.

Set *QaStatusSystemTypeCode* to *CurrentNoxrPrimaryOrPrimaryBypassMhvRecord*.NotReportedSystemTypeCode.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- NOXR Unused P-PB NOX RATA Status Initialization
---	-------------------	--

**Check Code:** HOURMHV-40

**Check Name:** Initialize QA Status Evaluation for Flow Averaging Component

**Related Former Checks:**

**Applicability:** General Check

**Description:** Determines whether Daily Calibration, Daily Interference and Leak status checks need to run for components involved with Flow reported using Dual Flow (X-Pattern Flow) monitoring systems.

**Specifications:**

Set *DailyCalStatusRequired* to false

Set *DailyIntStatusRequired* to false

Set *LeakStatusRequired* to false

Set *ApplicableComponentId* to null

Set *CurrentAnalyzerRangeUsed* to null.

Set *CurrentDailyCalStatus* to null.

Set *DualRangeStatus* to false.

Set *HighRangeComponentId* to null.

Set *LowRangeComponentId* to null.

Set *QaStatusComponentBeginDate* to null.

Set *QaStatusComponentBeginDatehour* to null.

Set *QaStatusComponentId* to null

Set *QaStatusComponentIdentifier* to null

Set *QaStatusComponentTypeCode* to null

Set *QaStatusPrimaryOrPrimaryBypassSystemId* to null.

When:

- 1) *CurrentMHVParameter* equals "FLOW".
- 2) *FlowAveragingComponentReecord* is NOT null.
- 3) *FlowAveragingComponentReecord*.ComponentId is NOT null.
- 4) *MonitorHourlyComponentStatus* is true.
- 5) *CurrentMhvRecord*.ComponentId is null.
- 6) *MonitorHourlyModcStatus* is true.
- 7) And either:
  - a) *CurrentMhvRecord*.ModcCode in set {01, 02, 03, 53}
  - OR
  - a) *CurrentMhvRecord*.ModcCode equals "20".
  - b) *CurrentMhvRecord*.UnadjustedHourlyValue is NOT null.
  - c) *CurrentMhvMaxMinValue* is not null.

Then:

Set *QaStatusComponentId* to *FlowAveragingComponentRecord*.ComponentId.

Set *QaStatusComponentIdentifier* to *FlowAveragingComponentRecord*.ComponentIdentifier.

Set *QaStatusComponentTypeCode* to *FlowAveragingComponentRecord*.ComponentTypeCode.

Set *ApplicableComponentId* to *FlowAveragingComponentRecord*.ComponentId.

Set *DailyCalStatusRequired* to true.

Set *DailyIntStatusRequired* to true.

Set *LeakStatusRequired* to ( *FlowAveragingComponentRecord*.SampleAcquisitionMethodCd equals "DP" ).

**Results:**

Result

Response

Severity

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Flow Averaging Component Evaluation



**Check Code:** HOURMHV-41

**Check Name:** Flag Petition MODC Use

**Related Former Checks:**

**Applicability:** General Check

**Description:** MODC 53, 54 and 55 were designed for sources with approved petitions. This check will flag when MODC 53, 54 and 55 are used to make clear to sources that they should have a petition in place.

**Specifications:**

If ( *MonitorHourlyModcStatus* is NOT false ) AND ( *CurrentMhvRecord*.ModcCode in set { 53, 54, 55 } )

return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You have reported MODC [modcCode] for [type] parameter [param]. Use of this MODC requires EPA permission.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- CO2C Monitor Hourly Evaluation for Substitute Data
3	Process/Category:	Emissions Data Evaluation Report ----- FLOW Monitor Hourly Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- H2O Monitor Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOx Concentration Monitor Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Monitor Hourly Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Monitor Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- O2C Monitor Hourly Evaluation for Substitute Data
9	Process/Category:	Emissions Data Evaluation Report ----- SO2 Monitor Hourly Evaluation

**Check Category:**

**Hourly Operating Data**

**Check Code:** HOUROP-1

**Check Name:** Validate Single Operating Data record for hour

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check will count the number of HourlyOperatingData records to ensure the existence of one unique record for the hour

**Specifications:**

*Current Hourly Op Record* = null

*Unit Hourly Operational Status* = false

*Current Operating Time* = null

*Hourly Extraneous Fields* = null

Count all HourlyOperatingData records with current MonitoringLocationID where

BeginHour = *Current Hour* AND

BeginDate = *Current Date*

If count == 0

*Derived Hourly Checks Needed* = false

if (*Current Month* is not April OR *Annual Reporting Requirement* == true)

    If (*Current Entity Type* == "Unit" OR *LME HI Method* is null)

        If (*Reporting Period Operating* == false AND *Legacy Data Evaluation* == true)

            return result E

    else

        Locate *Monitor Method* records where the BeginDate/BeginHour is on or before the *Current Date and Hour*, and the EndDate/EndHour is null or is on or after the *Current Date and Hour*.

        If found

            return result A

else if count > 1

    if (*Current Month* is not April OR *Annual Reporting Requirement* == true)

*Rpt Period CO2 Mass Reported Accumulator Array* for the location = -1

*Rpt Period CO2 Mass Calculated Accumulator Array* for the location = -1

*Rpt Period HI Reported Accumulator Array* for the location = -1

*Rpt Period HI Calculated Accumulator Array* for the location = -1

*Rpt Period NOx Rate Reported Accumulator Array* for the location = -1

*Rpt Period NOx Rate Calculated Accumulator Array* for the location = -1

*Rpt Period SO2 Mass Reported Accumulator Array* for the location = -1

*Rpt Period SO2 Mass Calculated Accumulator Array* for the location = -1

*Rpt Period NOx Mass Reported Accumulator Array* for the location = -1

*Rpt Period NOx Mass Calculated Accumulator Array* for the location = -1

*Rpt Period Op Time Accumulator Array* for the location = -1

*Rpt Period Op Hours Accumulator Array* for the location = -1

*Daily Op Time Accumulator Array* for the location = -1

*Derived Hourly Checks Needed* = false

return result B

else if (*Current Entity Type* <> "Unit" AND *LME HI Method* is not null)

*Derived Hourly Checks Needed* = false

return result D

else

*Current Hourly Op Record* = Unique HourlyOperatingData record

*Current Operating Time* = *Current Hourly Op Record*.OperatingTime

```

If (First Day of Operation is null)
    First Day of Operation = Current Hourly Op Record.Date
    First Hour of Operation = Current Hourly Op Record.Hour

if Current Operating Time > 1.0 OR Current Operating Time < 0.0
    Derived Hourly Checks Needed = false

    if (Current Month is not April OR Annual Reporting Requirement == true)
        Rpt Period Op Time Accumulator Array for the location = -1
        Rpt Period Op Hours Accumulator Array for the location = -1
        Daily Op Time Accumulator Array for the location = -1

    if (Current Entity Type = "Unit")
        Unit OpTime Accumulator = -1
    else
        Stack OpTime Accumulator = -1

return result C

else
    Derived Hourly Checks Needed = true
    if Current Operating Time > 0.0
        Unit Hourly Operational Status = true

        if (Operating Date Array entry for this location does not contain Current Hourly Op Record.Date)
            Add Current Hourly Op Record.Date to Operating Date Array entry for this location

        if (Current Month is not April OR Annual Reporting Requirement == true)
            if (Rpt Period Op Hours Accumulator Array for this location is not null)
                if (Rpt Period Op Hours Accumulator Array for this location >= 0)
                    Rpt Period Op Hours Accumulator Array for this location = Rpt Period Op Hours Accumulator + 1
                else
                    Rpt Period Op Hours Accumulator Array for this location = 1

            if (Rpt Period Op Time Accumulator Array for this location is not null)
                if (Rpt Period Op Time Accumulator Array for this location >= 0)
                    Rpt Period Op Time Accumulator Array for this location = Rpt Period Op Time Accumulator + Current Hourly Op Record.OperatingTime
                else
                    Rpt Period Op Time Accumulator Array for this location = Current Hourly Op Record.OperatingTime

            If (Current Month is April)
                if (April Op Hours Accumulator Array for this location is not null)
                    April Op Hours Accumulator Array for this location = April Op Hours Accumulator + 1
                else
                    April Op Hours Accumulator Array for this location = 1

                if (April Op Time Accumulator Array for this location is not null)
                    April Op Time Accumulator Array for this location = April Op Time Accumulator + Current Hourly Op Record.OperatingTime
                else
                    April Op Time Accumulator Array for this location = Current Hourly Op Record.OperatingTime

        if ( OS Reporting Requirement is true ) AND ( Current Month is May, June, July, August or September ) AND (
            Current Operating Date is on or after OS Reporting Period Begin Date )

```

***OS Op Hours Calculated Accumulator Array*** for this location = ***OS Op Hours Calculated Accumulator Array*** for this location + 1  
***OS Op Time Calculated Accumulator Array*** for this location = ***OS Op Time Calculated Accumulator Array*** for this location + ***Current Operating Time***

if (***Daily Op Time Accumulator Array*** for this location is not null)  
     if (***Daily Op Time Accumulator Array*** for this location >= 0)  
         ***Daily Op Time Accumulator Array*** for this location = ***Daily Op Time Accumulator*** + ***Current Hourly Op Record.OperatingTime***  
 else  
     ***Daily Op Time Accumulator Array*** for this location = ***Current Hourly Op Record.OperatingTime***

if (***Last Day of Operation Array*** for the location is null OR is not equal to ***Current Date***)  
     ***Last Day of Operation Array*** for the location = ***Current Date***  
     if (***Rpt Period Op Days Accumulator Array*** for this location is not null)  
         if (***Rpt Period Op Days Accumulator Array*** for this location >= 0)  
             ***Rpt Period Op Days Accumulator Array*** for this location = ***Rpt Period Op Days Accumulator*** + 1  
     else  
         ***Rpt Period Op Days Accumulator Array*** for this location = 1

If (***Current Month*** is April)  
     if (***April Op Days Accumulator Array*** for this location is not null)  
         ***April Op Days Accumulator Array*** for this location = ***April Op Days Accumulator*** + 1  
     else  
         ***April Op Days Accumulator Array*** for this location = 1

if (***Current Entity Type*** = "Unit")  
     if (***Unit OpTime Accumulator*** >= 0)  
         ***Unit OpTime Accumulator*** = ***Unit OpTime Accumulator*** + ***Current Hourly Op Record.OperatingTime***  
     if ***Current Hourly Op Record.OperatingTime*** > ***Max Unit OpTime***  
         ***Max Unit OpTime*** = ***Current Hourly Op Record.OperatingTime***

else if (***Current Entity Type*** == "CS" OR ***Current Entity Type*** == "MS")  
     if (***Stack OpTime Accumulator*** >= 0)  
         ***Stack OpTime Accumulator*** = ***Stack OpTime Accumulator*** + ***Current Hourly Op Record.OperatingTime***  
     if ***Current Hourly Op Record.OperatingTime*** > ***Max Stack OpTime***  
         ***Max Stack OpTime*** = ***Current Hourly Op Record.OperatingTime***

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report an Hourly Operating record for the hour.	Critical Error Level 1
B	You reported more than one Hourly Operating records for the hour. There will be no further evaluation of the reported emissions data for this hour.	Critical Error Level 1
C	The OperatingTime reported in the Hourly Operating record is invalid. This value must be between 0 and 1. There will be no further evaluation of the reported emissions data for this hour.	Critical Error Level 1
D	You reported an invalid Hourly Operating record. Only the units in an LME monitoring configuration should report this record. There will be no further evaluation of the reported emissions data for this hour.	Critical Error Level 1
E	You did not report an Hourly Operating record for the hour. Although this was acceptable for legacy data during a non-operating quarter, it is not allowed in ECMPS.	Fatal

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Operating Hour Evaluation
---	-------------------	--

**Check Code:** HOUROP-2

**Check Name:** Count Flow, O2, and Heat Input records

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Determine the number of Stack Flow Monitor Hourly, H2O Monitor Hourly, H2O Derived Hourly, Heat Input Derived Hourly, and O2 Wet and Dry Hourly Records for the current location and current hour

**Specifications:**

**Flow Monitor Hourly Count** = count of MonitorHourlyValueData records with parameter FLOW where

**Current Date** = MonitorHourlyValueData.Date and

**Current Hour** = MonitorHourlyValueData.Hour

**O2 Wet Monitor Hourly Count** = count of MonitorHourlyValueData records with ParameterCode = "O2C" AND MoistureBasis = "W" where

**Current Date** = MonitorHourlyValueData.Date and

**Current Hour** = MonitorHourlyValueData.Hour

**O2 Dry Monitor Hourly Count** = count of MonitorHourlyValueData records with ParameterCode = "O2C" AND MoistureBasis = "D" where

**Current Date** = MonitorHourlyValueData.Date and

**Current Hour** = MonitorHourlyValueData.Hour

**O2 Null Monitor Hourly Count** = count of MonitorHourlyValueData records with ParameterCode = "O2C" AND MoistureBasis is NULL where

**Current Date** = MonitorHourlyValueData.Date and

**Current Hour** = MonitorHourlyValueData.Hour

if **O2 Null Monitor Hourly Count** == 1

**Current O2 Null Monitor Hourly Record** = the single matching record

**Heat Input Derived Hourly Count** = count of DerivedHourlyValueData records with ParameterCode equal to "HI" where

**Current Date** = DerivedHourlyValueData.Date and

**Current Hour** = DerivedHourlyValueData.Hour

// **O2 Needed To Support Heat Input** = false

**Results:**

Result

Response

Severity

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** HOUROP-3

**Check Name:** Initialize Location Variables for the Hour

**Related Former Checks:**

**Applicability:** General Check

**Description:** Looks up information about the current unit - initially whether or not it is a Peaking Unit

**Specifications:**

*Current Unit Is Peaking* = false

*Current Unit Is ARP* = false

*Special Fuel Burned* = false

*FC Factor Needed* = false

*FD Factor Needed* = false

*FW Factor Needed* = false

*Moisture Needed* = false

*H2O Missing Data Approach* = null

*Flow Monitor Hourly Checks Needed* = false

*Flow Needed For Part 75* = false

*Flow MHV Optionally Allowed* = false

*Current MHV Parameter* = null

*Current DHV Parameter* = null

*Current DHV Record Valid* = false

*Current DHV Record* = null

*Current DHV Method* = null

*Current DHV System Type* = null

*Current DHV HBHA Value* = null

*CO2 Conc Checks Needed for CO2 Mass Calc* = false

*CO2 Conc Checks Needed for Heat Input* = false

*CO2 Diluent Checks Needed for NOx Rate Calc* = false

*O2 Dry Checks Needed for Heat Input* = false

*O2 Dry Checks Needed for NOx Rate Calc* = false

*O2 Wet Checks Needed for Heat Input* = false

*O2 Wet Checks Needed for NOx Rate Calc* = false

*CO2 Diluent Needed for MATS* = false

*CO2 Diluent Needed for MATS Calculation* = false

*O2 Dry Needed for MATS* = false

*O2 Dry Needed for MATS Calculation* = false

*O2 Wet Needed for MATS* = false

*O2 Wet Needed for MATS Calculation* = false

*Linearity Status Required* = false

*AppendixEStatusRequired* = false

*RATAStatusRequired* = false

*Current RATA Status* = null

*CurrentHourlyRecordforRATAStatus* = null

*RATAStatusBAF* = null

*Daily Cal Status Required* = false

*CO2 RATA Required* = false

*HI Measure Code* = null.

*NOXR Measure Code* = null.

*F2L Status Required* = false

*Daily Int Status Required* = false

*Leak Status Required* = false

*CO2C MHV MODC* = null

*H2O DHV MODC* = null

*H2O MHV MODC* = null

*O2 Dry MODC* = null

*O2 Wet MODC* = null



**SO2 HPFF Exists** = false

**CO2 HPFF Exists** = false

**HI HPFF Exists** = false

If the StackPipeID of the monitoring location begins with "CS",  
set **Current Entity Type** = "CS"

else if the StackPipeID of the monitoring location begins with "CP",  
set **Current Entity Type** = "CP"

else if the StackPipeID of the monitoring location begins with "MS",  
set **Current Entity Type** = "MS"

else if the StackPipeID of the monitoring location begins with "MP",  
set **Current Entity Type** = "MP"

else  
set **Current Entity Type** = "Unit"

if **Current Entity Type** = "Unit"

*Mon Qual Record Count* = Find Monitor Qualification Records by Hour where  
MonitoringLocationId = **Current Location**  
*Mon Qual Record*.QualTypecode == "PK" OR *Mon Qual Record*.QualTypecode == "SK"

if *Mon Qual Record Count* > 0  
**Current Unit Is Peaking** = true

else if **Current Entity Type** = "CP"  
find all entries in UnitStackConfiguration table where  
UnitStackConfiguration.StackPipeId = the StackPipeId for this pipe  
for each matching record  
set *Assoc Unit* = UnitStackConfiguration.UnitId  
*Mon Qual Record Count* = Find MonitorQualification Records by Hour where  
MonitoringLocationId = *Assoc Unit*  
*Mon Qual Record*.QualTypecode == "PK" OR *Mon Qual Record*.QualTypecode == "SK"  
if *Mon Qual Record Count* is not null  
**Current Unit Is Peaking** = true

Set **CurrentUnitIsArp** to false.  
Set **So2cIsOnlyForMats** to false.

Locate records in **LocationProgramRecordsByHourLocation** where:

- 1) EmissionRecordingDate is NOT null and is on or prior to **CurrentOperatingDate**,
- 2) Or, EmissionRecordingDate is null, UnitMonitorCertBeginDate is NOT null, and UnitMonitorCertBeginDate is on or prior to **CurrentOperatingDate**.

If the located **LocationProgramRecordsByHourLocation** include a record where ProgramCode is equal to "ARP" AND Class is equal to "P1" or "P2",  
Set **CurrentUnitIsArp** to true.

If **CurrentUnitIsArp** is equal to false

If the located **LocationProgramRecordsByHourLocation** include a record where ProgramCode is equal to "MATS" and Class is

equal to "A", AND does NOT include a record where ProgramCode is NOT equal to "MATS" AND is in  
*ProgramRequiresSo2SystemCertificationList* and Class is equal to "A",  
Set *So2cIsOnlyForMats* to true.

Set *EarliestLocationReportDate* = *CurrentMonitorPlanLocationRecord*.EarliestReportDate

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Operating Hour Evaluation
---	-------------------	--

**Check Code:** HOUROP-4

**Check Name:** Verify SO2 Monitor Method Active During Current Hour

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check tests to see if the "SO2" Monitoring method is defined at this location. If so, this method is checked to ensure that the current hour being evaluated is within the window defined by the start and end times for the SO2 method.

**Specifications:**

If (*Derived Hourly Checks Needed*)

*SO2 Monitor Method Record* = null

*SO2 CEM Method Active For Hour* = false

*SO2 App D Method Active For Hour* = false

*SO2 F23 Method Active For Hour* = false

*SO2 Method Code* = null

*SO2 Fuel Specific Missing Data* = false

*SO2 Bypass Code* = null

*SO2 Method Count* = Active records in MonitoringMethodData for the location where  
ParameterCode = "SO2" or "SO2M"

if (*SO2 Method Count* > 1)

return result A

else if *SO2 Method Count* == 1

*SO2 Monitor Method Record* = the single matched record

*SO2 Method Code* = *SO2 Monitor Method Record*.MethodCode

if (*LME HI Method* is not null AND *SO2 Method Code* <> "LME")

return result B

else

if (*SO2 Monitor Method Record*.SubDataCode begins with "FSP75")

*SO2 Fuel Specific Missing Data* = true

*SO2 Bypass Code* = *SO2 Monitor Method Record*.BypassApproachCode

*Expected Summary Value SO2 Array* for this location = true

if (*SO2 Monitor Method Record*.MethodCode == "CEM")

*SO2 CEM Method Active For Hour* = true

else if *SO2 Monitor Method Record*.MethodCode == "F23")

*SO2 F23 Method Active For Hour* = true

else if (*SO2 Monitor Method Record*.MethodCode == "AD")

*SO2 App D Method Active For Hour* = true

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You have reported more than one active SO2 Method record in your monitoring plan for this hour.	Critical Error Level 1
B	You reported an invalid [param] method for a location that is part of a configuration of LME units.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Operating Hour Evaluation
---	-------------------	--

**Check Code:** HOUROP-5

**Check Name:** Determine H2O Method

**Related Former Checks:**

**Applicability:**

**Description:** The H2O Monitor Method must be known prior to category-level checks for H2O Derived and H2O Monitor  
**Specifications:**

if *Derived Hourly Checks Needed*

*H2O Method Code* = null

*H2O Default Value* = null

*H2O Default Max Value* = null

*H2O Default Min Value* = null

*Current Hourly H2O Table Reference* = null

*H2O Fuel Specific Missing Data* = false

*H2O Reported Value* = null

*H2O Method Count* = Active records in MonitoringMethodData for the location where  
ParameterCode = "H2O"

*H2O Derived Hourly Count* = count of DerivedHourlyValueData where ParameterCode = "H2O" for current hour

*H2O Monitor Hourly Count* = count of MonitorHourlyValueData where ParameterCode = "H2O" for current hour

if (*H2O Method Count* > 2

return result A

else if (*H2O Method Count* == 2)

If (*H2O Derived Hourly Count* + *H2O Monitor Hourly Count* > 0)

If (*H2O Derived Hourly Count* == 1 AND *H2O Monitor Hourly Count* == 0 AND the MethodCode in one of the  
matched records is equal to "MWD")

*Current Hourly H2O Table Reference* = DerivedHourlyValueData where ParameterCode = "H2O"

*H2O Reported Value* = *Current Hourly H2O Table Reference*.AdjustedHourlyValue

*H2O Method Code* = "MWD"

else if (*H2O Derived Hourly Count* == 0 AND *H2O Monitor Hourly Count* == 1 AND the MethodCode in one  
(but not both) of the matched records is equal to "MTB" or "MMS")

*Current Hourly H2O Table Reference* = MonitorHourlyValueData where ParameterCode = "H2O"

*H2O Reported Value* = *Current Hourly H2O Table Reference*.UnadjustedHourlyValue

if the MethodCode in the matched record == "MMS"

*H2O Method Code* = "MMS"

else

*H2O Method Code* = "MTB"

else

return result A

else if *H2O Method Count* == 1

*H2O Monitor Method Record* = the single matched record

*H2O Method Code* = *H2O Monitor Method Record*.MethodCode

if (*H2O Monitor Method Record*.SubDataCode begins with "FSP75")

*H2O Fuel Specific Missing Data* = true

if (*H2O Method Code* == 'MDF')

*H2O Default Record Count* = count active MonitoringDefaultData Records for the location where ParameterCd =  
'H2O'

if (*H2O Default Record Count* == 0)

return result B

else if (*H2O Default Record Count* > 1)

if (*H2O Derived Hourly Count* == 1)

*Current Hourly H2O Table Reference* = DerivedHourlyValueData where ParameterCode =

"H2O"

**H2O Default Max Value** = Highest DefaultValue field from active MonitoringDefaultData record for location where ParameterCd = 'H2O'

**H2O Default Min Value** = Lowest DefaultValue field from active MonitoringDefaultData record for location where ParameterCd = 'H2O'

If (**H2O Default Max Value** <= 0 OR **H2O Default Min Value** <= 0 OR **H2O Default Max Value** >= 100 OR **H2O Default Min Value** >= 100)

return result C

else

**H2O Default Value** = DefaultValue field from active MonitoringDefaultData record for location where ParameterCd = 'H2O'

If (**H2O Default Value** <= 0 OR **H2O Default Value** >= 100)

return result C

else if (**H2O Method Code** == "MWD")

if (**H2O Derived Hourly Count** == 1)

**Current Hourly H2O Table Reference** = DerivedHourlyValueData where ParameterCode = "H2O"

**H2O Reported Value** = **Current Hourly H2O Table Reference**.AdjustedHourlyValue

else if (**H2O Method Code** == "MMS" OR **H2O Method Code** == "MTB")

if (**H2O Monitor Hourly Count** == 1)

**Current Hourly H2O Table Reference** = MonitorHourlyValueData where ParameterCode = "H2O"

**H2O Reported Value** = **Current Hourly H2O Table Reference**.UnadjustedHourlyValue

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You have reported more than one active H2O Method record in your monitoring plan for this hour.	Critical Error Level 1
B	You reported an H2O MethodCode of MDF, but you did not report an active H2O default record in your monitoring plan for the hour.	Critical Error Level 1
C	The DefaultValue reported in the active H2O default record in your monitoring plan is invalid.	Critical Error Level 1

## Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** HOUROP-6

**Check Name:** Verify NOx Rate Monitor Method

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check tests to see if the "NOx Rate" Monitoring method is defined at this location. If so, this method is checked to ensure that the current hour being evaluated is within the window defined by the start and end times for the NOx method.

**Specifications:**

If (*Derived Hourly Checks Needed*)

*NOx Rate Bypass Code* = null

*NOx Rate Fuel Specific Missing Data* = false

*Current NOx Rate Monitor Method Record* = null

*Current NOx Rate Method Code* = null

*NOx Rate Method Count* = Active records in MonitoringMethodData for the location where  
ParameterCode = "NOXR"

if (*NOx Rate Method Count* > 1)

return result A

else if *NOx Rate Method Count* == 1

if (*LME HI Method* is not null)

return result B

else

*Current NOx Rate Monitor Method Record* = the single matched record

*Current NOx Rate Method Code* = *Current NOx Rate Monitor Method Record*.MethodCode

*NOx Rate Bypass Code* = *Current NOx Rate Monitor Method Record*.BypassApproachCode

if (*Current NOx Rate Monitor Method Record*.SubDataCode begins with "FSP75")

*NOx Rate Fuel Specific Missing Data* = true

If (*Current Unit is ARP* == true)

*Expected Summary Value NOx Rate Array* for this location = true

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one active NOXR Method record in your monitoring plan for this hour.	Critical Error Level 1
B	You reported a [param] method, which is not valid for a location that is part of a configuration of LME units.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** HOUROP-7

**Check Name:** Verify NOx Mass Monitor Method Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Finds the Monitor Method record for NOx Mass and stores it for later reference

**Specifications:**

If (*Derived Hourly Checks Needed*)

*Current NOx Mass Monitor Method Record* = null

*NOx Mass Method Active For Hour* = false

*NOx Mass Monitor Method Code* = null

*NOx Mass Bypass Code* = null

*NOx Mass Fuel Specific Missing Data* = false

*NOx Mass Method Count* = Active records in MonitoringMethodData for the location where  
ParameterCode = "NOX" or "NOXM"

if (*NOx Mass Method Count* > 1)  
return result A

else if *NOx Mass Method Count* == 1  
*Current NOx Mass Monitor Method Record* = the single matched record  
*NOx Mass Monitor Method Code* = *NOx Mass Monitor Method Record*.MethodCode

if (*LME HI Method* is not null AND *NOx Mass Monitor Method Code* <> "LME")  
return result B

else

*Expected Summary Value NOx Mass Array* for this location = true  
*NOx Mass Bypass Code* = *Current NOx Mass Monitor Method Record*.BypassApproachCode  
if (*Current NOx Mass Monitor Method Record*.SubDataCode begins with "FSP75")  
*NOx Mass Fuel Specific Missing Data* = true

if (*NOx Mass Monitor Method Record*.MethodCode == "CEM" OR  
*NOx Mass Monitor Method Record*.MethodCode == "NOXR" OR  
*NOx Mass Monitor Method Record*.MethodCode == "CEMNOXR" OR  
*NOx Mass Monitor Method Record*.MethodCode == "AMS")  
*NOx Mass Method Active For Hour* = true

If (*NOx Mass Monitor Method Code* == "LME" AND *Current Unit is ARP* == true)  
*Expected Summary Value NOx Rate Array* for this location = true

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one active NOX Method record in your monitoring plan for this hour.	Critical Error Level 1
B	You reported an invalid [param] method for a location that is part of a configuration of LME units.	Critical Error Level 1



**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Operating Hour Evaluation
---	-------------------	--

**Check Code:** HOUROP-8

**Check Name:** Verify CO2 Method Active During Current Hour

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Looks in the MonitoringMethod table to verify that a CO2 Mass Monitoring Method is active for the current hour at the current location

**Specifications:**

If (*Derived Hourly Checks Needed*)

*CO2 Monitor Method Record* = null

*CO2 CEM Method Active For Hour* = false

*CO2 App D Method Active For Hour* = false

*CO2 Fuel Specific Missing Data* = false

*CO2 Method Code* = null

// AD and CEMs are possible method codes

*CO2 Method Count* = Active records in MonitoringMethodData for the location where  
ParameterCode = "CO2" or "CO2M"

if (*CO2 Method Count* > 1)

return result A

else if *CO2 Method Count* == 1

*CO2 Monitor Method Record* = the single matched record

*CO2 Method Code* = *CO2 Monitor Method Record*.MethodCode

if (*LME HI Method* is not null and *CO2 Method Code* is not equal to "LME")

return result B

else

if (*Current CO2 Monitor Method Record*.SubDataCode begins with "FSP75")

*CO2 Fuel Specific Missing Data* = true

if (*CO2 Monitor Method Record*.MethodCode == "CEM")

*CO2 CEM Method Active For Hour* = true

else if (*CO2 Monitor Method Record*.MethodCode == "AD")

*CO2 App D Method Active For Hour* = true

*Expected Summary Value CO2 Array* for this location = true

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You have reported more than one active CO2 Method record in your monitoring plan for this hour.	Critical Error Level 1
B	You reported an invalid [param] method for a location that is part of a configuration of LME units.	Critical Error Level 1

## Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** HOUROP-9

**Check Name:** Verify Heat Input Method Active During Current hour

**Related Former Checks:**

**Applicability:** General Check

**Description:** Verifies that a single method is defined for Heat Input during the Current Hour

**Specifications:**

If (*Derived Hourly Checks Needed*)

*Heat Input Monitor Method Record* = null  
*Heat Input Fuel Specific Missing Data* = false  
*Heat Input Method Code* = null  
*Heat Input CEM Method Active For Hour* = false  
*Heat Input App D Method Active For Hour* = false

*Heat Input Method Count* = Active records in MonitoringMethodData for the location where  
ParameterCode begins with "HI"

if (*Heat Input Method Count* > 1)  
return result A

else if (*LME HI Method* is not null AND (*Heat Input Method Count* == 0 OR ParameterCode in the matched record is not equal to "HIT"))  
return result B

else if (*Heat Input Method Count* == 1)  
*Heat Input Monitor Method Record* = the single matched record  
*Heat Input Method Code* = *Heat Input Monitor Method Record*.MethodCode  
*LME HI Substitute Data Code* = *Heat Input Monitor Method Record*.SubstituteDataCode

if (*Heat Input Monitor Method Record*.SubDataCode begins with "FSP75")  
*Heat Input Fuel Specific Missing Data* = true

if (*Heat Input Monitor Method Record*.MethodCode == "CEM")  
*Heat Input CEM Method Active For Hour* = true  
else if (*Heat Input Monitor Method Record*.MethodCode == "AD" OR *Heat Input Monitor Method Record*.MethodCode == "ADCALC")  
*Heat Input App D Method Active For Hour* = true

If (*Heat Input Monitor Method Record*.MethodCode <> "EXP")  
*Expected Summary Value HI Array* for this location = true

if (*Heat Input Monitor Method Record*.ParameterCode == "HI")  
*Apportionment HI Method Array* for this location = *Heat Input Method Code*

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You have reported more than one active HI Method record in your monitoring plan for this hour.	Critical Error Level 1
B	You did not report an HIT Method record for this location in your monitoring plan, which is required for all locations that are part of a configuration of LME units.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Operating Hour Evaluation
---	-------------------	--

**Check Code:** HOUROP-17

**Check Name:** Verify Single SO2 Derived Hourly Data Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check scans the DerivedHourlyValueData records to ensure that a single record containing SO2 derived values is reported for the current hour

**Specifications:**

```

If (Derived Hourly Checks Needed == true)
    SO2 Derived Checks Needed = false
    SO2M Derived Checks Needed = false
    Current SO2 Derived Hourly Record = null
    F23 Default Max Value = null
    F23 Default Min Value = null
    F23 Default Value = null

    SO2 Derived Hourly Count = count of DerivedHourlyValueData records with ParameterCode = "SO2" or "SO2M" where
        Current Date = DerivedHourlyValueData.Date and
        Current Hour = DerivedHourlyValueData.Hour

    If Current Hourly Op Record.OperatingTime > 0
        If (SO2 Derived Hourly Count == 0 AND SO2 Method Code is not null)
            If (SO2 Method Code == "AD")
                If (Hourly Fuel Flow Count for Gas + Hourly Fuel Flow Count for Oil > 0)
                    return result A
                else
                    return result A
            Else if (SO2 Derived Hourly Count > 0 AND SO2 Method Code is null)
                Rpt Period SO2 Mass Reported Accumulator Array for the location = -1
                Rpt Period SO2 Mass Calculated Accumulator Array for the location = -1
                return result B
            Else if (SO2 Derived Hourly Count > 1)
                Rpt Period SO2 Mass Reported Accumulator Array for the location = -1
                Rpt Period SO2 Mass Calculated Accumulator Array for the location = -1
                return result C
            Else if (SO2 Derived Hourly Count > 0 AND SO2 Method Code == "AD" AND Hourly Fuel Flow Count for Gas +
                Hourly Fuel Flow Count for Oil == 0)
                Rpt Period SO2 Mass Reported Accumulator Array for the location = -1
                Rpt Period SO2 Mass Calculated Accumulator Array for the location = -1
                return result G
            Else if (SO2 Derived Hourly Count == 1)

                Current SO2 Derived Hourly Record = DerivedHourlyValueData rec matching with param SO2 or SO2M where
                Current Date = DerivedHourlyValueData.Date and Current Hour = DerivedHourlyValueData.Hour

                If (LME HI Method is not null)
                    If (SO2 Method Code == "LME")

                        If (Current SO2 Derived Hourly Record.ParameterCode == "SO2M")
                            SO2M Derived Checks Needed = true
                        else
                            Rpt Period SO2 Mass Reported Accumulator Array for the location = -1
                            Rpt Period SO2 Mass Calculated Accumulator Array for the location = -1
                            return result H

                    else
                        Rpt Period SO2 Mass Reported Accumulator Array for the location = -1

```

```

else
    Rpt Period SO2 Mass Calculated Accumulator Array for the location = -1

If (Current SO2 Derived Hourly Record.ParameterCode == "SO2M")
    Rpt Period SO2 Mass Reported Accumulator Array for the location = -1
    Rpt Period SO2 Mass Calculated Accumulator Array for the location = -1
    return result H

else
    SO2 Derived Checks Needed = true

    If (SO2 Method Code in set {CEMF23,AMS})

        if (SO2 Method Code == "CEMF23")
            SO2 CEM Method Active For Hour = true

        if (Current SO2 Derived Hourly Record.FormulaIdentifier is not null)

            SO2 Formula Record = MonitorFormulaData record where
                MonitorFormulaData.FormulaID = Current SO2 Derived Hourly Record.FormulaIdentifier

            If (SO2 Formula Record is not null)

                If (SO2 Formula Record.ParameterCode == "SO2")

                    if (SO2 Method Code == "CEMF23")
                        If (SO2 Formula Record.EquationCode == "F-23")
                            SO2 F23 Method Active For Hour = true
                            SO2 CEM Method Active For Hour = false

                        if (SO2 Method Code == "AMS")
                            If (SO2 Formula Record.EquationCode in set
                                {F-1,F-2})
                                SO2 Method Code = "CEM"
                                SO2 CEM Method Active For Hour = true

                    If (SO2 F23 Method Active For Hour == true)

                        F23 Default Record Count = count active MonitoringDefaultData Records for the location
                        where ParameterCd = 'SO2R' and DefaultPurposeCd = 'F23'

                        if (F23 Default Record Count == 0)
                            return result D
                        else if (F23 Default Record Count > 1)
                            F23 Default Max Value = Highest DefaultValue field from active
                            MonitoringDefaultData record for location where ParameterCd = 'SO2R' and
                            DefaultPurposeCd = 'F23'

                            F23 Default Min Value = Lowest DefaultValue field from active
                            MonitoringDefaultData record for location where ParameterCd = 'SO2R' and
                            DefaultPurposeCd = 'F23'

                            If (F23 Default Max Value <= 0 OR F23 Default Min Value <= 0)
                                return result E

                        else
                            F23 Default Value = DefaultValue field from active MonitoringDefaultData

```

record for location where ParameterCd = 'SO2R' and DefaultPurposeCd = 'F23'

If (*F23 Default Value* <= 0)  
return result E

else

If *SO2 Derived Hourly Count* > 0  
Return result F

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a DHV record for SO2 (or SO2M) for the hour.	Critical Error Level 1
B	You reported a DHV record for SO2 (or SO2M), but you did not report an active SO2 method record in your monitoring plan for the hour.	Critical Error Level 1
C	You reported more than one DHV records for SO2 (or SO2M) for the hour.	Critical Error Level 1
D	You did not report an active SO2R default record in your monitoring plan for use in F23 calculation for the hour.	Critical Error Level 1
E	The DefaultValue reported in the active SO2R F23 default record in your monitoring plan is invalid.	Critical Error Level 1
F	You reported a DHV record for SO2 (or SO2M), but this is not appropriate for a non-operating hour.	Critical Error Level 1
G	You reported a DHV record for [param], but you did not report any Hourly Fuel Flow records at the location.	Critical Error Level 1
H	The ParameterCode reported in the DHV record does not match the ParameterCode in the Method record in your monitoring plan used to determine [eparam].	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** HOUROP-18

**Check Name:** Verify Single SO<sub>2</sub> Concentration record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Counts all SO<sub>2</sub> Concentration records (MonitorHourlyValueData records with "SO<sub>2</sub>C" ParameterCode) for the current hour and outputs appropriate responses if count does not match expectations

**Specifications:**

**Current SO<sub>2</sub> Monitor Hourly Record** = null

**SO<sub>2</sub> Monitor Hourly Count** = count of MonitorHourlyValueDate records with param "SO<sub>2</sub>C" where

Current Date = MonitorHourlyValueData.Date and

Current Hour = MonitorHourlyValueData.Hour

If **Unit Hourly Operational Status** = true

If (**SO<sub>2</sub> Monitor Hourly Count** > 0 AND **SO<sub>2</sub> CEM Method Active For Hour** == false AND **MATS SO<sub>2</sub>C Needed** == false)

Return result A

Else if (**SO<sub>2</sub> Monitor Hourly Count** > 1)

Return result B

Else if (**SO<sub>2</sub> Monitor Hourly Count** == 1)

**Current SO<sub>2</sub> Monitor Hourly Record** = MonitorHourlyValueData rec with param SO<sub>2</sub>C where

CurrentDate = MonitorHourlyValueData.Date and

CurrentHour = MonitorHourlyValueData.Hour

Else

if (**SO<sub>2</sub> Monitor Hourly Count** > 0)

return result C

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an MHV record for SO <sub>2</sub> C, but you did not report an active SO <sub>2</sub> method record in your monitoring plan for the hour.	Critical Error Level 1
B	You reported more than one MHV record for SO <sub>2</sub> C for the hour.	Critical Error Level 1
C	You reported an MHV record for SO <sub>2</sub> C, but this is not appropriate for a non-operating hour.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Operating Hour Evaluation



**Check Code:** HOUROP-19

**Check Name:** Verify Single NO<sub>x</sub> Concentration Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Counts all NO<sub>x</sub> Rate Concentration records (MonitorHourlyValueData records with "NOXR" ParameterCode) for the current hour and outputs appropriate responses if count does not match expectations

**Specifications:**

*Current NO<sub>x</sub> Conc Monitor Hourly Record* = null

*NO<sub>x</sub> Conc Monitor Hourly Count* = count of MonitorHourlyValueDate records with param "NOXC" where  
 Current Date = MonitorHourlyValueData.Date and  
 Current Hour = MonitorHourlyValueData.Hour

if *Unit Hourly Operational Status* = true

if (*NO<sub>x</sub> Conc Monitor Hourly Count* > 1)

Return result A

Else if (*NO<sub>x</sub> Conc Monitor Hourly Count* == 1)

If (*NO<sub>x</sub> Mass Monitor Method Code* in {CEM, CEMNOXR, AMS} OR *Current NO<sub>x</sub> Rate Method Code* in {CEM,AMS})

*Current NO<sub>x</sub> Conc Monitor Hourly Record* = MonitorHourlyValueData rec with param "NOXC" where

CurrentDate = MonitorHourlyValueData.Date and

CurrentHour = MonitorHourlyValueData.Hour

else

return result B

Else

if (*NO<sub>x</sub> Conc Monitor Hourly Count* > 0)

return result C

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one MHV record for NOXC for the hour.	Critical Error Level 1
B	You reported an MHV record for NOXC, but you did not report an appropriate NOXR or NOX method record in your monitoring plan for the hour.	Critical Error Level 1
C	You reported an MHV record for NOXC, but this is not appropriate for a non-operating hour.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** HOUROP-20

**Check Name:** Verify Single NOx Rate Derived Hourly Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check scans the DerivedHourlyValueData records to ensure that a single record containing SO2 derived values is reported for the current hour

**Specifications:**

*Current NOXR Derived Hourly Record* = null

*NOXR Derived Hourly Checks Needed* = null

*NOXR Derived Hourly Count* = null

*NOXR Has Measured DHV MODC* = null

If (*Derived Hourly Checks Needed* == true)

*NOx Rate Derived Checks Needed* = false

*NOx Rate Derived Hourly Count* = count of DerivedHourlyValueData records with ParameterCode = "NOXR" where

*Current Date* = DerivedHourlyValueData.Date and

*Current Hour* = DerivedHourlyValueData.Hour

If *Current Hourly Op Record*.OperatingTime > 0

If (*NOx Rate Derived Hourly Count* == 0 AND *Current NOx Rate Method Code* is not null)

Return result A

Else if (*NOx Rate Derived Hourly Count* > 0 AND *Current NOx Rate Method Code* is NULL)

*Rpt Period NOx Rate Reported Accumulator Array* for the location = -1

*Rpt Period NOx Rate Calculated Accumulator Array* for the location = -1

Return result B

Else if (*NOx Rate Derived Hourly Count* > 1)

*Rpt Period NOx Rate Reported Accumulator Array* for the location = -1

*Rpt Period NOx Rate Calculated Accumulator Array* for the location = -1

Return result C

Else if (*NOx Rate Derived Hourly Count* == 1)

*Current NOx Rate Derived Hourly Record* = DerivedHourlyValueData rec matching param NOXR

*NOx Rate Derived Checks Needed* = true

*Apportionment NOXR Method Array* at this location = *Current NOx Rate Method Code*

*NOXR Has Measured DHV MODC* = ( *Current NOx Rate Derived Hourly Record*.MODCCode in set { 01, 02, 03, 04, 05, 14, 21, 22, 53, 54 } )

If (*Current NOx Rate Method Code* == "AMS")

if (*Current NOx Rate Derived Hourly Record*.FormulaIdentifier is null)

if *Current NOx Rate Derived Hourly Record*.MODCCode is not null)

*Current NOx Rate Method Code* = "CEM"

else

NOXR Formula Record = MonitorFormulaData record where

MonitorFormulaData.FormulaID = *Current NOx Rate Derived Hourly Record*.FormulaIdentifier

If (NOXR Formula Record is not null)

If (NOXR Formula Record.ParameterCode == "NOXR" AND NOXR Formula Record.EquationCode in set

{F-5,F-6,19-1,19-2,19-3,19-3D,19-4,19-5,19-5D,19-6,19-7,19-8,19-9})

*Current NOx Rate Method Code* = "CEM"

else

If ***NOx Rate Derived Hourly Count*** > 0  
Return result D

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a DHV record for NOXR for the hour.	Critical Error Level 1
B	You reported a DHV record for NOXR, but you did not report an active NOXR method record in your monitoring plan for the hour.	Critical Error Level 1
C	You reported more than one DHV record for NOXR for the hour.	Critical Error Level 1
D	You reported a DHV record for NOXR, but this is not appropriate for a non-operating hour.	Critical Error Level 1
E	This check result is obsolete.	No Errors

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** HOUROP-21

**Check Name:** Verify Single NOx Mass Derived Hourly Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Counts number of NOx Mass DerivedHourlyValue records active during the current hour and compares this count with the Monitor Method records indicating the need for this data

**Specifications:**

If (*Derived Hourly Checks Needed* == true)  
     *NOx Mass Derived Checks Needed* = false  
     *NOXM Derived Checks Needed* = false  
     *Current NOx Mass Derived Hourly Record* = null

*NOx Mass Derived Hourly Count* = count of DerivedHourlyValueData records with ParameterCode = "NOX" or "NOXM" where  
     *Current Date* = DerivedHourlyValueData.Date and  
     *Current Hour* = DerivedHourlyValueData.Hour

If *Current Hourly Op Record*.OperatingTime > 0  
     If (*NOx Mass Derived Hourly Count* == 0 AND (*NOx Mass Method Active For Hour* == true OR *NOx Mass Monitor Method Code* == "LME"))  
         Return result A

Else if (*NOx Mass Derived Hourly Count* > 0 AND *NOx Mass Method Active For Hour* == false AND *NOx Mass Monitor Method Code* <> "LME")  
     *Rpt Period NOx Mass Reported Accumulator Array* for the location = -1  
     *Rpt Period NOx Mass Calculated Accumulator Array* for the location = -1  
     Return result B

Else if (*NOx Mass Derived Hourly Count* > 1)  
     *Rpt Period NOx Mass Reported Accumulator Array* for the location = -1  
     *Rpt Period NOx Mass Calculated Accumulator Array* for the location = -1  
     Return result C

Else if (*NOx Mass Derived Hourly Count* > 0 AND *Current NOx Rate Method Code* == "AE" AND *Hourly Fuel Flow Count for Gas* + *Hourly Fuel Flow Count for Oil* == 0)  
     *Rpt Period NOx Mass Reported Accumulator Array* for the location = -1  
     *Rpt Period NOx Mass Calculated Accumulator Array* for the location = -1  
     Return result E

Else if (*NOx Mass Derived Hourly Count* == 1)  
     *Current NOX Mass Derived Hourly Record* = DerivedHourlyValueData rec matching with param NOX or NOXM where *Current Date* = DerivedHourlyValueData.Date and *Current Hour* = DerivedHourlyValueData.Hour

    If (*LME HI Method* is not null)  
         If (*NOx Mass Monitor Method Code* == "LME")  
             if (*Current NOX Mass Derived Hourly Record*.ParameterCode == "NOXM")  
                 *NOXM Derived Checks Needed* = true  
             else  
                 *Rpt Period NOx Mass Reported Accumulator Array* for the location = -1  
                 *Rpt Period NOx Mass Calculated Accumulator Array* for the location = -1  
                 return result F  
         else  
             *Rpt Period NOx Mass Reported Accumulator Array* for the location = -1  
             *Rpt Period NOx Mass Calculated Accumulator Array* for the location = -1

```

else

    if (Current NOX Mass Derived Hourly Record.ParameterCode == "NOXM")
        Rpt Period NOx Mass Reported Accumulator Array for the location = -1
        Rpt Period NOx Mass Calculated Accumulator Array for the location = -1
        return result F

    else

        NOx Mass Derived Checks Needed = true

        If (NOx Mass Monitor Method Code in set {AMS, CEMNOXR})

            If (NOx Rate Derived Hourly Count > 0)
                NOx Mass Monitor Method Code = "NOXR"

            Else if (NOx Mass Monitor Method Code == "CEMNOXR")
                NOx Mass Monitor Method Code = "CEM"

            Else if (Current NOx Mass Derived Hourly Record.FormulaIdentifier is not null)

                NOX Formula Record = MonitorFormulaData record where
                    MonitorFormulaData.FormulaID = Current NOx Mass Derived Hourly Record.FormulaIdentifier

                If (NOX Formula Record is not null)

                    If (NOX Formula Record.ParameterCode == "NOX" AND NOX
                        Formula Record.EquationCode in set {F-26A,F-26B})
                        NOx Mass Monitor Method Code = "CEM"

                    Apportionment NOX Method Array at this location = NOx Mass Monitor Method Code

        else

            If NOx Mass Derived Hourly Count > 0
                Return result D

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a DHV record for NOX (or NOXM) for the hour.	Critical Error Level 1
B	You reported a DHV record for NOX (or NOXM), but you did not report an active NOX (or NOXM) method record in your monitoring plan for the hour.	Critical Error Level 1
C	You reported more than one DHV record for NOX (or NOXM) for the hour.	Critical Error Level 1
D	You reported a DHV record for NOX (or NOXM), but this is not appropriate for a non-operating hour.	Critical Error Level 1
E	You reported a DHV record for [param], but you did not report any Hourly Fuel Flow records at the location.	Critical Error Level 1
F	The ParameterCode reported in the DHV record does not match the ParameterCode in the Method record in your monitoring plan used to determine [eparam].	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Operating Hour Evaluation
---	-------------------	--

**Check Code:** HOUROP-22

**Check Name:** Verify Single CO2 Mass Derived Hourly Value Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Verifies that exactly ONE Derived Hourly Value record exists for the current hour associated with CO2 Mass

**Specifications:**

If (*Derived Hourly Checks Needed* == true)

*CO2 Mass Derived Checks Needed* = false

*Current CO2 Mass Derived Hourly Record* = null

*CO2M Derived Checks Needed* = false

*CO2 Mass Derived Hourly Count* = count of DerivedHourlyValueData records with ParameterCode beginning with "CO2" where

*Current Date* = DerivedHourlyValueData.Date and

*Current Hour* = DerivedHourlyValueData.Hour

If *Current Hourly Op Record*.OperatingTime > 0

If (*CO2 Mass Derived Hourly Count* == 0 AND *CO2 Method Code* is not null AND *CO2 Method Code* <> "FSA")

If (*CO2 Method Code* == "AD")

If (*Hourly Fuel Flow Count for Gas* + *Hourly Fuel Flow Count for Oil* > 0)

return result A

else

Return result A

Else if (*CO2 Mass Derived Hourly Count* > 0 AND (*CO2 Method Code* is null OR *CO2 Method Code* == "FSA"))

*Rpt Period CO2 Mass Reported Accumulator Array* for the location = -1

*Rpt Period CO2 Mass Calculated Accumulator Array* for the location = -1

return result B

Else if (*CO2 Mass Derived Hourly Count* > 1)

*Rpt Period CO2 Mass Reported Accumulator Array* for the location = -1

*Rpt Period CO2 Mass Calculated Accumulator Array* for the location = -1

Return result C

Else if (*CO2 Mass Derived Hourly Count* > 0 AND *CO2 Method Code* == "AD" AND *Hourly Fuel Flow Count for Gas* + *Hourly Fuel Flow Count for Oil* == 0)

*Rpt Period CO2 Mass Reported Accumulator Array* for the location = -1

*Rpt Period CO2 Mass Calculated Accumulator Array* for the location = -1

Return result E

Else if (*CO2 Mass Derived Hourly Count* == 1)

*Current CO2 Mass Derived Hourly Record* = DerivedHourlyValueData rec matching with param CO2 or CO2M where *Current Date* = DerivedHourlyValueData.Date and *Current Hour* = DerivedHourlyValueData.Hour

If (*LME HI Method* is not null)

If (*CO2 Method Code* == "LME")

if (*Current CO2 Mass Derived Hourly Record*.ParameterCode == "CO2M")

*CO2M Derived Checks Needed* = true

else

*Rpt Period CO2 Mass Reported Accumulator Array* for the location = -1

*Rpt Period CO2 Mass Calculated Accumulator Array* for the location = -1

return result F

else

*Rpt Period CO2 Mass Reported Accumulator Array* for the location = -1

*Rpt Period CO2 Mass Calculated Accumulator Array* for the location = -1

else

if (*Current CO2 Mass Derived Hourly Record*.ParameterCode == "CO2M")

*Rpt Period CO2 Mass Reported Accumulator Array* for the location = -1

*Rpt Period CO2 Mass Calculated Accumulator Array* for the location = -1

```

        return result F

    else
        CO2 Mass Derived Checks Needed = true

        If (CO2 Method Code == "AMS")

            if (Current CO2 Mass Derived Hourly Record.FormulaIdentifier is not null)

                CO2 Formula Record = MonitorFormulaData record where
                    MonitorFormulaData.FormulaID = Current CO2 Mass Derived Hourly
                    Record.FormulaIdentifier

                If (CO2 Formula Record is not null)

                    If (CO2 Formula Record.ParameterCode == "CO2" AND CO2 Formula
                    Record.EquationCode in set {F-2,F-11})
                        CO2 Method Code == "CEM"
                        CO2 CEM Method Active For Hour = true

Else
    If CO2 Mass Derived Hourly Count > 0
        Return result D

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a DHV record for CO2 (or CO2M) for the hour.	Critical Error Level 1
B	You reported a DHV record for CO2 (or CO2M), but you did not report an active CO2 (or CO2M) method record in your monitoring plan for the hour.	Critical Error Level 1
C	You reported more than one DHV records for CO2 (or CO2M) for the hour.	Critical Error Level 1
D	You reported a DHV record for CO2 (or CO2M), but this is not appropriate for a non-operating hour.	Critical Error Level 1
E	You reported a DHV record for [param], but you did not report any Hourly Fuel Flow records at the location.	Critical Error Level 1
F	The ParameterCode reported in the DHV record does not match the ParameterCode in the Method record in your monitoring plan used to determine [eparam].	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Operating Hour Evaluation



**Check Code:** HOUROP-23

**Check Name:** Verify CO2 Conc Derived and Monitor Hourly Data Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check scans the DerivedHourlyValueData and MonitorHourlyValueData records to ensure that a single record containing CO2 concentration values is reported for the current hour

**Specifications:**

*Current CO2 Conc Derived Hourly Record* = null

*Current CO2 Conc Monitor Hourly Record* = null

*Current CO2 Conc Missing Data Monitor Hourly Record* = null

*CO2 Conc Derived Checks Needed* = false

*CO2 Conc Monitor Checks Needed* = false

*O2 Dry Needed to Support CO2 Calculation* = false

*O2 Wet Needed to Support CO2 Calculation* = false

*CO2C Has Measured DHV MODC* = null

*CO2 Conc Derived Hourly Count* = count of DerivedHourlyValueData records with ParameterCode = "CO2C" where

*Current Date* = DerivedHourlyValueData.Date and

*Current Hour* = DerivedHourlyValueData.Hour

*CO2 Conc Monitor Hourly Count* = count of MonitorHourlyValueData records with ParameterCode = "CO2C" where

*Current Date* = MonitorHourlyValueData.Date and

*Current Hour* = MonitorHourlyValueData.Hour

*Total CO2 Conc Records* = *CO2 Conc Derived Hourly Count* + *CO2 Conc Monitor Hourly Count*

If (*Current Hourly Op Record*.OperatingTime > 0)

If ((*CO2 Conc Checks Needed for Heat Input* == true) OR (*CO2 Diluent Checks Needed for NOx Rate Calc* == true) OR (*CO2 Diluent Needed for MATS* == true) OR (*CO2 Conc Checks Needed for CO2 Mass Calc* == true))

If ((*CO2 Conc Monitor Hourly Count* == 0) AND ((*CO2 Conc Checks Needed for Heat Input* == true) OR (*CO2 Diluent Checks Needed for NOx Rate Calc* == true) OR (*CO2 Diluent Needed for MATS* == true)))

If ( *CO2 Conc Checks Needed for Heat Input* == true ) OR

( *CO2 Diluent Checks Needed for NOx Rate Calc* == true AND *NOXR Has Measured DHV MODC* == true

) OR

( *CO2 Diluent Needed for MATS* == true AND *CO2 Diluent Needed for MATS Calculation* == true )

return result B

Else

return result F

else if (*Total CO2 Conc Records* == 0)

return result A

else if ((*CO2 Conc Monitor Hourly Count* == 2) AND (*CO2 Conc Derived Hourly Count* == 0) AND ((*CO2 Diluent Checks Needed for NOx Rate Calc* == true) OR (*CO2 Diluent Needed for MATS* == true)) AND ((*CO2 Conc Checks Needed for Heat Input* == true) OR (*CO2 Conc Checks Needed for CO2 Mass Calc* == true)))

*Current CO2 Conc Monitor Hourly Record* = Find MonitorHourlyValueData records with ParameterCode = "CO2C" and MODCCode in set {01, 02, 03, 04, 53, 54} where

*Current Date* = MonitorHourlyValueData.Date and

*Current Hour* = MonitorHourlyValueData.Hour

*Current CO2 Conc Missing Data Monitor Hourly Record* = Find MonitorHourlyValueData records with

ParameterCode = "CO2C" and MODCCode not in set {01, 02, 03, 04, 54} where

**Current Date** = MonitorHourlyValueData.Date and

**Current Hour** = MonitorHourlyValueData.Hour

If (**Current CO2 Conc Monitor Hourly Record** is null OR **Current CO2 Conc Missing Data Monitor Hourly Record** is null)

return result C

else

**CO2 Conc Monitor Checks Needed** = true

else if (**Total CO2 Conc Records** > 1)

return result C

else if (**CO2 Conc Derived Hourly Count** == 1)

**CO2 Conc Derived Checks Needed** = true

**Current CO2 Conc Derived Hourly Record** = matching DerivedHourlyValueData rec

**CO2C Has Measured DHV MODC** = (**Current CO2 Conc Derived Hourly Record**.MODCCode in set {01, 02, 03, 04, 05, 21, 53, 54})

if (**Current CO2 Conc Derived Hourly Record**.MODCCode in set {01, 02, 03, 04, 05, 21, 53, 54})

**Fc Factor Needed** = true

**Fd Factor Needed** = true

If (**Current CO2 Conc Derived Hourly Record**.Formula Id Key is not null)

**CO2C Formula record** = Find MonitoringFormulaData record where

MonitoringFormulaIDKey = **Current CO2 Conc Derived Hourly Record**.Formula Id Key

If (**CO2C Formula record** is not null)

If (**CO2C Formula record**.ParameterCode == "CO2C")

If (**CO2C Formula record**.EquationCode == "F-14A")

**O2 Dry Needed to Support CO2 Calculation** = true

else if (**CO2C Formula record**.EquationCode == "F-14B")

**O2 Wet Needed to Support CO2 Calculation** = true

**Moisture Needed** = true

else if (**CO2 Conc Monitor Hourly Count** == 1)

**CO2 Conc Monitor Checks Needed** = true

**Current CO2 Conc Monitor Hourly Record** = matching MonitorHourlyValueData rec

else

If (**Total CO2 Conc Records** > 0)

Return result D

else

If (**Total CO2 Conc Records** > 0)

Return result E

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a MHV or DHV record for CO2C for the hour.	Critical Error Level 1
B	You did not report an MHV record for CO2C for the hour.	Critical Error Level 1
C	You reported more than one MHV and/or DHV records for CO2C for the hour.	Critical Error Level 1
D	You reported a MHV or DHV record for CO2C, but this record is not required to calculate emissions.	Non-Critical Error
E	You reported a MHV or DHV record for CO2C, but this is not appropriate for a non-operating hour.	Critical Error Level 1
F	You did not report an MHV record for CO2C for the hour.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Unit-Level Evaluation

**Check Code:** HOUROP-24

**Check Name:** Count Hourly Fuel Flow Records

**Related Former Checks:**

**Applicability:** General Check

**Description:** Counts the number of Hourly Fuel Flow Records for the current hour and checks for consistency with Appendix D and/or Appendix E Methods

**Specifications:**

If (*Derived Hourly Checks Needed* == true)

*Hourly Fuel Flow Count For Oil* = 0

*Hourly Fuel Flow Count For Gas* = 0

*Appendix D Method Active* = *Heat Input App D Method Active For Hour* OR  
*CO2 App D Method Active For Hour* OR  
*SO2 App D Method Active For Hour*

*Hourly Fuel Flow List* = set of all DerivedHourlyValueData records

*Current Date* = DerivedHourlyValueData.Date and

*Current Hour* = DerivedHourlyValueData.Hour

For each record (*Current Hourly Fuel Flow Record*) in *Hourly Fuel Flow List*

*Cur Fuel Code* = *Current Hourly Fuel Flow Record*.FuelCode

if (*Cur Fuel Code* is null)

return result D

*Current Fuel Group* = select FuelGroupCode from FuelCode Table where FuelCode = *Cur Fuel Code*

if (*Current Fuel Group* is null)

return result D

else If *Current Fuel Group* == "GAS"

Add 1 to *Hourly Fuel Flow Count For Gas*

else if *Current Fuel Group* == "OIL"

Add 1 to *Hourly Fuel Flow Count For Oil*

*Hourly Fuel Flow Count* = *Hourly Fuel Flow Count For Gas* + *Hourly Fuel Flow Count For Oil*

If (*Current Hourly Op Record*.LocationName begins with "CP")

*CP Fuel Count* = *CP Fuel Count* + *Hourly Fuel Flow Count*

If (*Current Hourly Op Record*.OperatingTime== 0)

If (*Hourly Fuel Flow Count* > 0)

Return result A

else

if (*Appendix D Method Active* = true AND *Hourly Fuel Flow Count* == 0 AND *MP Pipe Config for Hourly Checks* is null)

Return result B

else if (*Appendix D Method Active* = false AND *Hourly Fuel Flow Count* > 0)

return result C

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an HFF record, but this is not appropriate for a non-operating hour.	Critical Error Level 1
B	You did not report an HFF record for the hour.	Critical Error Level 1
C	You reported a HFF record, but you did not report an active AD or AE method record in your monitoring plan for the hour.	Critical Error Level 1
D	The FuelCode reported in the HFF record is missing or invalid.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** HOUROP-30

**Check Name:** Determine Load Based Status of unit

**Related Former Checks:**

**Applicability:** General Check

**Description:** Determines whether current entity is load based

**Specifications:**

*Unit is Load Based* = false

Location Name = *Current Monitor Plan Location Record*.LOCATION\_NAME

if the Location Name begins with "CS" or "CP" or "MS" or "MP"

Locate all Unit Stack Configuration records where the stack/pipe location is the monitoring location, the BeginDate is on or before the Current Date, and the EndDate is null or is on or after the Current Date.

If the NonLoadBasedIndicator in all of the retrieved records is equal to 1,

*Unit is Load Based* = false

else

*Unit is Load Based* = true

else // current location is a unit

if the NonLoadBasedIndicator field for the unit = 1

*Unit is Load Based* = false

else

*Unit is Load Based* = true

**Results:**

Result

Response

Severity

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** HOUROP-32

**Check Name:** Perform Load Checks for Operating Hour

**Related Former Checks:**

**Applicability:** General Check

**Description:** Checks to see that Load is populated correctly for operating hours. Also checks Units of Measure Code for Load

**Specifications:**

*CurrentMaximumLoadValue* = null

if (*Current Hourly Op Record* is not null)

*Apportionment OpTime Array* for this location = *Current Hourly Op Record*.OperatingTime

*Apportionment Load Array* for this Location = *Current Hourly Op Record*.HourlyLoad

if (*Unit is Load Based* == true and *Current Hourly Op Record*.OperatingTime > 0.0)

if (*Current Hourly Op Record*.HourLoad is null OR *Current Hourly Op Record*.HourLoad < 0)

if (*Current Entity Type* = "Unit")

*Unit LoadTimesOpTime Accumulator* = -1

else if (*Current Entity Type* in set {CP, MP})

*Pipe LoadTimesOpTime Accumulator* = -1

else

*Stack LoadTimesOpTime Accumulator* = -1

return result A

else

if (*MP Stack Config for Hourly Checks* == "MS" AND *Current Entity Type* == "Unit")

*MP Unit Load* = *Current Hourly Op Record*.HourLoad

if (*Current Entity Type* = "Unit")

if (*Unit LoadTimesOpTime Accumulator* >= 0)

*Unit LoadTimesOpTime Accumulator* = *Unit LoadTimesOpTime Accumulator* +

(*Current Hourly Op Record*.HourLoad \* *Current Hourly Op Record*.OperatingTime)

else if (*Current Entity Type* in set {CP, MP})

if (*Pipe LoadTimesOpTime Accumulator* >= 0)

*Pipe LoadTimesOpTime Accumulator* = *Pipe LoadTimesOpTime Accumulator* +

(*Current Hourly Op Record*.HourLoad \* *Current Hourly Op Record*.OperatingTime)

else

if (*Stack LoadTimesOpTime Accumulator* >= 0)

*Stack LoadTimesOpTime Accumulator* = *Stack LoadTimesOpTime Accumulator* +

(*Current Hourly Op Record*.HourLoad \* *Current Hourly Op Record*.OperatingTime)

if *Current Hourly Op Record*.LoadUnitsOfMeasureCode not in {"MW", "KLBHR", "MMBTUHR"}

*MP Load UOM* = "INVALID"

return result B

else if (*MP Load UOM* is not null AND *MP Load UOM* <> "INVALID" AND *MP Load UOM* <> *Current Hourly Op Record*.LoadUnitsOfMeasureCode )

*MP Load UOM* = "INVALID"

return result C

else

if (*MP Load UOM* is null)

*MP Load UOM* = *Current Hourly Op Record*.LoadUnitsOfMeasureCode

Locate the *MonitorLoadRecordsByHourandLocation* record for the hour and location.

```
If (only one record is found AND MonitorLoadRecordByHourandLocation.MaximumLoadValue is
greater than 0),
  If (Current Hourly Op Record.LoadUnitsOfMeasureCode ==
MonitorLoadRecordByHourandLocation.MaximumLoadUnitsOfMeasureCode)
    If (Current Hourly Op Record.HourLoad is greater than
MonitorLoadRecordByHourandLocation.MaximumLoadValue)
      If (Current Hourly Op Record.HourLoad is greater than 1.25 *
MonitorLoadRecordByHourandLocation.MaximumLoadValue)
        return result L
      else
        return result H
    Else
      CurrentMaximumLoadValue =
MonitorLoadRecordByHourandLocation.MaximumLoadValue
    else
      return result I
  else
    return result J

else if (Current Hourly Op Record.OperatingTime == 0.0)
  if (Current Hourly Op Record.HourLoad is not null)
    return result D
  if Current Hourly Op Record.LoadUnitsOfMeasureCode is not null
    return result E

else if (Unit is Load Based == false)
  if (Current Hourly Op Record.HourLoad is not null)
    return result F
  if Current Hourly Op Record.LoadUnitsOfMeasureCode is not null
    return result G
```



**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The HourLoad reported in the Hourly Operating record is invalid. The value must be greater than or equal to 0.	Critical Error Level 1
B	The LoadUnitsOfMeasureCode reported in the Hourly Operating record is invalid.	Critical Error Level 1
C	You did not report the same LoadUnitsOfMeasureCode for all locations in the configuration.	Critical Error Level 1
D	You reported HourLoad in the Hourly Operating record. This field should be blank for a non-operating hour.	Critical Error Level 1
E	You reported a LoadUnitsOfMeasureCode in the Hourly Operating record. This field should be blank for a non-operating hour.	Non-Critical Error
F	You reported HourLoad in the Hourly Operating record. This field should be blank for a non-load-based unit.	Critical Error Level 1
G	You reported a LoadUnitsOfMeasureCode in the Hourly Operating record. This field should be blank for a non-load-based unit.	Critical Error Level 1
H	Warning: The HourLoad reported in the Hourly Operating Data record is higher than the MaximumLoadValue in the Monitoring Load record reported in your monitoring plan. Sources are required to periodically (at least once annually) evaluate the appropriateness of these maximum values in the monitoring plan and make proper adjustments when necessary. You should investigate the cause of these exceedances and determine whether an adjustment to the MaximumLoadValue in your monitoring plan is necessary.	Informational Message
I	The [fieldname] does not correspond to the MaximumLoadUnitsOfMeasure reported in the monitoring plan.	Critical Error Level 2
J	You did not have one and only one valid Monitor Load record that was active during the hour.	Critical Error Level 1
K	The LoadRange or CommonStackLoadRange reported in the Hourly Operating record is inconsistent with the HourLoad. When no load is generated, the load range should be less than 2.	Informational Message
L	You reported an HourLoad in the Hourly Operating Data record that is 125% or greater than the MaximumLoadValue in the Monitoring Load record reported in your monitoring plan.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** HOUROP-33

**Check Name:** Check reported Fuel Code for Operating Hour

**Related Former Checks:**

**Applicability:** General Check

**Description:** Where applicable, ensures that the fuel code is valid

**Specifications:**

if (*Current Hourly Op Record* is not null)

*Fuel Code Validation Needed* = false

If (*NOx Rate Fuel Specific Missing Data* == true OR *NOx Mass Fuel Specific Missing Data* == true OR *SO2 Fuel Specific Missing Data* == true OR *CO2 Fuel Specific Missing Data* == true OR *Heat Input Fuel Specific Missing Data* == true OR *H2O Fuel Specific Missing Data* == true)

*Fuel Code Validation Needed* = true

else

if (*Current SO2 Monitor Hourly Record* is not null AND *SO2 Bypass Code* == "BYMAXFS" )

if (*Current SO2 Monitor Hourly Record*.MODCCode == 23)

*Fuel Code Validation Needed* = true

if (*Current NOx Conc Monitor Hourly Record* is not null AND *NOx Mass Bypass Code* == "BYMAXFS" )

if (*Current NOx Conc Monitor Hourly Record*.MODCCode in set {23,24})

*Fuel Code Validation Needed* = true

if (*Current NOx Rate Derived Hourly Record* is not null AND *NOx Rate Bypass Code* == "BYMAXFS" )

if (*Current NOx Rate Derived Hourly Record*.MODCCode in set {23,24})

*Fuel Code Validation Needed* = true

if (*Fuel Code Validation Needed* == true)

if (*Current Hourly Op Record*.FuelCode is null)

If (*Current Hourly Op Record*.OperatingTime is greater than 0)

return result A

else

*Current Hourly Fuel Group Code* = FuelGroupCode from FuelCode table entry where

FuelCode = *Current Hourly Op Record*.FuelCode

if (*Current Hourly Op Record*.FuelCode = "NFS" OR

(*Current Hourly Fuel Group Code* == "COAL" AND *Current Hourly Op Record*.FuelCode <> "C" ) )

return result B

else if (*Current Hourly Op Record*.FuelCode is not null)

if (*SO2 Bypass Code* <> "BYMAXFS" AND *NOx Rate Bypass Code* <> "BYMAXFS" AND *NOx Mass Bypass Code* <> "BYMAXFS")

return result C

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a FuelCode in the Hourly Operating record.	Critical Error Level 1
B	The FuelCode reported Hourly Operating record is invalid.	Critical Error Level 1
C	You reported a FuelCode in the Hourly Operating record. This value should only be reported if you use fuel-specific missing data or have an unmonitored bypass stack that reports emissions based on fuel-specific maximum values.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Operating Hour Evaluation
---	-------------------	--

**Check Code:** HOUROP-34

**Check Name:** Validate Reported FC Factor

**Related Former Checks:**

**Applicability:** General Check

**Description:** Uses cross-check value to ensure that FC Factor reported in Hourly Operating Data is within acceptable range

**Validation Tables:**

F-Factor Range Checks (Cross Check Table)

Fuel Type Reality Checks for FC FACTOR (Cross Check Table)

**Specifications:**

*Valid FC Factor Exists* = false

If ( *Current Hourly Op Record*.FcFactor is null )

    if ( *FC Factor Needed* = true )  
        return result A

Else If ( *Current Hourly Op Record*.FcFactor <= 0 )

    if ( *FC Factor Needed* = true )  
        return result A  
    else  
        return result C

Else

*Valid FC Factor Exists* = true

    If ( *Special Fuel Burned* <> true )

        If ( *FcValidationSpansQuarter* = true )

*IsFuelSpecific* = the IsFuelSpecific value at *CurrentMonitorPlanLocationPosition* in

*FcValidationInfoByLocationArray*

*MinValue* = the MinValue value at *CurrentMonitorPlanLocationPosition* in *FcValidationInfoByLocationArray*

*MaxValue* = the MaxValue value at *CurrentMonitorPlanLocationPosition* in *FcValidationInfoByLocationArray*

        Else

*FuelRangeCd* = null.

        If ( *CurrentMonitorPlanLocationRecord*.UnitID is NOT null )

            Locate *UnitFuelRecords* in *FacilityUnitFuelRecords* where:

- 1) UnitID is equal to *CurrentMonitorPlanLocationRecord*.UnitID.
- 2) BeginDate is less than or equal to *CurrentOperatingDate*.
- 3) EndDate is null or greater than or equal to *CurrentOperatingDate*.
- 4) IndicatorCode is equal to "P" or "S".

        For each *UnitFuelRecord* in *UnitFuelRecords*,

            If ( *UnitFuelRecord*.FuelCode is equal to "NNG" or "PNG" )

                Set *PngOrNngFound* to true.

            Else If ( *UnitFuelRecord*.FuelCode is equal to "DSL" )

Set *DslFound* to true.

Else

Set *OtherFound* to true.  
exit loop

Else

Locate *UnitStackConfigurationRecords* in ***EmUnitStackConfigurationRecords*** where:

- 1) StackPipeID is equal to ***CurrentMonitorPlanLocationRecord***.StackPipeID.
- 2) BeginDate is less than or equal to ***CurrentOperatingDate***.
- 3) EndDate is null or greater than or equal to ***CurrentOperatingDate***.

For each *UnitStackConfigurationRecord* in *UnitStackConfigurationRecords*,

Locate *UnitFuelRecords* in ***FacilityUnitFuelRecords*** where:

- 1):UnitID is equal to *UnitStackConfigurationRecord*.UnitID.
- 2) BeginDate is less than or equal to ***CurrentOperatingDate***.
- 3) EndDate is null or greater than or equal to ***CurrentOperatingDate***.
- 4) IndicatorCode is equal to "P" or "S".

For each *UnitFuelRecord* in *UnitFuelRecords*,

If ( *UnitFuelRecord*.FuelCode is equal to "NNG" or "PNG" )

Set *PngOrNngFound* to true.

Else If ( *UnitFuelRecord*.FuelCode is equal to "DSL" )

Set *DslFound* to true.

Else

Set *OtherFound* to true.  
exit *UnitFuelRecord* loop

If ( *OtherFound* to true )

exit *UnitStackConfigurationRecord* loop.

If ( *OtherFound* is true ) OR ( *PngOrNngFound* is false AND *DslFound* is false )

*IsFuelSpecific* = false

*MinValue* = the LowerValue in the ***FFactorRangeChecks*** crosscheck table row where Factor is equal to "FC"

*MaxValue* = the UpperValue in the ***FFactorRangeChecks*** crosscheck table row where Factor is equal to "FC"

Else

*IsFuelSpecific* = true

*MinValue* = the lowest LowerValue in the ***FuelTypeRealityChecksForFcFactor*** crosscheck table row where Factor is equal to either "GAS", if *PngOrNngFound* is true, OR "OIL", if *DslFound* is true

*MaxValue* = the highest UpperValue in the ***FuelTypeRealityChecksForFcFactor*** crosscheck table row where Factor is equal to either "GAS", if *PngOrNngFound* is true, OR "OIL", if *DslFound* is true.

*FcFactorMinimum* = *MinValue*  
*FcFactorMaximum* = *MaxValue*

If ( *CurrentHourlyOpRecord.FcFactor* > *FcFactorMaximum* OR *CurrentHourlyOpRecord.FcFactor* < *FcFactorMinimum* )

    If ( *IsFuelSpecific* is true )

        return result E

    Else If ( *FcFactorNeeded* is true )

        return result B

    Else

        return result D

Results:

Result	Response	Severity
A	The [FNAME] reported in the Hourly Operating record is missing or invalid.	Critical Error Level 1
B	The [FNAME] reported in the Hourly Operating record is outside of the expected range from [MIN] to [MAX].	Critical Error Level 2
C	The [FNAME] reported in the Hourly Operating record is missing or invalid.	Non-Critical Error
D	The [FNAME] reported in the Hourly Operating record is outside of the expected range from [MIN] to [MAX].	Non-Critical Error
E	The [FNAME] reported in the Hourly Operating record is outside of the expected range from [MIN] to [MAX].	Informational Message

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Unit-Level Evaluation
---	-------------------	--

**Check Code:** HOUROP-35

**Check Name:** Validate Reported FD Factor

**Related Former Checks:**

**Applicability:**

**Description:** Uses cross-check value to ensure that FD Factor reported in Hourly Operating Data is within acceptable range

**Validation Tables:**

F-Factor Range Checks (Cross Check Table)

**Specifications:**

*Valid FD Factor Exists* = false

If ( *Current Hourly Op Record*.FdFactor is null )

if ( *FD Factor Needed* = true )  
return result A

Else If ( *Current Hourly Op Record*.FdFactor <= 0 )

if ( *FD Factor Needed* = true )  
return result A  
else  
return result C

Else

*Valid FD Factor Exists* = true

If ( *Special Fuel Burned* <> true )

*FD Factor Minimum* = Lookup Lower from Cross-Check Table "F-Factor Range Checks" where Factor = "FD"

*FD Factor Maximum* = Lookup Upper from Cross-Check Table "F-Factor Range Checks" where Factor = "FD"

If ( *Current Hourly Op Record*.FdFactor > *FD Factor Maximum* OR *Current Hourly Op Record*.FdFactor < *FD Factor Minimum* )

if ( *FD Factor Needed* = true )  
return result B  
else  
return result D

#### Results:

Result	Response	Severity
A	The [FNAME] reported in the Hourly Operating record is missing or invalid.	Critical Error Level 1
B	The [FNAME] reported in the Hourly Operating record is outside of the expected range from [MIN] to [MAX].	Critical Error Level 2
C	The [FNAME] reported in the Hourly Operating record is missing or invalid.	Non-Critical Error
D	The [FNAME] reported in the Hourly Operating record is outside of the expected range from [MIN] to [MAX].	Non-Critical Error

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Unit-Level Evaluation

**Check Code:** HOUROP-36

**Check Name:** Validate Reported FW Factor

**Related Former Checks:**

**Applicability:** General Check

**Description:** Uses cross-check value to ensure that FW Factor reported in Hourly Operating Data is within acceptable range

**Validation Tables:**

F-Factor Range Checks (Cross Check Table)

**Specifications:**

*Valid FW Factor Exists* = false

If ( *Current Hourly Op Record*.FwFactor is null )

if ( *FW Factor Needed* = true )  
return result A

Else If ( *Current Hourly Op Record*.FwFactor <= 0 )

if ( *FW Factor Needed* = true )  
return result A  
else  
return result C

Else

*Valid FW Factor Exists* = true

If ( *Special Fuel Burned* <> true )

*FW Factor Minimum* = Lookup Lower from Cross-Check Table "F-Factor Range Checks" where Factor = "FW"

*FW Factor Maximum* = Lookup Upper from Cross-Check Table "F-Factor Range Checks" where Factor = "FW"

If ( *Current Hourly Op Record*.FwFactor > *FW Factor Maximum* OR *Current Hourly Op Record*.FwFactor < *FW Factor Minimum* )

if ( *FW Factor Needed* = true )  
return result B  
else  
return result D

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The [FNAME] reported in the Hourly Operating record is missing or invalid.	Critical Error Level 1
B	The [FNAME] reported in the Hourly Operating record is outside of the expected range from [MIN] to [MAX].	Critical Error Level 2
C	The [FNAME] reported in the Hourly Operating record is missing or invalid.	Non-Critical Error
D	The [FNAME] reported in the Hourly Operating record is outside of the expected range from [MIN] to [MAX].	Non-Critical Error

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Unit-Level Evaluation



**Check Code:** HOUROP-37

**Check Name:** Verify Single Heat Input Derived Hourly Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Verify that a single Derived Hourly record exists for Heat Input for the current location and hour

**Specifications:**

*Current Heat Input Derived Hourly Record* = null

*Heat Input Derived Checks Needed* = false

*HIT Derived Checks Needed* = false

Heat Input Derived Hourly Count = # of DerivedHourlyValueData record with parameter beginning with "HI" where

*Current Date* = DerivedHourlyValueData.Date and

*Current Hour* = DerivedHourlyValueData.Hour

If *Current Hourly Op Record*.OperatingTime > 0

If (Heat Input Derived Hourly Count == 0)

If (*Heat Input Method Code* is not null)

If (*Heat Input Method Code* not in set {EXP, LTFF})

return result A

else if (*Heat Input Method Code* == "LTFF" AND *Current Entity Type* == "Unit")

return result A

Else if (Heat Input Derived Hourly Count > 0 AND

(*Heat Input Method Code* is null OR

*Heat Input Method Code* == "EXP" OR

(*Heat Input Method Code* == "LTFF" AND *Current Entity Type* == "CP"))

*Rpt Period HI Reported Accumulator Array* for the location = -1

*Rpt Period HI Calculated Accumulator Array* for the location = -1

return result B

Else if (Heat Input Derived Hourly Count > 1)

*Rpt Period HI Reported Accumulator Array* for the location = -1

*Rpt Period HI Calculated Accumulator Array* for the location = -1

return result C

Else

*Current Heat Input Derived Hourly Record* = DerivedHourlyValueData record with parameter "HI" or "HIT" where

*Current Date* = DerivedHourlyValueData.Date and

*Current Hour* = DerivedHourlyValueData.Hour

If (*LME HI Method* is not null)

if (*Current Heat Input Derived Hourly Record*.ParameterCode == "HIT")

*HIT Derived Checks Needed* = true

else

*Rpt Period HI Reported Accumulator Array* for the location = -1

*Rpt Period HI Calculated Accumulator Array* for the location = -1

return result E

else

if (*Current Heat Input Derived Hourly Record*.ParameterCode == "HIT")

*Rpt Period HI Reported Accumulator Array* for the location = -1

*Rpt Period HI Calculated Accumulator Array* for the location = -1

return result E

else

*Heat Input Derived Checks Needed* = true

If (*Heat Input Method Code* == "AMS")

if (*Current Heat Input Derived Hourly Record*.FormulaIdentifier is not null)

HI Formula Record = MonitorFormulaData record where  
 MonitorFormulaData.FormulaID = ***Current Heat Input Derived Hourly Record***.FormulaIdentifier

If (HI Formula Record is not null)

If (HI Formula Record.ParameterCode == "HI" AND HI Formula  
 Record.EquationCode in set {F-15,F-16,F-17,F-18})  
***Heat Input Method Code*** == "CEM"  
***Heat Input CEM Method Active For Hour*** == true

else

If Heat Input Derived Hourly Count > 0  
 return result D

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a DHV record for HI (or HIT) for the hour. If you have entered LME data via the LME Emissions Data Utility, this error indicates that you have not yet generated your quarterly emissions data. You must do this by clicking on the Generate Emissions Data link on the LME Emissions Data Utility submenu.	Critical Error Level 1
B	You reported a DHV record for HI (or HIT), but, according to the monitoring methods in your monitoring plan, you should not report hourly heat input at this location.	Critical Error Level 1
C	You reported more than one DHV record for HI (or HIT) for the hour.	Critical Error Level 1
D	You reported a DHV record for HI (or HIT), but this is not appropriate for a non-operating hour.	Critical Error Level 1
E	The ParameterCode reported in the DHV record does not match the ParameterCode in the Method record in your monitoring plan used to determine [eparam].	Critical Error Level 1

#### Usage:

1      Process/Category:      Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** HOUROP-38

**Check Name:** Determine Fuel Type

**Related Former Checks:**

**Applicability:** General Check

**Description:**

**Specifications:**

If (*Derived Hourly Checks Needed* == true)

If *Current Hourly Op Record*.FcFactor is not null OR *Current Hourly Op Record*.FdFactor is not null OR *Current Hourly Op Record*.FwFactor is not null

If (*Hourly Fuel Flow Count For Oil* + *Hourly Fuel Flow Count For Gas* == 0)

If (*Current Hourly Op Record*.FuelCd is null OR *Current Hourly Op Record*.FuelCd == "MIX")

Count all active UnitFuel records for the location where  
FuelCd in set {OOL, PRG, PRS, OGS}

If count > 0

*Special Fuel Burned* = true

else if *Current Hourly Op Record*.UnitFuelCd in set {OOL, PRG, PRS, OGS}

*Special Fuel Burned* = true

#### Results:

Result

Response

Severity

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Unit-Level Evaluation

**Check Code:** HOUROP-39

**Check Name:** Verify Single H2O Conc Derived or Monitor Hourly Data Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check scans the DerivedHourlyValueData and MonitorHourlyValueData records to ensure that a single record containing H2O concentration values is reported for the current hour

**Specifications:**

*H2O Monitor Hourly Checks Needed* = false

*H2O Derived Hourly Checks Needed* = false

*Current H2O Monitor Hourly Record* = null

*Current H2O Derived Hourly Record* = null

*O2 Wet Checks Needed for H2O* = false

*O2 Dry Checks Needed for H2O* = false

*H2O Has Measured DHV MODC* = null

If *Current Hourly Op Record*.OperatingTime > 0.00

If (**Moisture Needed** == true)

If *H2O Monitor Hourly Count* + *H2O Derived Hourly Count* == 0

If (*H2O Method Code* == "MWD")

return result A

Else if (*H2O Method Code* <> "MDF")

return result B

Else if *H2O Default Max Value* is not null

return result C

Else if (*H2O Derived Hourly Count* > 1)

return result D

Else if (*H2O Monitor Hourly Count* > 1)

return result E

Else if (*H2O Derived Hourly Count* == 1 AND *H2O Method Code* in set {MTB, MMS})

return result F

Else if (*H2O Monitor Hourly Count* == 1 AND *H2O Method Code* in set {MWD, MDF})

return result G

Else if (*H2O Monitor Hourly Count* == 1)

*Current H2O Monitor Hourly Record* = MonitorHourlyValueData record matching with ParameterCode = "H2O"  
where

*Current Date* = MonitorHourlyValueData.Date and

*Current Hour* = MonitorHourlyValueData.Hour

*H2O Monitor Hourly Checks Needed* = true

Else if (*H2O Derived Hourly Count* == 1)

*Current H2O Derived Hourly Record* = DerivedHourlyValueData rec matching where

DerivedHourlyValueData.ParameterCode = "H2O" AND

DerivedHourlyValueData.Date = *Current Date* AND

DerivedHourlyValueData.Hour = **Current Hour**

**H2O Has Measured DHV MODC** = ( **Current H2O Derived Hourly Record**.ModcCode in set {01, 02, 03, 04, 05, 21, 53, 54} )

**H2O Derived Hourly Checks Needed** = true

if ( **Current H2O Derived Hourly Record**.ModcCode in set {01, 02, 03, 04, 05, 21, 53, 54} AND **Current H2O Derived Hourly Record**.FormulaIdentifier is not null)

**H2O Formula Record** = MonitorFormulaData record where  
MonitorFormulaData.FormulaID = **Current H2O Derived Hourly Record**.FormulaIdentifier

If ( **H2O Formula Record** is not null)

If ( **H2O Formula Record**.ParameterCode == "H2O" AND **H2O Formula Record**.EquationCode in set {F-31, M-1K})

**O2 Wet Checks Needed for H2O** = true

**O2 Dry Checks Needed for H2O** = true

else

If **H2O Monitor Hourly Count** + **H2O Derived Hourly Count** > 0  
return result I

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a DHV record for H2O for the hour.	Critical Error Level 1
B	You did not report an MHV record for H2O for the hour.	Critical Error Level 1
C	You did not report a DHV record for H2O for the hour. You must report this record if you have multiple H2O default values for different fuels.	Critical Error Level 1
D	You reported more than one DHV record for H2O for the hour.	Critical Error Level 1
E	You reported more than one MHV record for H2O for the hour.	Critical Error Level 1
F	You reported a DHV record for H2O, but the H2O MethodCode is not "MWD" or "MDF".	Critical Error Level 1
G	You reported a MHV record for H2O, but the H2O MethodCode is not "MTB" or "MMS".	Critical Error Level 1
H	You reported a DHV and/or MHV record for H2O, but this record is not required to calculate emissions.	Informational Message
I	You reported a DHV and/or MHV record for H2O, but this is not appropriate for a non-operating hour.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Unit-Level Evaluation

**Check Code:** HOUROP-40

**Check Name:** Verify Single O2 Dry Monitor Hourly Value Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check scans the MonitorHourlyValueData records to ensure that a single O2 Wet exists for the current hour.

Note that Result A and G indicate that a dry moisture basis is required because both a wet and dry O2C are needed. Otherwise a null moisture basis can be used.

**Specifications:**

*Current O2 Dry Monitor Hourly Record* = null

*Current O2 Dry Missing Data Monitor Hourly Record* = null

*O2 Dry Monitor Hourly Checks Needed* = false

If *Current Hourly Op Record*.OperatingTime > 0.00

If ((*O2 Dry Checks Needed for Heat Input* == true) OR (*O2 Dry Checks Needed for NOx Rate Calc* == true) OR (*O2 Dry Checks Needed To Support CO2 Calculation* == true) OR (*O2 Dry Checks Needed for H2O* == true) OR (*O2 Dry Needed for MATS* == true))

If ((*O2 Dry Monitor Hourly Count* == 0) AND ((*O2 Wet Checks Needed for Heat Input* == true) OR (*O2 Wet Checks Needed for NOx Rate Calc* == true) OR (*O2 Wet Checks Needed To Support CO2 Calculation* == true) OR (*O2 Wet Checks Needed for H2O* == true) OR (*O2 Wet Needed for MATS* == true)))

If ( *O2 Wet Checks Needed for Heat Input* == true ) OR  
 ( *O2 Wet Checks Needed for NOx Rate Calc* == true AND *NOXR Has Measured DHV MODC* == true ) OR  
 ( *O2 Wet Checks Needed To Support CO2 Calculation* == true AND *CO2C Has Measured DHV MODC* == true ) OR  
 ( *O2 Wet Checks Needed for H2O* == true AND *H2O Has Measured DHV MODC* == true ) OR  
 ( *O2 Wet Needed for MATS* == true AND *O2 Wet Needed for MATS Calculation* == true )  
 return result A  
 Else  
 return result G

Else if (*O2 Dry Monitor Hourly Count* + *O2 Null Monitor Hourly Count* == 0)

If ( *O2 Dry Checks Needed for Heat Input* == true ) OR  
 ( *O2 Dry Checks Needed for NOx Rate Calc* == true AND *NOXR Has Measured DHV MODC* == true ) OR  
 ( *O2 Dry Checks Needed To Support CO2 Calculation* == true AND *CO2C Has Measured DHV MODC* == true ) OR  
 ( *O2 Dry Checks Needed for H2O* == true AND *H2O Has Measured DHV MODC* == true ) OR  
 ( *O2 Dry Needed for MATS* == true AND *O2 Dry Needed for MATS Calculation* == true )  
 return result B  
 Else  
 return result H

Else if ((*O2 Dry Monitor Hourly Count* + *O2 Null Monitor Hourly Count* > 2) OR (*O2 Dry Monitor Hourly Count* + *O2 Null Monitor Hourly Count* == 2 AND *O2 Wet Monitor Hourly Count* + *O2 Null Monitor Hourly Count* == 2))  
 Return result C

Else if (*O2 Dry Monitor Hourly Count* + *O2 Null Monitor Hourly Count* == 2)

If (*O2 Dry Checks Needed for Heat Input* == true AND (*O2 Dry Checks Needed for NOx Rate Calc* == true OR *O2 Dry Checks Needed for H2O* == true) OR (*O2 Dry Needed for MATS* == true))

*Current O2 Dry Monitor Hourly Record* = Find MonitorHourlyValueData records with ParameterCode = "O2C" AND (MoistureBasis = "D" OR MoistureBasis is null) and MODCCCode in set {01, 02, 03, 04, 53,

54} where

**Current Date** = MonitorHourlyValueData.Date and

**Current Hour** = MonitorHourlyValueData.Hour

**Current O2 Dry Missing Data Monitor Hourly Record** = Find MonitorHourlyValueData records with ParameterCode = "O2C" AND (MoistureBasis = "D" OR MoistureBasis is null) and MODCCode not in set {01, 02, 03, 04, 54} where

**Current Date** = MonitorHourlyValueData.Date and

**Current Hour** = MonitorHourlyValueData.Hour

If (**Current O2 Dry Monitor Hourly Record** is null OR **Current O2 Dry Missing Data Monitor Hourly Record** is null)

return result C

else

**O2 Dry Monitor Hourly Checks Needed** = true

else

return result C

Else if (**O2 Dry Monitor Hourly Count** == 1)

**O2 Dry Monitor Hourly Checks Needed** = true

**Current O2 Dry Monitor Hourly Record** = MonitorHourlyValueData record with ParameterCode = "O2C" AND MoistureBasis = "D" where

**Current Date** = MonitorHourlyValueData.Date and

**Current Hour** = MonitorHourlyValueData.Hour

Else if (**O2 Null Monitor Hourly Count** == 1)

**O2 Dry Monitor Hourly Checks Needed** = true

**Current O2 Dry Monitor Hourly Record** = **Current O2 Null Monitor Hourly Record**

else

If (**O2 Dry Monitor Hourly Count** > 0)

Return result D

If ((**O2 Null Monitor Hourly Count** > 0) AND (**O2 Wet Checks Needed for Heat Input** == false) AND (**O2 Wet Checks Needed for NOx Rate Calc** == false) AND (**O2 Wet Checks Needed To Support CO2 Calculation** == false) AND (**O2 Wet Checks Needed for H2O** == false) AND (**O2 Wet Needed for MATS** == false))

return result E

else

If (**O2 Dry Monitor Hourly Count** + **O2 Null Monitor Hourly Count** + **O2 Wet Monitor Hourly Count** > 0)

Return result F

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a MHV record for O2C with a MoistureBasis of D for the hour.	Critical Error Level 1
B	You did not report a MHV record for O2C with a MoistureBasis of D (or blank) for the hour.	Critical Error Level 1
C	You reported too many MHV records for O2C with a MoistureBasis of D (or blank) for the hour.	Critical Error Level 1
D	You reported an MHV record for O2C with a MoistureBasis of [basis], but this record is not required to calculate emissions.	Non-Critical Error
E	You reported an MHV record for O2C with a blank MoistureBasis, but this record is not required to calculate emissions.	Non-Critical Error
F	You reported a MHV record for O2C, but this is not appropriate for a non-operating hour.	Critical Error Level 1
G	You did not report a MHV record for O2C with a MoistureBasis of D for the hour.	Critical Error Level 1
H	You did not report a MHV record for O2C with a MoistureBasis of D (or blank) for the hour.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Unit-Level Evaluation



**Check Code:** HOUROP-41

**Check Name:** Verify Single O2 Wet Monitor Hourly Value Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check scans the MonitorHourlyValueData records to ensure that a single O2 Wet exists for the current hour. Otherwise a null moisture basis can be used.

Note that Result A and E indicate that a wet moisture basis is required because both a wet and dry O2C are needed.

**Specifications:**

*Current O2 Wet Monitor Hourly Record* = null

*Current O2 Wet Missing Data Monitor Hourly Record* = null

*O2 Wet Monitor Hourly Checks Needed* = false

If *Current Hourly Op Record*.OperatingTime > 0.00

If ((*O2 Wet Checks Needed for Heat Input* == true) OR (*O2 Wet Checks Needed for NOx Rate Calc* == true) OR (*O2 Wet Checks Needed To Support CO2 Calculation* == true) OR (*O2 Wet Checks Needed for H2O* == true) OR (*O2 Wet Needed for MATS* == true))

If ((*O2 Wet Monitor Hourly Count* == 0) AND ((*O2 Dry Checks Needed for Heat Input* == true) OR (*O2 Dry Checks Needed for NOx Rate Calc* == true) OR (*O2 Dry Checks Needed To Support CO2 Calculation* == true) OR (*O2 Dry Checks Needed for H2O* == true) OR (*O2 Dry Needed for MATS* == true)))

If ( *O2 Dry Checks Needed for Heat Input* == true ) OR  
 ( *O2 Dry Checks Needed for NOx Rate Calc* == true AND *NOXR Has Measured DHV MODC* == true ) OR  
 ( *O2 Dry Checks Needed To Support CO2 Calculation* == true AND *CO2C Has Measured DHV MODC* == true ) OR  
 ( *O2 Dry Checks Needed for H2O* == true AND *H2O Has Measured DHV MODC* == true ) OR  
 ( *O2 Dry Needed for MATS* == true AND *O2 Dry Needed for MATS Calculation* == true )  
 return result A

Else  
 return result E

Else if (*O2 Wet Monitor Hourly Count* + *O2 Null Monitor Hourly Count* == 0)

If ( *O2 Wet Checks Needed for Heat Input* == true ) OR  
 ( *O2 Wet Checks Needed for NOx Rate Calc* == true AND *NOXR Has Measured DHV MODC* == true ) OR  
 ( *O2 Wet Checks Needed To Support CO2 Calculation* == true AND *CO2C Has Measured DHV MODC* == true ) OR  
 ( *O2 Wet Checks Needed for H2O* == true AND *H2O Has Measured DHV MODC* == true ) OR  
 ( *O2 Wet Needed for MATS* == true AND *O2 Wet Needed for MATS Calculation* == true )  
 return result B

Else  
 return result F

Return result B

Else if (*O2 Wet Monitor Hourly Count* + *O2 Null Monitor Hourly Count* > 2)  
 Return result C

Else if (*O2 Wet Monitor Hourly Count* + *O2 Null Monitor Hourly Count* == 2)

If ((*O2 Wet Checks Needed for Heat Input* == true) AND (*O2 Dry Monitor Hourly Count* + *O2 Null Monitor Hourly Count* < 2) AND ((*O2 Wet Checks Needed for NOx Rate Calc* == true) OR (*O2 Wet Checks Needed for H2O* == true) OR (*O2 Wet Needed for MATS* == true)))

**Current O2 Wet Monitor Hourly Record** = Find MonitorHourlyValueData records with ParameterCode = "O2C" AND (MoistureBasis = "W" OR MoistureBasis is null) and MODCCode in set {01, 02, 03, 04, 53, 54} where

**Current Date** = MonitorHourlyValueData.Date and

**Current Hour** = MonitorHourlyValueData.Hour

**Current O2 Wet Missing Data Monitor Hourly Record** = Find MonitorHourlyValueData records with ParameterCode = "O2C" AND (MoistureBasis = "W" OR MoistureBasis is null) and MODCCode not in set {01, 02, 03, 04, 54} where

**Current Date** = MonitorHourlyValueData.Date and

**Current Hour** = MonitorHourlyValueData.Hour

If (**Current O2 Wet Monitor Hourly Record** is null OR **Current O2 Wet Missing Data Monitor Hourly Record** is null)

return result C

else

**O2 Wet Monitor Hourly Checks Needed** = true

else

return result C

Else if (**O2 Wet Monitor Hourly Count** == 1)

**O2 Wet Monitor Hourly Checks Needed** = true

**Current O2 Wet Monitor Hourly Record** = MonitorHourlyValueData record with ParameterCode = "O2C" AND MoistureBasis = "W" where

**Current Date** = MonitorHourlyValueData.Date and

**Current Hour** = MonitorHourlyValueData.Hour

Else if (**O2 Null Monitor Hourly Count** == 1)

**O2 Wet Monitor Hourly Checks Needed** = true

**Current O2 Wet Monitor Hourly Record** = **Current O2 Null Monitor Hourly Record**

else

If (**O2 Wet Monitor Hourly Count** > 0)

Return result D

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a MHV record for O2C with a MoistureBasis of W for the hour.	Critical Error Level 1
B	You did not report a MHV record for O2C with a MoistureBasis of W (or blank) for the hour.	Critical Error Level 1
C	You reported too many MHV records for O2C with a MoistureBasis of W (or blank) for the hour.	Critical Error Level 1
D	You reported an MHV record for O2C with a MoistureBasis of [basis], but this record is not required to calculate emissions.	Non-Critical Error
E	You did not report a MHV record for O2C with a MoistureBasis of W for the hour.	Critical Error Level 1
F	You did not report a MHV record for O2C with a MoistureBasis of W (or blank) for the hour.	Critical Error Level 1

## Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Unit-Level Evaluation

**Check Code:** HOUROP-42

**Check Name:** Verify Single SO2R Derived Hourly Data Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check scans the DerivedHourlyValueData records to ensure that a single record containing SO2R derived values is reported for the current hour

**Specifications:**

If (*Derived Hourly Checks Needed* == true)  
*SO2R Derived Checks Needed* = false

*SO2R Derived Hourly Count* = count of DerivedHourlyValueData records with ParameterCode = "SO2R" where  
*Current Date* = DerivedHourlyValueData.Date and  
*Current Hour* = DerivedHourlyValueData.Hour

If *Current Hourly Op Record*.OperatingTime > 0

If (*SO2R Derived Hourly Count* == 0 AND *F23 Default Max Value* is not null)

Return result A

Else if (*SO2R Derived Hourly Count* > 0 AND *SO2 F23 Method Active For Hour* == false)

Return result B

Else if (*SO2R Derived Hourly Count* > 1)

Return result C

Else if (*SO2R Derived Hourly Count* == 1)

*Current SO2R Derived Hourly Record* = DerivedHourlyValueData rec matching with param SO2R where

*Current Date* = DerivedHourlyValueData.Date and

*Current Hour* = DerivedHourlyValueData.Hour

*SO2R Derived Checks Needed* = true

else

If *SO2R Derived Hourly Count* > 0

Return result D

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a DHV record for SO2R for the hour.	Critical Error Level 1
B	You reported a DHV record for SO2R, but this record is not required to calculate emissions.	Non-Critical Error
C	You reported more than one DHV record for SO2R for the hour.	Critical Error Level 1
D	You reported a DHV record for SO2R, but this is not appropriate for a non-operating hour.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** HOUROP-43

**Check Name:** Validate Single Stack Flow Record

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Counts records in MonitorHourlyValueData for the current date and hour with parameter "FLOW". Based on whether or not OperatingTime is non-zero for this hour, reports any appropriate errors and sets Current Flow Monitor Hourly Record

**Specifications:**

*Current Stack Flow Hourly Record* = null

*Apportionment Stack Flow Array* for this Location = null

If (*Flow MHV Optionally Allowed* == true) AND (*Flow Monitor Hourly Count* > 0)  
*Flow Monitor Hourly Checks Needed* = true

If *Flow Monitor Hourly Checks Needed* == true)

If (*Flow Monitor Hourly Count* == 0)

*Flow Monitor Hourly Checks Needed* = false

return result A

Else if (*Flow Monitor Hourly Count* > 1)

return result B

Else

*Current Stack Flow Hourly Record* = MonitorHourlyValueData record with parameter FLOW where

*Current Date* = MonitorHourlyValueData.Date and

*Current Hour* = MonitorHourlyValueData.Hour

*Apportionment Stack Flow Array* for this Location = *CurrentStackFlowHourlyRecord*.UnadjustedHourlyValue

else

If *Flow Monitor Hourly Count* > 0

return result C

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report an MHV record for FLOW for the hour.	Critical Error Level 1
B	You reported more than one MHV record for FLOW for the hour.	Critical Error Level 1
C	You reported a MHV record for FLOW, but this record is not appropriate for the hour.	Non-Critical Error

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Unit-Level Evaluation

**Check Code:** HOUROP-44

**Check Name:** Check Reporting of Load Range and Common Stack Load Range

**Related Former Checks:**

**Applicability:** General Check

**Description:** Ensures that Load Range and Common Stack Load Range are reported when required and are otherwise not reported.

**Specifications:**

Set *CheckLoadRangeValue* to false.  
Set *CheckCsLoadRangeValue* to false.

If *DerivedHourlyChecksNeeded* == true, AND *UnitIsLoadBased* is true,

If *CurrentHourlyOpRecord*.OpTime > 0, *CurrentHourlyOpRecord*.HourLoad >= 0, *LmeAnnual* is false, AND *LmeOs* is false,

If *FlowMonitorHourlyChecksNeeded* is true, OR *NoxConcNeededForNoxMass* is true, OR  
*NoxRateDerivedChecksNeeded* is true, OR *So2HpffExists* is true, OR *Co2HpffExists* is true, OR *HiHpffExists* is true,

If *CurrentHourlyOpRecord*.LoadRange is null, AND *CurrentHourlyOpRecord*.CommonStackLoadRange is null,  
return result A.

Else if *CurrentEntityType* is equal to "CS",

If *CurrentHourlyOpRecord*.LoadRange is NOT null,  
Set *CheckLoadRangeValue* to true.

If *CurrentHourlyOpRecord*.CommonStackLoadRange is NOT null,

If *FlowMonitorHourlyCount* is equal to 0,  
return result C.

Else  
Set *CheckCsLoadRangeValue* to true.

Else if *CurrentEntityType* is equal to "CP",

If *CurrentHourlyOpRecord*.LoadRange is NOT null,  
Set *CheckLoadRangeValue* to true.

If *CurrentHourlyOpRecord*.CommonStackLoadRange is NOT null,

If (*HourlyFuelFlowCountOil* + *HourlyFuelFlowCountForGas*) is equal to 0,  
return result D.

Else  
Set *CheckCsLoadRangeValue* to true.

Else

If *CurrentHourlyOpRecord*.LoadRange is NOT null,  
Set *CheckLoadRangeValue* to true.

If *CurrentHourlyOpRecord*.CommonStackLoadRange is NOT null,  
return result E.

Else

If *CurrentHourlyOpRecord*.LoadRange is NOT null, OR *CurrentHourlyOpRecord*.CommonStackLoadRange is NOT null,

return result F.

Else

If *CurrentHourlyOpRecord*.LoadRange is NOT null, OR *CurrentHourlyOpRecord*.CommonStackLoadRange is NOT null,  
return result B.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a Load Range (or Common Stack Load Range) for a monitored operating load-based unit (or associated stack or pipe) that is not in an LME configuration.	Critical Error Level 1
B	You reported a Load Range (or Common Stack Load Range) for a unit (or associated stack or pipe) that was either not operating, not load-based, or is in an LME configuration.	Critical Error Level 1
C	You reported a Common Stack Load Range for a common stack that did not report stack flow.	Critical Error Level 1
D	You reported a Common Stack Load Range for a common pipe that did not report oil or gas fuel flow.	Critical Error Level 1
E	You reported a Common Stack Load Range for a location that is not a common stack or common pipe.	Critical Error Level 1
F	You reported a Load Range (or Common Stack Load Range) for a unit (or associated stack or pipe) that was not monitoring parameters used for substitute data. However, this is not appropriate.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Unit-Level Evaluation

**Check Code:** HOUROP-45

**Check Name:** Check Reported Load Range Value

**Related Former Checks:**

**Applicability:** General Check

**Description:** Checks the accuracy of the report Load Range if both a Load Range and Load are reported.

**Specifications:**

Set *CalculatedLoadRange* to null.

When *CheckLoadRangeValue* is true,

If *CurrentHourlyOpRecord*.LoadRange is equal to 0,  
return result A.

Else if *CurrentHourlyOpRecord*.HourLoad is NOT null, AND *CurrentMaximumLoadValue* is NOT null and > 0,

Set *CalculatedLoadRange* to  $((10 * \text{CurrentHourlyOpRecord}.HourLoad / \text{CurrentMaximumLoadValue}) + 1)$  round down to an integer.

If *CurrentHourlyOpRecord*.HourLoad is equal to 0,

If *CurrentHourlyOpRecord*.LoadRange is NOT equal to 1,  
return result B.

Else if *CurrentHourlyOpRecord*.HourLoad >= *CurrentMaximumLoadValue*,

If *CurrentHourlyOpRecord*.LoadRange is NOT equal to 10,  
return result C.

Else

Set BinSize to  $(\text{CurrentMaximumLoadValue} / 10)$

Set *LowRangeBoundry* to  $(\text{BinSize} * (\text{CurrentHourlyOpRecord}.LoadRange - 1))$ .

Set *HighRangeBoundry* to  $(\text{BinSize} * \text{CurrentHourlyOpRecord}.LoadRange)$ .

If  $(\text{CurrentHourlyOpRecord}.HourLoad < \text{LowRangeBoundry} - 2, \text{ OR } \text{CurrentHourlyOpRecord}.HourLoad > \text{HighRangeBoundry} + 2,$   
return result D.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You should only report a Load Range of 0 (zero) if the load range number is indeterminable.	Critical Error Level 1
B	You reported an Hour Load of 0 (zero), which requires a Load Range of 1 when reported.	Critical Error Level 1
C	You reported an Hour Load that is equal to or exceeds the maximum load, which requires a Load Range of 10 when reported.	Critical Error Level 1
D	You reported a Load Range of [RptLoadRange], but the value calculated using the hourly load and maximum load range is [CalcLoadRange].	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Unit-Level Evaluation

**Check Code:** HOUROP-46

**Check Name:** Check Reported Common Stack Load Range Value

**Related Former Checks:**

**Applicability:** General Check

**Description:** Checks the accuracy of the report Common Stack Load Range if both a Common Stack Load Range and Load are reported.

**Specifications:**

When *CheckCsLoadRangeValue* is true,

If *CurrentHourlyOpRecord.CommonStackLoadRange* is equal to 0,  
return result A.

Else if *CurrentHourlyOpRecord.HourLoad* is NOT null, AND *CurrentMaximumLoadValue* is NOT null and > 0,,

Set *CalculatedCsLoadRange* to ( ( 20 \* *CurrentHourlyOpRecord.HourLoad* / *CurrentMaximumLoadValue* ) + 1 ) round down to an integer.

If *CurrentHourlyOpRecord.HourLoad* is equal to 0,

If *CurrentHourlyOpRecord.CommonStackLoadRange* is NOT equal to 1,  
return result B.

Else if *CurrentHourlyOpRecord.HourLoad* >= *CurrentMaximumLoadValue*,

If *CurrentHourlyOpRecord.CommonStackLoadRange* is NOT equal to 20,  
return result C.

Else

Set *BinSize* to ( *CurrentMaximumLoadValue* / 20 )

Set *LowRangeBoundry* to ( *BinSize* \* ( *CurrentHourlyOpRecord.CommonStackLoadRange* - 1 ) ).

Set *HighRangeBoundry* to ( *BinSize* \* *CurrentHourlyOpRecord.CommonStackLoadRange* ).

If ( *CurrentHourlyOpRecord.HourLoad* < *LowRangeBoundry* - 2, OR *CurrentHourlyOpRecord.HourLoad* < *HighRangeBoundry* + 2,  
return result D.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You should only report a Common Stack Load Range of 0 (zero) if the load range number is indeterminable.	Critical Error Level 1
B	You reported an Hour Load of 0 (zero), which requires a Common Stack Load Range of 1 when reported.	Critical Error Level 1
C	You reported an Hour Load that is equal to or exceeds the maximum load, which requires a Common Stack Load Range of 20 when reported.	Critical Error Level 1
D	You reported a Common Stack Load Range of [RptLoadRange], but the value calculated using the hourly load and maximum load range is [CalcLoadRange].	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Unit-Level Evaluation



**Check Code:** HOUROP-47

**Check Name:** Updated QA Certification Event Supplemental Data

**Related Former Checks:**

**Applicability:** General Check

**Description:** Updates the QA Certification Event Supplemental Data for event dates and conditional data begin dates that occur in the quarter of the emission report being evaluated.

**Specifications:**

If *DerivedHourlyChecksNeeded* is true AND *CurrentOperatingTime* is greater than 0,

For each *SupplementalDataRecord* in the dictionary at *CurrentMonitorPlanLocationPosition* in *QaCertEventSuppDataDictionaryArray*,

If *SupplementalDataRecord.TimeType* is equal to "Date",

Increment *SupplementalDataRecord.QaCertEventQuarterlyOpDays* by 1 when:

- 1) An increment has not already occurred for the date of *CurrentOperatingDatehour*.
- 2) *QaCertEventDatehour* is in the same quarter as *CurrentOperatingDatehour*,
- 3) The date of *QaCertEventDatehour* is on or before the date of *CurrentOperatingDatehour*,

Else if *SupplementalDataRecord.TimeType* is equal to "Hour",

Increment *SupplementalDataRecord.ConditionalDataBeginQuarterlyOpHours* by 1 when:

- 1) An increment has not already occurred for *CurrentOperatingDatehour*.
- 2) *ConditionalDataBeginDatehour* is not null,
- 3) *ConditionalDataBeginDatehour* is in the same quarter as *CurrentOperatingDatehour*,
- 4) *ConditionalDataBeginDatehour* is on or before *CurrentOperatingDatehour*,

If the month of *CurrentOperatingDatehour* is in May or June,.

If *SupplementalDataRecord.TimeType* is equal to "Date",

Increment *SupplementalDataRecord.QaCertEventQuarterlyOpDays* by 1 when:

- 1) An increment has not already occurred for the date of *CurrentOperatingDatehour*.
- 2) *QaCertEventDatehour* is in the same quarter as *CurrentOperatingDatehour*,
- 3) The date of *QaCertEventDatehour* is on or before the date of *CurrentOperatingDatehour*.

Else if *SupplementalDataRecord.TimeType* is equal to "Hour",

Increment *SupplementalDataRecord.ConditionalDataBeginMayAndJuneOpHours* by 1 when:

- 1) An increment has not already occurred for *CurrentOperatingDatehour*.
- 2) *ConditionalDataBeginDatehour* is not null,
- 3) *ConditionalDataBeginDatehour* is in the same quarter as *CurrentOperatingDatehour*,
- 4) *ConditionalDataBeginDatehour* is on or before *CurrentOperatingDatehour*.

**Results:**

Result

Response

Severity

**Usage:**

1

Process/Category:

Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** HOUROP-48

**Check Name:** Update System Related Supplemental Data

**Related Former Checks:**

**Applicability:** General Check

**Description:** Updates the System Operating Supplemental Data for Part 75 monitored and derived hourly data, and MATS monitored hourly data.

**Specifications:**

If *DerivedHourlyChecksNeeded* is true AND *CurrentOperatingTime* is greater than 0,

Set *SupplementalDataDictionary* to the dictionary at *CurrentMonitorPlanLocationPosition* in *SystemOperatingSuppDataDictionaryArray*.

For each *HourlyRecord* in list:

- 1) *CurrentCo2ConcDerivedHourlyRecord*
- 2) *CurrentCo2ConcMonitorHourlyRecord*
- 3) *CurrentStackFlowHourlyRecord*
- 4) *CurrentHeatInputDerivedHourlyRecord*
- 5) *CurrentH2oDerivedHourlyRecord*
- 6) *CurrentH2oMonitorHourlyRecord*
- 7) *CurrentNoxConcMonitorHourlyRecord*
- 8) *CurrentNoxRateDerivedHourlyRecord*
- 9) *CurrentO2DryMonitorHourlyRecord*
- 10) *CurrentO2WetMonitorHourlyRecord*
- 11) *CurrentSo2MonitorHourlyRecord*
- 12) *MatsHclcMhvRecord*
- 13) *MatsHfcMhvRecord*
- 14) *MatsHgcMhvRecord*

If *HourlyRecord* is not null, AND *HourlyRecord.MonitoringSystemID* is not null,

If *SupplementalDataDictionary* contains key *HourlyRecord.MonitoringSystemID*,

Set *SupplementalDataRecord* in *SupplementalDataDictionary* value where key is equal to *HourlyRecord.MonitoringSystemID*.

Else

Create a new *SupplementalDataRecord* with *MonitoringSystemID* equal to *HourlyRecord.MonitoringSystemID*, and *OpDays*, *OpHours*, *OsDays* and *OsHours* equal to 0..  
Add *SupplementalDataRecord* to *SupplementalDataDictionary* with a key of *HourlyRecord.MonitoringSystemID*.

Increment *SupplementalDataRecord.QuarterlyOperatingCounts.OpDays* by 1 when:

- 1) An increment has not already occurred for the date of *CurrentOperatingDatehour*.

Increment *SupplementalDataRecord.QuarterlyOperatingCounts.OpHours* by 1 when:

- 1) An increment has not already occurred for *CurrentOperatingDatehour*.

Increment *SupplementalDataRecord.QuarterlyQualityAssuredCounts.OpDays* by 1 when:

- 1) An increment has not already occurred for the date of *CurrentOperatingDatehour*.
- 2) *HourlyRecord.ModeCode* is in set { 01, 02, 03, 04, 14, 16, 17, 19, 20, 21, 22, 32, 33, 41, 42, 43, 44, 47,

53, 54 }.

Increment *SupplementalDataRecord.QuarterlyQualityAssuredCounts..OpHours* by 1 when:

- 1) An increment has not already occurred for ***CurrentOperatingDatehour***.
- 2) *HourlyRecord.ModcCode* is in set { 01, 02, 03, 04, 14, 16, 17, 19, 20, 21, 22, 32, 33, 41, 42, 43, 44, 47, 53, 54 }.

Increment *SupplementalDataRecord.QuarterlyMonitorAvailableCounts.OpDays* by 1 when:

- 1) An increment has not already occurred for the date of ***CurrentOperatingDatehour***.
- 2) *HourlyRecord.ModcCode* is in set { 01, 02, 04, 14, 16, 17, 19, 20, 21, 22, 32, 33, 41, 42, 43, 44, 53 }.

Increment *SupplementalDataRecord.QuarterlyMonitorAvailableCounts..OpHours* by 1 when:

- 1) An increment has not already occurred for ***CurrentOperatingDatehour***.
- 2) *HourlyRecord.ModcCode* is in set { 01, 02, 04, 14, 16, 17, 19, 20, 21, 22, 32, 33, 41, 42, 43, 44, 53 }.

Increment *SupplementalDataRecord.MayAndJuneOperatingCounts.OpDays* by 1 when:

- 1) An increment has not already occurred for the date of ***CurrentOperatingDatehour***.
- 2) The month of ***CurrentOperatingDatehour*** is in May, June, July, August or September.

Increment *SupplementalDataRecord.MayAndJuneOperatingCounts..OpHours* by 1 when:

- 1) An increment has not already occurred for ***CurrentOperatingDatehour***.
- 2) The month of ***CurrentOperatingDatehour*** is in May, June, July, August or September.

Increment *SupplementalDataRecord.MayAndJuneQualityAssuredCounts.OpDays* by 1 when:

- 1) An increment has not already occurred for the date of ***CurrentOperatingDatehour***.
- 2) The month of ***CurrentOperatingDatehour*** is in May, June, July, August or September.
- 3) *HourlyRecord.ModcCode* is in set { 01, 02, 03, 04, 14, 16, 17, 19, 20, 21, 22, 32, 33, 41, 42, 43, 44, 47, 53, 54 }.

Increment *SupplementalDataRecord.MayAndJuneQualityAssuredCounts..OpHours* by 1 when:

- 1) An increment has not already occurred for ***CurrentOperatingDatehour***.
- 2) The month of ***CurrentOperatingDatehour*** is in May, June, July, August or September.
- 3) *HourlyRecord.ModcCode* is in set { 01, 02, 03, 04, 14, 16, 17, 19, 20, 21, 22, 32, 33, 41, 42, 43, 44, 47, 53, 54 }.

Increment *SupplementalDataRecord.MayAndJuneMonitorAvailableCounts.OpDays* by 1 when:

- 1) An increment has not already occurred for the date of ***CurrentOperatingDatehour***.
- 2) The month of ***CurrentOperatingDatehour*** is in May, June, July, August or September.
- 3) *HourlyRecord.ModcCode* is in set { 01, 02, 04, 14, 16, 17, 19, 20, 21, 22, 32, 33, 41, 42, 43, 44, 53 }.

Increment *SupplementalDataRecord.MayAndJuneMonitorAvailableCounts..OpHours* by 1 when:

- 1) An increment has not already occurred for ***CurrentOperatingDatehour***.
- 2) The month of ***CurrentOperatingDatehour*** is in May, June, July, August or September.
- 3) *HourlyRecord.ModcCode* is in set { 01, 02, 04, 14, 16, 17, 19, 20, 21, 22, 32, 33, 41, 42, 43, 44, 53 }.

For each *SupplementalDataRecord* in the list in the *QaCertEventSuppDataDictionaryForSystem* with *HourlyRecord.MonitoringSystemID* as a key,

Increment *SupplementalDataRecord.QaCertEventQuarterlySystemOperating.Days* by 1 when:

- 1) An increment has not already occurred for the date of *CurrentOperatingDatehour*.
- 2) *QaCertEventDatehour* is in the same quarter as *CurrentOperatingDatehour*,
- 3) The date of *QaCertEventDatehour* is on or before the date of *CurrentOperatingDatehour*,

Increment *SupplementalDataRecord.ConditionalDataBeginQuarterlySystemOperating.Hours* by 1 when:

- 1) An increment has not already occurred for *CurrentOperatingDatehour*.
- 2) *ConditionalDataBeginDatehour* is not null,
- 3) *ConditionalDataBeginDatehour* is in the same quarter as *CurrentOperatingDatehour*,
- 4) *ConditionalDataBeginDatehour* is on or before *CurrentOperatingDatehour*,

If the month of *CurrentOperatingDatehour* is in May or June,.

Increment *SupplementalDataRecord.QaCertEventMayAndJuneSystemOperating.Days* by 1 when:

- 1) An increment has not already occurred for the date of *CurrentOperatingDatehour*.
- 2) *QaCertEventDatehour* is in the same quarter as *CurrentOperatingDatehour*,
- 3) The date of *QaCertEventDatehour* is on or before the date of *CurrentOperatingDatehour*.

Increment *SupplementalDataRecord.ConditionalDataBeginMayAndJuneSystemOperating.Hours* by 1 when:

- 1) An increment has not already occurred for *CurrentOperatingDatehour*.
- 2) *ConditionalDataBeginDatehour* is not null,
- 3) *ConditionalDataBeginDatehour* is in the same quarter as *CurrentOperatingDatehour*,
- 4) *ConditionalDataBeginDatehour* is on or before *CurrentOperatingDatehour*.

If *HourlyRecord.MODCCode* in set { 01, 02, 03, 04, 14, 16, 17, 19, 20, 21, 22, 32, 33, 41, 42, 43, 44, 47, 53, 54 },

For each *SupplementalDataRecord* in the list in the *QaCertEventSuppDataDictionaryForSystem* with *HourlyRecord.MonitoringSystemID* as a key,

Increment *SupplementalDataRecord.QaCertEventQuarterlySystemQualityAssuredDays* by 1 when:

- 1) An increment has not already occurred for the date of *CurrentOperatingDatehour*.
- 2) *QaCertEventDatehour* is in the same quarter as *CurrentOperatingDatehour*,
- 3) The date of *QaCertEventDatehour* is on or before the date of *CurrentOperatingDatehour*,

Increment

*SupplementalDataRecord.ConditionalDataBeginQuarterlySystemQualityAssuredHours* by 1 when:

- 1) An increment has not already occurred for *CurrentOperatingDatehour*.
- 2) *ConditionalDataBeginDatehour* is not null,
- 3) *ConditionalDataBeginDatehour* is in the same quarter as *CurrentOperatingDatehour*,

4) ConditionalDataBeginDatehour is on or before **CurrentOperatingDatehour**,

If the month of **CurrentOperatingDatehour** is in May or June,.

Increment

*SupplementalDataRecord.QaCertEventMayAndJuneSystemQualityAssuredDays* by 1 when:

- 1) An increment has not already occurred for the date of **CurrentOperatingDatehour**.
- 2) QaCertEventDatehour is in the same quarter as **CurrentOperatingDatehour**,
- 3) The date of QaCertEventDatehour is on or before the date of **CurrentOperatingDatehour**.

Increment

*SupplementalDataRecord.ConditionalDataBeginMayAndJuneSystemQualityAssuredHours* by 1 when:

- 1) An increment has not already occurred for **CurrentOperatingDatehour**.
- 2) ConditionalDataBeginDatehour is not null,
- 3) ConditionalDataBeginDatehour is in the same quarter as **CurrentOperatingDatehour**,
- 4) ConditionalDataBeginDatehour is on or before **CurrentOperatingDatehour**.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Operating Hour Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- Unit-Level Evaluation

**Check Code:** HOUROP-49

**Check Name:** Update Component Related Supplemental Data

**Related Former Checks:**

**Applicability:** General Check

**Description:** Updates the Component Operating Supplemental Data for Part 75 and MATS monitored hourly data.

**Specifications:**

If *DerivedHourlyChecksNeeded* is true AND *CurrentOperatingTime* is greater than 0,

Set *SupplementalDataDictionary* to the dictionary at *CurrentMonitorPlanLocationPosition* in *ComponentOperatingSuppDataDictionaryArray*.

For each *HourlyRecord* in list:

- 1) *CurrentCo2ConcMonitorHourlyRecord*
- 2) *CurrentStackFlowHourlyRecord*
- 3) *CurrentH2oMonitorHourlyRecord*
- 4) *CurrentNoxConcMonitorHourlyRecord*
- 5) *CurrentO2DryMonitorHourlyRecord*
- 6) *CurrentO2WetMonitorHourlyRecord*
- 7) *CurrentSo2MonitorHourlyRecord*
- 8) *MatsHclcMhvRecord*
- 9) *MatsHfcMhvRecord*
- 10) *MatsHgcMhvRecord*

If *HourlyRecord* is not null, AND *HourlyRecord.ComponentID* is not null,

If *SupplementalDataDictionary* contains key *HourlyRecord.ComponentID*,

Set *SupplementalDataRecord* in *SupplementalDataDictionary* value where key is equal to *HourlyRecord.ComponentID*.

Else

Create a new *SupplementalDataRecord* with *ComponentID* equal to *HourlyRecord.ComponentID*, and *OpDays*, *OpHours*, *OsDays* and *OsHours* equal to 0..  
Add *SupplementalDataRecord* to *SupplementalDataDictionary* with a key of *HourlyRecord.ComponentID*.

Increment *SupplementalDataRecord.QuarterlyOperatingCounts.OpDays* by 1 when:

- 1) An increment has not already occurred for the date of *CurrentOperatingDatehour*.

Increment *SupplementalDataRecord.QuarterlyOperatingCounts..OpHours* by 1 when:

- 1) An increment has not already occurred for *CurrentOperatingDatehour*.

Increment *SupplementalDataRecord.QuarterlyQualityAssuredCounts.OpDays* by 1 when:

- 1) An increment has not already occurred for the date of *CurrentOperatingDatehour*.
- 2) *HourlyRecord.ModeCode* is in set { 01, 02, 03, 04, 14, 16, 17, 19, 20, 21, 22, 32, 33, 41, 42, 43, 44, 47, 53, 54 }.

Increment *SupplementalDataRecord.QuarterlyQualityAssuredCounts..OpHours* by 1 when:

- 1) An increment has not already occurred for *CurrentOperatingDatehour*.

2) *HourlyRecord.ModeCode* is in set { 01, 02, 03, 04, 14, 16, 17, 19, 20, 21, 22, 32, 33, 41, 42, 43, 44, 47, 53, 54 }.

Increment *SupplementalDataRecord.QuarterlyMonitorAvailableCounts.OpDays* by 1 when:

- 1) An increment has not already occurred for the date of ***CurrentOperatingDatehour***.
- 2) *HourlyRecord.ModeCode* is in set { 01, 02, 04, 14, 16, 17, 19, 20, 21, 22, 32, 33, 41, 42, 43, 44, 53 }.

Increment *SupplementalDataRecord.QuarterlyMonitorAvailableCounts..OpHours* by 1 when:

- 1) An increment has not already occurred for ***CurrentOperatingDatehour***.
- 2) *HourlyRecord.ModeCode* is in set { 01, 02, 04, 14, 16, 17, 19, 20, 21, 22, 32, 33, 41, 42, 43, 44, 53 }.

Increment *SupplementalDataRecord.MayAndJuneOperatingCounts.OpDays* by 1 when:

- 1) An increment has not already occurred for the date of ***CurrentOperatingDatehour***.
- 2) The month of ***CurrentOperatingDatehour*** is in May, June, July, August or September.

Increment *SupplementalDataRecord.MayAndJuneOperatingCounts..OpHours* by 1 when:

- 1) An increment has not already occurred for ***CurrentOperatingDatehour***.
- 2) The month of ***CurrentOperatingDatehour*** is in May, June, July, August or September.

Increment *SupplementalDataRecord.MayAndJuneQualityAssuredCounts.OpDays* by 1 when:

- 1) An increment has not already occurred for the date of ***CurrentOperatingDatehour***.
- 2) The month of ***CurrentOperatingDatehour*** is in May, June, July, August or September.
- 3) *HourlyRecord.ModeCode* is in set { 01, 02, 03, 04, 14, 16, 17, 19, 20, 21, 22, 32, 33, 41, 42, 43, 44, 47, 53, 54 }.

Increment *SupplementalDataRecord.MayAndJuneQualityAssuredCounts..OpHours* by 1 when:

- 1) An increment has not already occurred for ***CurrentOperatingDatehour***.
- 2) The month of ***CurrentOperatingDatehour*** is in May, June, July, August or September.
- 3) *HourlyRecord.ModeCode* is in set { 01, 02, 03, 04, 14, 16, 17, 19, 20, 21, 22, 32, 33, 41, 42, 43, 44, 47, 53, 54 }.

Increment *SupplementalDataRecord.MayAndJuneMonitorAvailableCounts.OpDays* by 1 when:

- 1) An increment has not already occurred for the date of ***CurrentOperatingDatehour***.
- 2) The month of ***CurrentOperatingDatehour*** is in May, June, July, August or September.
- 3) *HourlyRecord.ModeCode* is in set { 01, 02, 04, 14, 16, 17, 19, 20, 21, 22, 32, 33, 41, 42, 43, 44, 53 }.

Increment *SupplementalDataRecord.MayAndJuneMonitorAvailableCounts..OpHours* by 1 when:

- 1) An increment has not already occurred for ***CurrentOperatingDatehour***.
- 2) The month of ***CurrentOperatingDatehour*** is in May, June, July, August or September.
- 3) *HourlyRecord.ModeCode* is in set { 01, 02, 04, 14, 16, 17, 19, 20, 21, 22, 32, 33, 41, 42, 43, 44, 53 }.

For each *SupplementalDataRecord* in the list in the ***QaCertEventSuppDataDictionaryForComponent*** with *HourlyRecord.ComponentID* as a key,

Increment *SupplementalDataRecord.QaCertEventQuarterlySystemOperating.Days* by 1 when:

- 1) An increment has not already occurred for the date of ***CurrentOperatingDatehour***.
- 2) *QaCertEventDatehour* is in the same quarter as ***CurrentOperatingDatehour***,
- 3) The date of *QaCertEventDatehour* is on or before the date of ***CurrentOperatingDatehour***,

Increment *SupplementalDataRecord.ConditionalDataBeginQuarterlySystemOperating.Hours* by 1 when:

- 1) An increment has not already occurred for ***CurrentOperatingDatehour***.
- 2) *ConditionalDataBeginDatehour* is not null,
- 3) *ConditionalDataBeginDatehour* is in the same quarter as ***CurrentOperatingDatehour***,
- 4) *ConditionalDataBeginDatehour* is on or before ***CurrentOperatingDatehour***,

If the month of ***CurrentOperatingDatehour*** is in May or June,.

Increment *SupplementalDataRecord.QaCertEventMayAndJuneSystemOperating.Days* by 1 when:

- 1) An increment has not already occurred for the date of ***CurrentOperatingDatehour***.
- 2) *QaCertEventDatehour* is in the same quarter as ***CurrentOperatingDatehour***,
- 3) The date of *QaCertEventDatehour* is on or before the date of ***CurrentOperatingDatehour***.

Increment

*SupplementalDataRecord.ConditionalDataBeginMayAndJuneSystemOperating.Hours* by 1 when:

- 1) An increment has not already occurred for ***CurrentOperatingDatehour***.
- 2) *ConditionalDataBeginDatehour* is not null,
- 3) *ConditionalDataBeginDatehour* is in the same quarter as ***CurrentOperatingDatehour***,
- 4) *ConditionalDataBeginDatehour* is on or before ***CurrentOperatingDatehour***.

If *HourlyRecord.MODCCCode* in set { 01, 02, 03, 04, 14, 16, 17, 19, 20, 21, 22, 32, 33, 41, 42, 43, 44, 47, 53, 54 },

For each *SupplementalDataRecord* in the list in the ***QaCertEventSuppDataDictionaryForComponent*** with *HourlyRecord.ComponentID* as a key,

Increment *SupplementalDataRecord.QaCertEventQuarterlySystemQualityAssuredDays* by 1 when:

- 1) An increment has not already occurred for the date of ***CurrentOperatingDatehour***.
- 2) *QaCertEventDatehour* is in the same quarter as ***CurrentOperatingDatehour***,
- 3) The date of *QaCertEventDatehour* is on or before the date of ***CurrentOperatingDatehour***,

Increment

*SupplementalDataRecord.ConditionalDataBeginQuarterlySystemQualityAssuredHours* by 1 when:

- 1) An increment has not already occurred for ***CurrentOperatingDatehour***.
- 2) *ConditionalDataBeginDatehour* is not null,
- 3) *ConditionalDataBeginDatehour* is in the same quarter as ***CurrentOperatingDatehour***,



4) ConditionalDataBeginDatehour is on or before **CurrentOperatingDatehour**,

If the month of **CurrentOperatingDatehour** is in May or June,.

Increment

*SupplementalDataRecord.QaCertEventMayAndJuneSystemQualityAssuredDays* by 1 when:

- 1) An increment has not already occurred for the date of **CurrentOperatingDatehour**.
- 2) QaCertEventDatehour is in the same quarter as **CurrentOperatingDatehour**,
- 3) The date of QaCertEventDatehour is on or before the date of **CurrentOperatingDatehour**.

Increment

*SupplementalDataRecord.ConditionalDataBeginMayAndJuneSystemQualityAssuredHours* by 1 when:

- 1) An increment has not already occurred for **CurrentOperatingDatehour**.
- 2) ConditionalDataBeginDatehour is not null,
- 3) ConditionalDataBeginDatehour is in the same quarter as **CurrentOperatingDatehour**,
- 4) ConditionalDataBeginDatehour is on or before **CurrentOperatingDatehour**.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Operating Hour Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- Unit-Level Evaluation

**Check Code:** HOUROP-50

**Check Name:** Update Last Quality Assured Supplemental Data

**Related Former Checks:**

**Applicability:** General Check

**Description:** Updates the Last Quality Assured Supplemental Data for Part 75 monitored and derived hourly data.

**Specifications:**

If *DerivedHourlyChecksNeeded* is true AND *CurrentOperatingTime* is greater than 0,

Set *SupplementalDataDictionary* to the dictionary at *CurrentMonitorPlanLocationPosition* in *LastQualityAssuredSuppDataDictionaryArray*.

For each *HourlyRecord* in list:

- 1) *CurrentCo2ConcDerivedHourlyRecord*
- 2) *CurrentCo2ConcMonitorHourlyRecord*
- 3) *CurrentStackFlowHourlyRecord*
- 4) *CurrentH2oDerivedHourlyRecord*
- 5) *CurrentH2oMonitorHourlyRecord*
- 6) *CurrentNoxConcMonitorHourlyRecord*
- 7) *CurrentNoxRateDerivedHourlyRecord*
- 8) *CurrentO2DryMonitorHourlyRecord*
- 9) *CurrentO2WetMonitorHourlyRecord*
- 10) *CurrentSo2MonitorHourlyRecord*

If *HourlyRecord* is *CurrentCo2ConcDerivedHourlyRecord* or *CurrentH2oDerivedHourlyRecord* or *CurrentNoxRateDerivedHourlyRecord*,

Set *HourlyTypeCode* to "DERIVED".  
Set *MoistureBasis* to null.  
Set *ComponentKey* to null.

Otherwise

Set *HourlyTypeCode* to "MONITOR".  
Set *MoistureBasis* to *HourlyRecord.MoistureBasis*.  
Set *ComponentKey* to *HourlyRecord.ComponentKey*.

If *HourlyRecord* is not null, AND *HourlyRecord.ModeCode* in *QualityAssuredModeSet*,

For three passes with the following condition and settings for each pass:

Pass 1) *MonitorSystemTarget* equal to null and *ComponentTarget* equal to null.  
Pass 2) Run when *HourlyRecord.MonitorSystemKey* is not null with *MonitorSystemTarget* equal to *HourlyRecord.MonitorSystemKey* and *ComponentTarget* equal to null.  
Pass 3) Run when *ComponentKey* is not null with *MonitorSystemTarget* equal to null and *ComponentTarget* equal to *ComponentKey*.

Set *QualityAssuredKey* to the concatenation of:

- 1) *CurrentOperatingDatehour*
- 2) *HourlyRecord.MonitorLocationKey*
- 3) *HourlyRecord.ParameterCode*,
- 4) *MoistureBasis*,

- 5) *HourlyTypeCode*,
- 6) *MonitorSystemTarget*.
- 7) *ComponentTarget*.

If *SupplementalDataDictionary* contains key *QualityAssuredKey*,

Set *SupplementalDataRecord* to *SupplementalDataDictionary* value where key is equal to *QualityAssuredKey*.

Else

Create a new *SupplementalDataRecord* with:

- 1) *MonitorLocationKey* equal to *HourlyRecord.MonitorLocationKey* .
- 2) *ReportingPeriodKey* equal to *HourlyRecord.ReportingPeriodKey* .
- 3) *ParameterCode* equal to *HourlyRecord.ParameterCode*.
- 4) *MoistureBasis* equal to *MoistureBasis*.
- 5) *HourlyTypeCode* equal to *HourlyTypeCode*.
- 6) *MonitorSystemKey* equal to *MonitorSystemTarget*.
- 7) *ComponentKey* to *ComponentTarget*.
- 8) *UnadjustedHourlyValue* equal to null.
- 9) *AdjustedHourlyValue* equal to null.

Add *SupplementalDataRecord* to *SupplementalDataDictionary* with a key of *QualityAssuredKey*.

Set *SupplementalDataRecord.UnadjusteHourlyValue* to *HourlyRecord.UnadjusteHourlyValue*.  
Set *SupplementalDataRecord.AdjusteHourlyValue* to *HourlyRecord.AdjusteHourlyValue*.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Operating Hour Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- Unit-Level Evaluation

**Check Code:** HOUROP-51

**Check Name:** Set Primary Bypass Information

**Related Former Checks:**

**Applicability:** General Check

**Description:** Set check parameters used in the processing of primary bypass system (stacks) and associated primary systems (stacks) when primary bypass systems are involved for an emission report.

**Specifications:**

Set *PrimaryBypassActiveForHour* to false.

Set *PrimaryBypassActivePrimarySystemId* to null.

Set *PrimaryBypassActiveBypassSystemId* to null.

If *PrimaryBypassActiveInQuarter* is true,

Locate *BypassSystemRecord* in *MonitorSystemRecordsByHourLocation* where:

1) *SystemTypeCode* equals "NOX".

2) *SystemDesignationCode* equals "PB".

If found,

Set *PrimaryBypassActiveForHour* to true.

Set *PrimaryBypassActiveBypassSystemId* to *BypassSystemRecord.MonitorSystemId*.

Locate *PrimarySystemRecord* in *MonitorSystemRecordsByHourLocation* where:

1) *SystemTypeCode* equals "NOX".

2) *SystemDesignationCode* equals "P".

If found,

Set *PrimaryBypassActivePrimarySystemId* to *PrimarySystemRecord.MonitorSystemId*.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Operating Hour Evaluation
---	-------------------	--

**Check Code:** HOUROP-52

**Check Name:** Update Daily Calibration Operating Information

**Related Former Checks:**

**Applicability:** General Check

**Description:** Updates the operating hour count, last covered non-op hour, and first op hour after last covered non--op hour information for daily calibration tests being tracked for status checking.

**Specifications:**

If *DerivedHourlyChecksNeeded* is true,

Initialize *BypassSystemActiveSystemOpTimeDictionary*.

If ( *PrimaryBypassActiveForHour* is true )

If ( *CurrentNoxRateDerivedHourlyRecord* is NOT null ) and ( *CurrentNoxRateDerivedHourlyRecord* MonitoringSystemId is NOT null, SystemTypeCode equals "NOX" and SystemDesignationCode equals "P" or "PB" )

Add *CurrentNoxRateDerivedHourlyRecord* MonitoringSystemId to *BypassSystemActiveSystemOpTimeDictionary* with a value of *CurrentHourlyOpRecord*.OperatingTime.

For each *UnusedMhvRecord* in *NoxrPrimaryOrPrimaryBypassMhvRecords*,

If ( *UnusedMhvRecord*.NotReportedNoxMonitoringSystemID is NOT in *BypassSystemActiveSystemOpTimeDictionary* )

Add *UnusedMhvRecord*.NotReportedNoxMonitoringSystemID to *BypassSystemActiveSystemOpTimeDictionary* with a value of *CurrentHourlyOpRecord*.OperatingTime.

If ( *PrimaryBypassActiveBypassSystemId* is NOT in *BypassSystemActiveSystemOpTimeDictionary* )

Add *PrimaryBypassActiveBypassSystemId* to *BypassSystemActiveSystemOpTimeDictionary* with a value of 0.

If ( *PrimaryBypassActivePrimarySystemId* is NOT null ) and ( *PrimaryBypassActivePrimarySystemId* is NOT in *BypassSystemActiveSystemOpTimeDictionary* )

Add *PrimaryBypassActivePrimarySystemId* to *BypassSystemActiveSystemOpTimeDictionary* with a value of 0.

For each *TestLocationObject* in *MostRecentDailyCalibrationTestObject* for the location,

If ( *CurrentHourlyOpRecord*.OperatingTime is greater than 0 )

Increment *TestLocationObject*.OperatingHourCount by 1.

If ( *TestLocationObject*.LastCoveredNonOpHour is NOT null ) AND ( *TestLocationObject*.FirstOpHourAfterLastCoveredNonOpHour is null )

Set *TestLocationObject*.FirstOpHourAfterLastCoveredNonOpHour to *CurrentHourlyOpRecord*.Date/Hour.

Else

If ( the number of inclusive days from *TestLocationObject*.DailyTestDateHour through *CurrentHourlyOpRecord*.Date/Hour is inclusively between 1 and 26 )

Set *TestLocationObject*.LastCoveredNonOpHour to ***CurrentHourlyOpRecord***.Date/Hour.  
Set *TestLocationObject*.FirstOpHourAfterLastCoveredNonOpHour to null.

For each *SystemOpTimeEntry* in *BypassSystemActiveSystemOpTimeDictionary* for the location,

Set *TestSystemObject* to the entry in *TestLocationObject*.SystemSupplementalValuesDictionary where key equals *SystemOpTimeEntry*.MonitorSystemId.

If ( *SystemOpTimeEntry*.OpTime is greater than 0 )

Increment *TestSystemObject* .OperatingHourCount by 1.

If ( *TestSystemObject* .LastCoveredNonOpHour is NOT null ) AND ( *TestSystemObject* .FirstOpHourAfterLastCoveredNonOpHour is null )

Set *TestSystemObject* .FirstOpHourAfterLastCoveredNonOpHour to  
***CurrentHourlyOpRecord***.Date/Hour.

Else

If ( the number of inclusive days from *TestSystemObject* .DailyTestDateHour through  
***CurrentHourlyOpRecord***.Date/Hour is inclusively between 1 and 26 )

Set *TestSystemObject* .LastCoveredNonOpHour to ***CurrentHourlyOpRecord***.Date/Hour.  
Set *TestSystemObject* .FirstOpHourAfterLastCoveredNonOpHour to null.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Unit-Level Evaluation
---	-------------------	--

**Check Code:** HOUROP-53

**Check Name:** Update Daily Interference Operating Information

**Related Former Checks:**

**Applicability:** General Check

**Description:** Updates the operating hour count, last covered non-op hour, and first op hour after last covered non--op hour information for daily interference tests tracked for status checking.

**Specifications:**

If *DerivedHourlyChecksNeeded* is true,

For each *TestObject* in *LatestDailyInterferenceCheckObject* for *CurrentMonitorLocationId*,

If ( *CurrentOperatingTime* is greater than 0 )

Increment *TestObject.OperatingHourCount* by 1.

If ( *TestObject.LastCoveredNonOpHour* is NOT null ) AND ( *TestObject.FirstOpHourAfterLastCoveredNonOpHour* is null )

Set *TestObject.FirstOpHourAfterLastCoveredNonOpHour* to *CurrentOperatingDatehour*.

Else

If ( the number of inclusive days from *TestObject.DailyTestDateHour* through *CurrentOperatingDatehour* is inclusively between 1 and 26 )

Set *TestObject.LastCoveredNonOpHour* to *CurrentOperatingDatehour*.

Set *TestObject.FirstOpHourAfterLastCoveredNonOpHour* to null.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Unit-Level Evaluation
---	-------------------	--

**Check Code:** HOUROP-54

**Check Name:** Check for Linearity Tests During Non-Op Hours

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Returns a result when a location did not operate but a linearity exists with a begin or end hour equal to the current operating hour.

**Specifications:**

Set *LinearityOfflineList* to "".

If *DerivedHourlyChecksNeeded* is true AND *CurrentOperatingTime* equals 0.00,

If *LinearityExistsLocationArray* value at *CurrentMonitorPlanLocationPosition* is true,

For each *LinearitySuppDataRecord* in *LinearityTestRecordsByLocationForQaStatus* where:

- 1) *MonitorLocationId* equals *CurrentMonitorLocationId*.
- 2) *BeginDate/BeginHour* OR *EndDate/EndHour* equals *CurrentOperatingDateHour*.

Append *LinearitySuppDataRecord.TestNumber* to *LinearityOfflineList*.

If *LinearityOfflineList* does not equal "",

Return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	Linearity and System Integrity tests are not allowed during non-operating hours, but the begin or end hour of the following test(s) occurred during this non-operating hour: [list].	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Operating Hour Evaluation



**Check Code:** HOUROP-55

**Check Name:** Track Missing Data Counts and Last PMA for DHV and MHV Parameters

**Related Former Checks:**

**Applicability:** General Check

**Description:** Tracks Missing Data Counts and Last PMA for DHV CO2C, H2O and NOXR parameters, and MHV CO2C, FLOW, H2O, NOXC, O2D, O2W and SO2C parameters.

**Specifications:**

If *DerivedHourlyChecksNeeded* is true AND *CurrentOperatingTime* is greater than 0,

For each *HourlyRecord* in list:

- 1) *CurrentCo2ConcDerivedHourlyRecord*
- 2) *CurrentH2oDerivedHourlyRecord*
- 3) *CurrentNoxRateDerivedHourlyRecord*
- 4) *CurrentCo2ConcMonitorHourlyRecord*
- 5) *CurrentCo2ConcMissingDataMonitorHourlyRecord*
- 6) *CurrentStackFlowHourlyRecord*
- 7) *CurrentH2oMonitorHourlyRecord*
- 8) *CurrentNoxConcMonitorHourlyRecord*
- 9) *CurrentO2DryMonitorHourlyRecord*
- 10) *CurrentO2DryMissingDataMonitorHourlyRecord*
- 11) *CurrentO2WetMonitorHourlyRecord*
- 12) *CurrentO2WetMissingDataMonitorHourlyRecord*
- 13) *CurrentSo2MonitorHourlyRecord*

If *HourlyRecord* is not null,

Find *MissingDataPmaTrackingInfo* for *CurrentMonitorPlanLocationPosition* and *HourlyRecord* in *MissingDataPmaTracking*:

If *MissingDataPmaTrackingInfo.MissingDataHourCountLastOpHour* is NULL or less than *CurrentOperatingDateHour*,

AND *HourlyRecord.ModeCode* is in set {06, 08, 09, 10, 11, 12, 13, 15, 18, 23, 24, 25, 26, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48, 55},

Increment *MissingDataPmaTrackingInfo.MissingDataHourCount* by 1.

Set *MissingDataPmaTrackingInfo.MissingDataHourCountLastOpHour* to *CurrentOperatingDateHour*.

If *MissingDataPmaTrackingInfo.LastPercentAvailableOpHour* is NULL or less than *CurrentOperatingDateHour*,

AND *HourlyRecord.PercentAvailable* is NOT null,

Set *MissingDataPmaTrackingInfo.LastPercentAvailable* to *HourlyRecord.PercentAvailable*.

Set *MissingDataPmaTrackingInfo.LastPercentAvailableOpHour* to *CurrentOperatingDateHour*.

**Results:**

Result

Response

Severity

**Usage:**

1

Process/Category:

Emissions Data Evaluation Report ----- Unit-Level Evaluation

**Check Code:** HOUROP-56

**Check Name:** Ensure Consistent Reporting of MODC 46 for NOxC and Diluent Emissions for a NOxR System

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Ensures that when MODC 46 is reported in a NOxC or Diluent MHV record when the/a Diluent is only needed for NOxR calculations, that both the NOxC and Diluent MHV records must report MODC 46.

**Specifications:**

Set *MissingModc46ParameterForModc46* to null.

Set *MissingModc46ParameterForNon46* to null.

Set *MissingModc46Non46ModcCode* to null.

If ( *DerivedHourlyChecksNeeded* is True ) AND ( *CurrentOperatingTime* is greater than 0 )

If ( ( *NoxConcNeededForNoxRateCalc* is True ) AND ( *CurrentNoxConcMonitorHourlyRecord* is NOT null ) ) AND  
 ( ( *Co2DiluentChecksNeededForNoxRateCalc* is True ) AND ( *CurrentCo2ConcMonitorHourlyRecord* is NOT null ) )

OR

( ( *O2DryChecksNeededForNoxRateCalc* is True ) AND ( *CurrentO2DryMonitorHourlyRecord* is NOT null ) ) OR  
 ( ( *O2WetChecksNeededForNoxRateCalc* is True ) AND ( *CurrentO2WetMonitorHourlyRecord* is NOT null ) )

If ( *Co2ConcChecksNeededforCo2MassCalc* is NOT true ) AND  
 ( *Co2ConcChecksNeededforHeatInput* is NOT true ) AND  
 ( *Co2DiluentNeededforMats* is NOT true ) AND  
 ( *O2DryChecksNeededforH2o* is NOT true ) AND  
 ( *O2DryChecksNeededforHeatInput* is NOT true ) AND  
 ( *O2DryNeededforMats* is NOT true ) AND  
 ( *O2DryNeededToSupportCo2Calculation* is NOT true ) AND  
 ( *O2WetChecksNeededForH2o* is NOT true ) AND  
 ( *O2WetChecksNeededforHeatInput* is NOT true ) AND  
 ( *O2WetNeededforMats* is NOT true ) AND  
 ( *O2WetNeededToSupportCo2Calculation* is NOT true )

If ( *Co2DiluentChecksNeededForNoxRateCalc* is True ) AND ( *CurrentCo2ConcMonitorHourlyRecord* is NOT null )

Set *DiluentMonitorRecord* to *CurrentCo2ConcMonitorHourlyRecord*.

Set *DiluentParameter* to "CO2C".

Else If ( *O2DryChecksNeededForNoxRateCalc* is True ) AND ( *CurrentO2DryMonitorHourlyRecord* is NOT null )

Set *DiluentMonitorRecord* to *CurrentO2DryMonitorHourlyRecord*.

Set *DiluentParameter* to "O2C-D".

Else ( *O2WetChecksNeededForNoxRateCalc* is True ) AND ( *CurrentO2WetMonitorHourlyRecord* is NOT null )

Set *DiluentMonitorRecord* to *CurrentO2WetMonitorHourlyRecord*.

Set *DiluentParameter* to "O2C-W".

If ( *CurrentNoxConcMonitorHourlyRecord*.ModcCode is equal to "46" ) AND ( *DiluentMonitorRecord*.ModcCode is NOT equal to "46" )

Set *MissingModc46ParameterForModc46* to "NOx Concentration".

Set *MissingModc46ParameterForNon46* to *DiluentParameter*.

Set *MissingModc46Non46ModcCode* to *DiluentMonitorRecord*.ModcCode.

Return result A.

Else If ( *DiluentMonitorRecord*.ModcCode is equal to "46" ) AND ( *CurrentNoxConcMonitorHourlyRecord*.ModcCode is NOT equal to "46" )

Set *MissingModc46ParameterForModc46* to *DiluentParameter*.  
Set *MissingModc46ParameterForNon46* to "NOx Concentration".  
Set *MissingModc46Non46ModcCode* to *CurrentNoxConcMonitorHourlyRecord*.ModcCode.

Return result A.

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	MODC 46 was reported for the [ParameterFor46] monitor value which requires reporting MODC 46 for the [ParameterNot46] monitor value, but MODC [Non46Modc] was reported.	Informational Message

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Unit-Level Evaluation
---	-------------------	--

**Check Category:**

**Leak Status**

**Check Code:** LKSTAT-1

**Check Name:** Locate Most Recent Prior Leak Check

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Determines if there is an applicable prior Leak Check.

**Specifications:**

Set *PriorLeakRecord* = null.

Locate the most recent record in *LeakCheckRecordsByLocationForQAStatus* for the location where:

- a) the ComponentID is equal to the *QaStatusComponentId*
- b) the TestResultCd is not equal to "INVALID" and
- c) the EndDate/Hour is on or prior to the *CurrentMHVRecord*.Date/Hour

if (*LeakCheckRecordsByLocationForQAStatus* is found)

Set *PriorLeakRecord* = the found record in *LeakCheckRecordsByLocationForQAStatus*.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

- |   |                   |  |
|---|-------------------|--|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- Leak Check Status Evaluation          |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- Flow Averaging Leak Status Evaluation |

**Check Code:** LKSTAT-2  
**Check Name:** Locate Most Recent Prior Event  
**Related Former Checks:**  
**Applicability:** CEM Check  
**Description:** Determines if there is an applicable prior event.  
**Specifications:**

Set *PriorLeakEventRecord* = null.

Set *LeakStatusResult* = null

If (*PriorLeakRecord* is null)

Locate the latest record in *QACertificationEventRecords* where the ComponentID is equal to the *QaStatusComponentId*, QaCertEventCode is equal to "300" or "305", and the QaCertEventDate/Hour is prior to *CurrentReportingPeriod*.

if (*QACertificationEventRecord* is found)

Set *PriorLeakEventRecord* = the found record in *QACertificationEventRecord*.

Set *ExpectedLeakCheckQuarter* = the quarter after *PriorLeakEventRecord.QaCertEventDate*.

Set *RequiredLeakCheckQuarter* = null.

Set *QuartersAfterCount* = 0.

For each quarter beginning with *ExpectedLeakCheckQuarter* and ending with *CurrentReportingPeriod*,

if *AnnualReportingRequirement* equals true, or the quarter being checked is 2 or 3

if *AnnualReportingRequirement* equals true, or the quarter being checked is 3

Locate the record in *OperatingSuppDataRecordsByLocation* where OpTypeCode is equal to "OPHOURS", FuelCode is null, and reporting period equals the quarter being checked

else

Locate the record in *OperatingSuppDataRecordsByLocation* where OpTypeCode is equal to "OSHOURS", FuelCode is null, and reporting period equals the quarter being checked

if *OperatingSuppDataRecordsByLocation* record is found

If *OperatingSuppDataRecordsByLocation.OpValue* >= 168

Set *RequiredLeakCheckQuarter* to quarter.

Exit the loop.

else

Set *RequiredLeakCheckQuarter* to quarter.

Exit the loop.

Increment *QuartersAfterCount* by 1.

if *AnnualReportingRequirement* equals true, AND *QuartersAfterCount* is equal to 4,

Set *RequiredLeakCheckQuarter* to quarter.

Exit the loop.

if *RequiredLeakCheckQuarter* is null

Set *LeakStatusResult* = "IC".

else if *AnnualReportingRequirement* equals false,

Set **LeakStatusResult** = "OOC-Event".

else

Set **GraceOpHours** = **RptPeriodOpHoursAccumulatorArray** element at **CurrentMonitorPlanLocationPosition**.

if (**GraceOpHours** > 168)

Set **LeakStatusResult** = "OOC-Event".

else

For each quarter beginning with the quarter after the **RequiredLeakCheckQuarter** and ending with the quarter before **CurrentReportingPeriod**,

if **AnnualReportingRequirement** equals true, or the quarter being checked is 2 or 3

if **AnnualReportingRequirement** equals true, or the quarter being checked is 3

Locate the record in **OperatingSuppDataRecordsByLocation** where  
OpTypeCode is equal to "OPHOURS", FuelCode is null, and reporting period  
equals the quarter being checked

else

Locate the record in **OperatingSuppDataRecordsByLocation** where  
OpTypeCode is equal to "OSHOURLS", FuelCode is null, and reporting period  
equals the quarter being checked

if **OperatingSuppDataRecordsByLocation** record is found AND  
**OperatingSuppDataRecordsByLocation.OpValue** is NOT null

Add OpValue to **GraceOpHours**.

If **GraceOpHours** > 168

Exit the loop.

if **GraceOpHours** > 168

Set **LeakStatusResult** = "OOC-Event"

else

Set **LeakStatusResult** = "IC-Grace".

else

Locate the **SystemComponent** record with the earliest BeginDate where the ComponentID is equal to the **QaStatusComponentId**.

If found, and the BeginDate in the **SystemComponent** record is in the current reporting period,

Set **LeakStatusResult** = "IC"

else

Set **LeakStatusResult** = "OOC-No Prior Test".

else

Locate the latest record in **QACertificationEventRecords** where the ComponentID is equal to the **QaStatusComponentId**,  
LeakRequired is equal to "Y" and QaCertEventCode is not equal to "300", and the QACertEventDate/Hour is prior to the  
**CurrentMHVRecord.Date/Hour** and after the **PriorLeakRecord.EndDate/Hour**,

if a record is found

Set **PriorLeakEventRecord** = the found record in **QACertificationEventRecords**.

Set **ExpectedLeakCheckQuarter** = the quarter after **PriorLeakEventRecord.QACertEventDate**.

Set *RequiredLeakCheckQuarter* = null.

Set *Quarters.AfterCount* = 0.

For each quarter beginning with *ExpectedLeakCheckQuarter* and ending with *CurrentReportingPeriod*,

if *AnnualReportingRequirement* equals true, or the quarter being checked is 2 or 3

if *AnnualReportingRequirement* equals true, or the quarter being checked is 3

Locate the record in *OperatingSuppDataRecordsByLocation* where OpTypeCode is equal to "OPHOURS", FuelCode is null, and reporting period equals the quarter being checked

else

Locate the record in *OperatingSuppDataRecordsByLocation* where OpTypeCode is equal to "OSHOURS", FuelCode is null, and reporting period equals the quarter being checked

if *OperatingSuppDataRecordsByLocation* record is found

If *OperatingSuppDataRecordsByLocation*.OpValue >= 168

Set *RequiredLeakCheckQuarter* to quarter.

Exit the loop.

else

Set *RequiredLeakCheckQuarter* to quarter.

Exit the loop.

Increment *Quarters.AfterCount* by 1.

if *AnnualReportingRequirement* equals true, AND *Quarters.AfterCount* is equal to 4,

Set *RequiredLeakCheckQuarter* to quarter.

Exit the loop.

if *RequiredLeakCheckQuarter* is null

Set *LeakStatusResult* = "IC".

else if *AnnualReportingRequirement* equals false,

Set *LeakStatusResult* = "OOC-Event".

else

Set *GraceOpHours* = *RptPeriodOpHoursAccumulatorArray* element at *CurrentMonitorPlanLocationPosition*.

if (*GraceOpHours* > 168)

Set *LeakStatusResult* = "OOC-Event".

else

For each quarter beginning with the quarter after the *RequiredLeakCheckQuarter* and ending with the quarter before *CurrentReportingPeriod*,

if *AnnualReportingRequirement* equals true, or the quarter being checked is 2 or 3

if *AnnualReportingRequirement* equals true, or the quarter being checked is 3

Locate the record in *OperatingSuppDataRecordsByLocation* where OpTypeCode is equal to "OPHOURS", FuelCode is null, and reporting period



```

                                equals the quarter being checked
                        else
                                Locate the record in OperatingSuppDataRecordsByLocation where
                                OpTypeCode is equal to "OSHOURLS", FuelCode is null, and reporting period
                                equals the quarter being checked

                                if OperatingSuppDataRecordsByLocation record is found AND
                                OperatingSuppDataRecordsByLocation.OpValue is NOT null
                                        Add OpValue to GraceOpHours.

                                If GraceOpHours > 168
                                        Exit the loop.

                                if GraceOpHours > 168
                                        Set LeakStatusResult = "OOC-Event"
                                else
                                        Set LeakStatusResult = "IC-Grace".

else if PriorLeakRecord.QANeedsEvaluationFlag = "Y"
        Set LeakStatusResult = "Prior Test Not Yet Evaluated".

else if PriorLeakRecord.TestResultCd is null
        Set LeakStatusResult = "OOC-Test Has Critical Errors".

else if PriorLeakRecord.TestResultCd == "FAILED"
        Set LeakStatusResult = "OOC-Test Failed".

else if PriorLeakRecord.TestResultCd == "ABORTED"
        Set LeakStatusResult = "OOC-Test Aborted".

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Leak Check Status Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- Flow Averaging Leak Status Evaluation

**Check Code:** LKSTAT-3

**Check Name:** Determine Expiration Date For Prior Leak Check

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Determines if Leak Check occurred prior to the standard expiration date.

**Specifications:**

if (*LeakStatusResult* is null)

Set *PriorLeakExpirationDate* = *PriorLeakRecord*.TestExpirationDate.

if (*PriorLeakExpirationDate* is null)

if (*Annual Reporting Requirement* == false)

if (*PriorLeakRecord* .TestEndQuarter = "2")

Set *PriorLeakExpirationDate* = September 30th following *PriorLeakRecord* .EndDate.

else

Set *PriorLeakExpirationDate* = June 30th following *PriorLeakRecord* .EndDate.

else

if (*PriorLeakRecord* .GracePeriodInd = 1)

Set *PriorLeakExpirationDate* = the end of the quarter of the *PriorLeakRecord*.EndDate.

else

Set *PriorLeakExpirationDate* = the end of the quarter following the quarter of the *PriorLeakRecord* .EndDate.

Set *PriorLeakRecord* .TestExpirationDate = *PriorLeakExpirationDate* .

if (*CurrentMHVRecord*.Date is ON OR BEFORE the *PriorLeakExpirationDate* )

Set *LeakStatusResult* = "IC".

else

Set *PriorLeakExpirationDate* = null.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

#### Usage:

- |   |                   |  |
|---|-------------------|--|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- Leak Check Status Evaluation          |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- Flow Averaging Leak Status Evaluation |

**Check Code:** LKSTAT-4

**Check Name:** Determine Extended Expiration Date for Prior Leak Check

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Determines if Leak Check occurred prior to the extended expiration date.

**Specifications:**

Set *LeakMissingOpDataInfo* = null.

if (*LeakStatusResult* is null)

Set *MissingOpData* = false

if (*PriorLeakRecord*.TestExpirationDateWithExtension is null)

For each quarter beginning with the quarter of the *PriorLeakExpirationDate* and continuing through the quarter prior to the quarter of the *CurrentMHVRecord*.Date:

if (*EarliestLocationReportDate* > the last day of the quarter being checked)

Set *NumberOfExtensionQuarters* = *NumberOfExtensionQuarters* + 1.

else

If (*Annual Reporting Requirement* == true OR the quarter being checked is == 2 or 3)

If (*Annual Reporting Requirement* == true OR the quarter being checked == 3)

Locate a record in *OperatingSuppDataRecordsByLocation* where the reporting period is equal to the year/quarter being checked and the OpTypeCode = "OPHOURS" and FuelCode is null.

else

Locate a record in *OperatingSuppDataRecordsByLocation* where the reporting period is equal to the year/quarter being checked and the OpTypeCode = "OSHOURS" and FuelCode is null.

if (*OperatingSuppDataRecordsByLocation* is found AND  
*OperatingSuppDataRecordsByLocation*.OpValue < 168)

If (*Annual Reporting Requirement* = true OR the quarter being checked == 2)

Set *NumberOfExtensionQuarters* = *NumberOfExtensionQuarters* + 1.

else

Set *NumberOfExtensionQuarters* = *NumberOfExtensionQuarters* + 3.

else if (*OperatingSuppDataRecordsByLocation* is not found)

If (the quarter being checked == 1 or 4)

Locate a *LocationReportingFrequency* record for the test location where ReportingFrequencyCode = "OS", the Begin Quarter is on or before the quarter being checked and the EndQuarter is null or is on or after the quarter being checked.

If (*LocationReportingFrequency* record is found)

if (*Annual Reporting Requirement* == true and the quarter being checked == 4 and the year of the EndQuarter is equal to the year of the quarter being checked.

Set *NumberOfExtensionQuarters* =  
*NumberOfExtensionQuarters* + 1.

else

Stop looking for extensions.

else

Set *Missing Op Data* to true.

Set *LeakMissingOpDataInfo* = "[YEAR] Q[QTR]" (where [YEAR] is the year of the quarter being checked and [QTR] is the number of the quarter being checked.)

Stop looking for extensions.

else

Set *Missing Op Data* to true.

Set *LeakMissingOpDataInfo* = "[YEAR] Q[QTR]" (where [YEAR] is the year of the quarter being checked and [QTR] is the number of the quarter being checked.)

Stop looking for extensions.

else

Stop looking for extensions.

Add *NumberOfExtensionQuarters* to *PriorLeakExpirationDate*

Set *PriorLeakRecord*.TestExpirationDateWithExtension = *PriorLeakExpirationDate*

else

Set *PriorLeakExpirationDate* = *PriorLeakRecord*.TestExpirationDateWithExtension

If (*CurrentMHVRecord*.Date/Hour is ON OR BEFORE the *PriorLeakExpirationDate*)

Set *LeakStatusResult* = "IC-Extension".

else if (*Missing Op Data* == true)

Set *LeakStatusResult* = "Missing Op Data".

Set *PriorLeakRecord*.TestExpirationDateWithExtension = null

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Leak Check Status Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- Flow Averaging Leak Status Evaluation

**Check Code:** LKSTAT-5

**Check Name:** Determine Grace Period for Leak Check

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Determines if Leak Check occurred prior to the end of the grace period.

**Specifications:**

if (*LeakStatusResult* is null)

if (*Annual Reporting Requirement* == false)

Set *LeakStatusResult* = "OOC-Expired".

else if (*Rpt Period Op Hours Accumulator Array* for the location == -1)

Set *LeakStatusResult* = "Invalid Op Data".

else

Set *GraceOpHours* = *RptPeriodOpHoursAccumulatorArray* for the location.

if (*GraceOpHours* > 168)

Set *LeakStatusResult* = "OOC-Expired".

else

If the quarter after the LATER of the *PriorLeakExpirationDate* and the *EarliestLocationReportDate* is the quarter of the *CurrentMHVRecord.Date/Hour* ,

Set *LeakStatusResult* = "IC-Grace".

else

For each quarter beginning with the quarter after the LATER of the *PriorLeakExpirationDate* and the *EarliestLocationReportDate* ,and continuing through the quarter prior to the *CurrentMHVRecord.Date/Hour* ,

if (*EarliestLocationReportDate* <= the last day of the quarter being checked)

Locate a record in *OperatingSuppDataRecordsByLocation* where the reporting period is equal to the year/quarter being checked and the OpTypeCode = "OPHOURS" and FuelCode is null.

if (*OperatingSuppDataRecordsByLocation* is found)

Add OpValue to *GraceOpHours*.

if (*GraceOpHours* > 168)

Set *LeakStatusResult* = "OOC-Expired".  
exit for.

else

Set *LeakStatusResult* = "Missing Op Data".

Set *LeakMissingOpDataInfo* = "[YEAR] Q[QTR]" (where [YEAR] is the year

of the quarter being checked and [QTR] is the number of the quarter being checked.)  
exit for.

if (*LeakStatusResult* is null)  
Set *LeakStatusResult* = "IC-Grace".

if *LeakStatusResult* does not begin with "IC"  
return *LeakStatusResult*

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
Invalid Op Data	The [testtype] status for [key] could not be determined, because the OperatingTime in at least one Hourly Operating Data records was missing or invalid.	Critical Error Level 1
Missing Op Data	The Leak Check status for [COMPID] could not be determined, because the Op Supp Data record for OPHOURS or OSHOURS is missing for [MISSINGOPDATAINFO] (and possibly other previous reporting periods). If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
OOE-Event	You reported a QA Certification Event record for QACertEventCode [code] QACertEventDate [eventdate] for [compid], but you did not perform a subsequent leak check.	Critical Error Level 1
OOE-Expired	The prior leak check for [compid] completed on [date] has expired.	Critical Error Level 1
OOE-No Prior Test	You did not report a prior [testtype] for [key].	Critical Error Level 1
OOE-Test Aborted	The prior leak check for [compid] completed on [date] was aborted.	Critical Error Level 1
OOE-Test Failed	The prior leak check for [compid] completed on [date] failed.	Critical Error Level 1
OOE-Test Has Critical Errors	The prior leak check for [compid] completed on [date] has critical errors.	Critical Error Level 1
Prior Test Not Yet Evaluated	The [testtype] status for [key] could not be determined, because the applicable prior [testtype] with TestNumber [testnum] has not yet been evaluated.	Critical Error Level 1

#### Usage:

- 1 Process/Category: Emissions Data Evaluation Report ----- Leak Check Status Evaluation
- 2 Process/Category: Emissions Data Evaluation Report ----- Flow Averaging Leak Status Evaluation

**Check Category:**

**Linearity Status**

**Check Code:** LINSTAT-1

**Check Name:** Check Analyzer Range Exemption For Linearity Status

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check determines if the Current Analyzer Range used is exempt for Linearity Status purposes.

**Specifications:**

Set *CurrentLinearityStatus* = null

if (*CurrentMHVParameter* = "SO2C" or *CurrentMHVParameter* = "NOXC")

Locate the record in *MonitorSpanRecordsByHourLocation* for the hour and location where the ComponentTypeCode is equal to the *QaStatusComponentTypeCode* and the SpanScaleCode is equal to the *CurrentAnalyzerRangeUsed*.

if (*MonitorSpanRecordsByHourLocation* is not found OR more than one *MonitorSpanRecordsByHourLocation* is found OR if the *MonitorSpanRecordsByHourLocation.SpanValue* is null or <= 0)

Set *CurrentLinearityStatus* = "Invalid Monitor Span".

else if (*MonitorSpanRecordsByHourLocation* is found and *MonitorSpanRecordsByHourLocation.SpanValue* <= 30)

Set *CurrentLinearityStatus* = "IC-Exempt".

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Linearity Status Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- Hg Linearity Status Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- NOX Linearity Status Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- NOXR Unused P-PB CO2C, NOXC or O2C Linearity Sta
5	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Linearity Status Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Linearity Status Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- SO2 Linearity Status Evaluation



**Check Code:** LINSTAT-2

**Check Name:** Locate Most Recent Prior Linearity Test

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Determines if there is an applicable prior Linearity test.

**Specifications:**

Set *PriorLinearityRecord* = null.  
Set *InvalidLinearityRecord* = null.

if (*CurrentLinearityStatus* is null)

Locate the most recent record in *LinearityTestRecordsByLocationForQAStatus* for the location where the ComponentID is equal to the *ApplicableComponentID* and the SpanScaleCode is equal to the *CurrentAnalyzerRangeUsed* and the CalculatedTestResult is not equal to "INVALID" and the EndDate/Hour is either:

- a) prior to the *CurrentDateHour* OR
- b) equal to the *CurrentDateHour* and the EndMinute is less than 45 and the CalculatedTestResult is equal to "PASSED" or "PASSAPS".

if (*LinearityTestRecordsByLocationForQAStatus* is found)

Set *PriorLinearityRecord* = the found record in *LinearityTestRecordsByLocationForQAStatus*.

Locate the most recent record in *LinearityTestRecordsByLocationForQAStatus* for the location where the ComponentID is equal to the *ApplicableComponentID* and the SpanScaleCode is equal to the *CurrentAnalyzerRangeUsed* and the EndDate/Hour is prior to the *CurrentDateHour* and the EndDate/Hour is greater than the *PriorTestRecord*.EndDate/Hour and the CalculatedTestResult is equal to "INVALID".

if (*LinearityTestRecordsByLocationForQAStatus* is found)

Set *InvalidLinearityRecord* = the found record in *LinearityTestRecordsByLocationForQAStatus*.

else

Locate the most recent record in *LinearityTestRecordsByLocationForQAStatus* for the location where the ComponentID is equal to the *ApplicableComponentID* and the SpanScaleCode is equal to the *CurrentAnalyzerRangeUsed* and the CalculatedTestResult is equal to "INVALID" and the EndDate/Hour is prior to the *CurrentDateHour*.

if (*LinearityTestRecordsByLocationForQAStatus* is found)

Set *InvalidLinearityRecord* = the found record in *LinearityTestRecordsByLocationForQAStatus*.

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

- |   |                   |   |
|---|-------------------|---|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- CO2 Linearity Status Evaluation                  |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- Hg Linearity Status Evaluation                   |
| 3 | Process/Category: | Emissions Data Evaluation Report ----- NOX Linearity Status Evaluation                  |
| 4 | Process/Category: | Emissions Data Evaluation Report ----- NOXR Unused P-PB CO2C, NOXC or O2C Linearity Sta |
| 5 | Process/Category: | Emissions Data Evaluation Report ----- O2 Dry Linearity Status Evaluation               |
| 6 | Process/Category: | Emissions Data Evaluation Report ----- O2 Wet Linearity Status Evaluation               |
| 7 | Process/Category: | Emissions Data Evaluation Report ----- SO2 Linearity Status Evaluation                  |

**Check Code:** LINSTAT-3

**Check Name:** Locate Most Recent Prior Event

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Determines if there is an applicable prior event.

**Specifications:**

Set *PriorLinearityEventRecord* = null.

if (*CurrentLinearityStatus* is null)

Locate all records in *QACertificationEventRecords* where:

the ComponentID is equal to the *ApplicableComponentID*

AND LinearityRequired is equal to "Y";

AND the QACertEventDate/Hour is either:

- a) prior to the *CurrentDateHour* OR
- b) equal to both the *CurrentDateHour* and the ConditionalBeginDate/Hour;

AND either

- a) *Prior Test Record* is null OR
- b) QACertEventDate/Hour is after the *PriorTestRecord.EndDate/Hour* OR
- c) QACertEventDate/Hour is equal to the *PriorTestRecord.EndDate/Hour* AND (TestCompletionDate is null or the TestCompletionDate/Hour is after the *PriorTestRecord.EndDate/Hour*)

AND either

- a) *DualRangeStatus* = false OR
- b) *HighRangeComponentID* <> *LowRangeComponentID* OR
- c) QACertEventCode <> 27 or 30 or 172 and *CurrentAnalyzerRangeUsed* = "H" OR
- d) QACertEventCode <> 35 or 171 and *CurrentAnalyzerRangeUsed* = "L"

AND either

- a) *Annual Reporting Requirement* is equal to true OR
- b) QACertEventDate/Hour is on or after April 1 of the year of the *CurrentDateHour*

if (*QACertificationEventRecords* is found)

Sort *QACertificationEventRecords* by QACertEventDate/Hour descending.

For each record in *QACertificationEventRecords*

Set *PriorLinearityEventRecord* = the found record in *QACertificationEventRecords*.

if (*PriorLinearityEventRecord.QACertEventCode* = 170 and *DualRangeStatus* = true)

Locate the record in *MonitorSpanRecordsByLocation* where the ComponentTypeCode is equal to *QaStatusComponentTypeCode* and the SpanScaleCode is equal to the *CurrentAnalyzerRangeUsed* and the BeginDate/Hour is equal to the *PriorLinearityEventRecord.QACertEventDate/Hour*.

if (*MonitorSpanRecordsByLocation* is found)  
exit for loop.

```

        else
            set PriorLinearityEventRecord = null.
        else
            exit for loop.

```

If (**PriorLinearityEventRecord** is null)

    If (**PriorLinearityRecord** is null)

        Set **CurrentLinearityStatus** = "OOC-No Prior Test or Event".

else if (**InvalidLinearityRecord** is not null AND **PriorLinearityEventRecord.QACertEventDate/Hour** is after **InvalidTestRecord.EndDate/Hour**)

    Locate the earliest record in **LinearityTestRecordsByLocationForQASatus** where the ComponentID is equal to the **ApplicableComponentID**, the SpanScaleCode is equal to the **CurrentAnalyzerRangeUsed**, the CalculatedTestResult is equal to "INVALID", and the EndDate/Hour is after the **PriorLinearityEventRecord.QACertEventDate/Hour** and prior to the **CurrentDateHour**.

    if (**LinearityTestRecordsByLocationForQASatus** is found)

        Set **InvalidLinearityRecord** = the found record in **LinearityTestRecordsByLocationForQASatus**.

    else

        Set **InvalidLinearityRecord** = null.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Linearity Status Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- Hg Linearity Status Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- NOX Linearity Status Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- NOXR Unused P-PB CO2C, NOXC or O2C Linearity Sta
5	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Linearity Status Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Linearity Status Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- SO2 Linearity Status Evaluation

<b>Check Code:</b>	LINSTAT-4
<b>Check Name:</b>	Determine Expiration Dates For Most Recent Prior Linearity Test
<b>Related Former Checks:</b>	
<b>Applicability:</b>	CEM Check
<b>Description:</b>	Determines the expiration dates for the Applicable Prior Linearity test. This includes the Test Expiration Date both with and without any extensions

**Specifications:**

Set *LinearityMissingOpDataInfo* = null.

if (*CurrentLinearityStatus* is blank and *PriorLinearityRecord* is not null and *PriorLinearityEventRecord* is null)

Set *CheckForIgnoredLinearity* = true.  
Set *PriorTestExpirationDate* = null  
Set *PriorTestExpirationDateWithExtension* = null  
Set *MissingOpData* = false

if (*PriorLinearityRecord*.QANeedsEvaluationFlag = "Y")

Set *CurrentLinearityStatus* = "Prior Test Not Yet Evaluated".

else if (*PriorLinearityRecord*.TestResultCode = null or *PriorLinearityRecord*.TestResultCode = "FAILED" or *PriorLinearityRecord*.TestResultCode = "ABORTED")

Locate the most recent record in *QACertificationEventRecords* where:

the ComponentID is equal to the *ApplicableComponentID*

AND LinearityRequired is equal to "Y";

AND the ConditionalBeginDate/Hour is:

- a) on or prior to the *CurrentDateHour* AND
- b) on or after the *PriorTestRecord*.EndDate/Hour;

AND either

- a) *DualRangeStatus* = false OR
- b) *HighRangeComponentID* < *LowRangeComponentID* OR
- c) QACertEventCode < 27 or 30 or 172 and *CurrentAnalyzerRangeUsed* = "H" OR
- d) QACertEventCode < 35 or 171 and *CurrentAnalyzerRangeUsed* = "L"

AND either

- a) *Annual Reporting Requirement* is equal to true OR
- b) QACertEventDate/Hour is on or after April 1 of the year of the *CurrentHourlyRecordforRATAStatus*.Date

if (*QACertificationEventRecords* is found)

Set *PriorLinearityEventRecord* = found record in *QACertificationEventRecords*.

elseif (*PriorLinearityRecord*.TestResultCode = null)

Set *CurrentLinearityStatus* = "OOC-Test Has Critical Errors".

else if (*PriorLinearityRecord*.TestResultCode = "FAILED")

Set **CurrentLinearityStatus** = "OOC-Test Failed".

else if (**PriorLinearityRecord**.TestResultCode = "ABORTED")

Set **CurrentLinearityStatus** = "OOC-Test Aborted".

else

Set **PriorTestExpirationDate** = **PriorLinearityRecord**.TestExpirationDate.

Set **PriorTestExpirationDateWithExtension** = **PriorLinearityRecord**.TestExpirationDateWithExtension.

if (**PriorTestExpirationDate** is null)

if (**Annual Reporting Requirement** == false)

if (**PriorLinearityRecord**.TestEndQuarter = "2")

Set **PriorTestExpirationDate** = July 30th following **PriorLinearityRecord**.EndDate.

else

Set **PriorTestExpirationDate** = April 30th following **PriorLinearityRecord**.EndDate.

else

Set **AlternateTestDate** = null

if (**PriorLinearityRecord**.ComponentTypeCode is equal to "HG")

Locate the record in **LocationProgramRecordsByHourLocation** with the latest EmissionsRecordingBeginDate where the ProgramCode is equal to MATS and the EmissionsRecordingBeginDate is ON OR BEFORE the **QaStatusComponentBeginDate**.

if found

Set **AlternateTestDate** = EmissionsRecordingBeginDate of the located record

Locate the most recent **QACertificationEventRecords** for the **ApplicableComponentID** where LinearityRequired is equal to "Y", and the BeginDate/Hour is prior to the **PriorLinearityRecord**.BeginDate/Hour.

if (**QACertificationEventRecords** is found AND the LinearityCertEvent is equal to "Y" and the ConditionalDataBeginDate is null and the CompletionTestDate/Hour is after the **PriorLinearityRecord**.EndDate/Hour)

If **AlternateTestDate** is null

Set **PriorTestExpirationDate** = the end of the quarter following the quarter of the **QACertificationEventRecords**.CompletionTestDate.

Else

Set **PriorTestExpirationDate** = the end of the quarter following the quarter of the later of **QACertificationEventRecords**.CompletionTestDate and **AlternateTestDate**.

else if (**PriorLinearityRecord**.GracePeriodInd = 1)

If **AlternateTestDate** is null

Set **PriorTestExpirationDate** = the end of the quarter of the quarter of the

---

```

        PriorLinearityRecord.EndDate.

    Else
        Set PriorTestExpirationDate = the end of the quarter of the quarter of the later of
        PriorLinearityRecord.EndDate and AlternateTestDate .

    else

        If AlternateTestDate is null

            Set PriorTestExpirationDate = the end of the quarter following the quarter of the
            PriorLinearityRecord.EndDate.

        Else
            Set PriorTestExpirationDate = the end of the quarter following the quarter of the later of
            PriorLinearityRecord.EndDate and AlternateTestDate .

        Set PriorLinearityRecord.TestExpirationDate = PriorTestExpirationDate.

    if (CurrentDateHour is ON OR BEFORE the PriorTestExpirationDate)

        Set CurrentLinearityStatus = "IC".

    else if (Annual Reporting Requirement == false)

        Set CurrentLinearityStatus = "OOC-Expired".

    else

        if (PriorTestExpirationDateWithExtension is null)

            Set NumberOfExtensionQuarters = 0;

            For each quarter beginning with the quarter of the PriorTestExpirationDate and continuing through the
            quarter prior to the quarter of the CurrentDate,

                if (NumberOfExtensionQuarters = 3)

                    Stop looking for extensions.

                else

                    if (EarliestLocationReportDate > the last day of the quarter being checked)

                        Set NumberOfExtensionQuarters = NumberOfExtensionQuarters + 1.

                    else

                        If ( PrimaryBypassActiveForHour is true AND QaStatusComponentTypeCode
                        is "CO2", "NOX" or "O2" )

                            Locate a record in SystemOperatingSuppDataRecordsByLocation
                            where:

                                1) SystemId is equal to
                                QaStatusPrimaryOrPrimaryBypassSystemId.
                                2) Year is equal to the year being checked.
                                3) Quarter is equal to the quarter being checked.

```

4) OpSuppDataTypeCode = "OP".

If ( *SystemOperatingSuppDataRecordsByLocation* is found )  
Set *OperatingHourCount* =  
*SystemOperatingSuppDataRecordsByLocation*.Hours.

Else  
Set *OperatingHourCount* = null.

Else  
Locate a record in *OperatingSuppDataRecordsByLocation* where the reporting period is equal to the year/quarter being checked and the OpTypeCode = "OPHOURS".

If ( *OperatingSuppDataRecordsByLocation* is found )  
Set *OperatingHourCount* =  
*OperatingSuppDataRecordsByLocation*.OpValue.

Else  
Set *OperatingHourCount* = null.

if ( *OperatingHourCount* is NOT null AND *OperatingHourCount* < 168 )

Set *NumberOfExtensionQuarters* = *NumberOfExtensionQuarters* + 1.

else if ( *PriorLinearityRecord*.ComponentTypeCode is NOT equal to "HG")

Locate a record in *TestExtensionExemptionRecords* where the ComponentID is equal to the *ApplicableComponentID* and the ExtensionExemptionCode is equal to "RANGENU", and the SpanScaleCode is equal to the *CurrentAnalyzerRangeUsed* and the Year/Quarter is equal to the year/quarter to check.

if ( *TestExtensionExemptionRecords* is found)

Set *NumberOfExtensionQuarters* =  
*NumberOfExtensionQuarters* + 1.

else

if ( the year being checked < 2021 )

Locate *NonQaPbRecord* in  
*TestExtensionExemptionRecords* where the ComponentID is equal to the *ApplicableComponentID* and the ExtensionExemptionCode is equal to "NONQAPB", and the Year/Quarter is equal to the year/quarter to check.

else  
*NonQaPbRecord* = null.

if ( *NonQaPbRecord* is NOT null )

Set *NumberOfExtensionQuarters* =  
*NumberOfExtensionQuarters* + 1.

else if ( *OperatingHourCount* is null )



If (the quarter being checked == 1 or 4)

Locate a **LocationReportingFrequency** record for the test location where ReportingFrequencyCode = "OS", the Begin Quarter is on or before the quarter being checked and the EndQuarter is null or is on or before the quarter being checked.

If (**LocationReportingFrequency** record is found)

if (**Annual Reporting Requirement** == true and the quarter being checked == 4 and the year of the EndQuarter is equal to the year of the quarter being checked.

Set  
**NumberOfExtensionQuarters**  
=  
**NumberOfExtensionQuarters**  
+ 1.

else

Stop looking for extensions.

else

Set *Missing Op Data* to true.  
Set **LinearityMissingOpDataInfo** = "[YEAR] Q[QTR]" (where [YEAR] is the year of the quarter being checked and [QTR] is the number of the quarter being checked.)  
Stop looking for extensions.

else

Set *Missing Op Data* to true.  
Set **LinearityMissingOpDataInfo** = "[YEAR] Q[QTR]" (where [YEAR] is the year of the quarter being checked and [QTR] is the number of the quarter being checked.)  
Stop looking for extensions.

else

Stop looking for extensions.

if (**PriorLinearityRecord**.ComponentTypeCode is NOT equal to "HG")

if ( the year of the quarter after the *End Quarter* < 2021 )

For each quarter beginning with the quarter after the *End Quarter* and continuing through the earlier of the quarter prior to the quarter of **CurrentDateHour** AND 2020 Q4

Locate a record in **TestExtensionExemptionRecords** where the ComponentID is equal to the **ApplicableComponentID** and the ExtensionExemptionCode is equal

to "NONQAPB", and the Year/Quarter is equal to the year/quarter to check.

if (*TestExtensionExemptionRecords* is found)

Set *NumberOfExtensionQuarters* =  
*NumberOfExtensionQuarters* + 1.

Set *PriorTestExpirationDateWithExtension* = *PriorTestExpirationDate*.

Add *NumberOfExtensionQuarters* to *PriorTestExpirationDateWithExtension*.

Set ***PriorLinearityRecord***.*TestExpirationDateWithExtension* = *PriorTestExpirationDateWithExtension*.

else

Set ***PriorLinearityRecord***.*TestExpirationDateWithExtension* = *PriorTestExpirationDate*

If (*CurrentDateHour* is ON OR BEFORE the *PriorTestExpirationDateWithExtension*)

Set *CurrentLinearityStatus* = "IC-Extension".

else if (*Missing Op Data* == true)

Set *CurrentLinearityStatus* = "Missing Op Data".

Set ***PriorLinearityRecord***.*TestExpirationDateWithExtension* = null

else

If ( ***PrimaryBypassActiveForHour*** is true AND ***QaStatusComponentTypeCode*** is "CO2", "NOX" or "O2" )

Set *CurrentOpHours* = Hours in ***SystemOperatingSuppDataDictionaryArray*** for the current location where *SystemId* is equal to ***QaStatusPrimaryOrPrimaryBypassSystemId***.

Else

Set *CurrentOpHours* = ***RptPeriodOpHoursAccumulatorArray*** for the location.

if ( *CurrentOpHours* == -1)

Set *CurrentLinearityStatus* = "Invalid Op Data".

else

Set *GraceOpHours* = *CurrentOpHours* .

if (*GraceOpHours* > 168)

Set *CurrentLinearityStatus* = "OOC-Expired".

else

If there are NO quarters beginning with the LATER of the quarter after the *PriorTestExpirationDateWithExtension* and the quarter of the ***EarliestLocationReportDate*** and ending with the quarter prior to the *CurrentDateHour*,

Set *CurrentLinearityStatus* = "IC-Grace".

else

For each quarter beginning with the quarter after the *PriorTestExpirationDateWithExtension* and continuing through the quarter prior to the ***CurrentDateHour***,

if (***EarliestLocationReportDate*** <= the last day of the quarter being checked)

If ( ***PrimaryBypassActiveForHour*** is true AND  
***QaStatusComponentTypeCode*** is "CO2", "NOX" or "O2" )

Locate a record in  
***SystemOperatingSuppDataRecordsByLocation*** where:

- 1) ***SystemId*** is equal to  
***QaStatusPrimaryOrPrimaryBypassSystemId***.
- 2) ***Year*** is equal to the year being checked.
- 3) ***Quarter*** is equal to the quarter being checked.
- 4) ***OpSuppDataTypeCode*** = "OP".

If ( ***SystemOperatingSuppDataRecordsByLocation*** is found )

Set ***OperatingHourCount*** =  
***SystemOperatingSuppDataRecordsByLocation***.Hours.

Else

Set ***OperatingHourCount*** = null.

Else

Locate a record in  
***OperatingSuppDataRecordsByLocation*** where the reporting period is equal to the year/quarter being checked and the ***OpTypeCode*** = "OPHOURS" and ***FuelCode*** is null.

If ( ***OperatingSuppDataRecordsByLocation*** is found )

Set ***OperatingHourCount*** =  
***OperatingSuppDataRecordsByLocation***.OpValue.

Else

Set ***OperatingHourCount*** = null.

if ( ***OperatingHourCount*** is NOT null )  
Add ***OperatingHourCount*** to ***GraceOpHours***.

if (***GraceOpHours*** > 168)

Set ***CurrentLinearityStatus*** = "OOC-Expired".  
exit for.

else

Set ***CurrentLinearityStatus*** = "Missing Op Data".  
Set ***LinearityMissingOpDataInfo*** = "[YEAR] Q[QTR]"  
(where [YEAR] is the year of the quarter being checked and [QTR] is the number of the quarter being checked.)  
exit for.

if (*CurrentLinearityStatus* is null)

Set *CurrentLinearityStatus* = "IC-Grace".

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2 Linearity Status Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- Hg Linearity Status Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- NOX Linearity Status Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- NOXR Unused P-PB CO2C, NOXC or O2C Linearity Sta
5	Process/Category:	Emissions Data Evaluation Report ----- O2 Dry Linearity Status Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- O2 Wet Linearity Status Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- SO2 Linearity Status Evaluation

**Check Code:** LINSTAT-5

**Check Name:** Determine Event Conditional Status

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** If a QA Cert Event was found that affects this MHV record, evaluate the conditional status.

**Specifications:**

Set *SubsequentLinearityRecord* = null.

if (*CurrentLinearityStatus* is null and *PriorLinearityEventRecord* is not null)

if (*PriorLinearityEventRecord*.ConditionalDataBeginDate/Hour is null or *CurrentDateHour* is prior to the *PriorLinearityEventRecord*.ConditionalDataBeginDate/Hour)

Set *CurrentLinearityStatus* = "OOC-Event".

else

Locate the earliest record in *LinearityTestRecordsByLocationForQAStatus* where the ComponentID is equal to the *ApplicableComponentID*, the SpanScaleCode is equal to the *CurrentAnalyzerRangeUsed*, the CalculatedTestResult is not equal to "INVALID" and the EndDate/Hour is on or after the *PriorLinearityEventRecord*.ConditionalDataBeginDate/Hour.

if (*LinearityTestRecordsByLocationForQAStatus* is found)

Set *SubsequentLinearityRecord* = the found record in *LinearityTestRecordsByLocationForQAStatus*.

if (*LinearityTestRecordsByLocationForQAStatus*.QANeedsEvaluationFlag = "Y")

Set *CurrentLinearityStatus* = "Recertification Test Not Yet Evaluated".

else if (*LinearityTestRecordsByLocationForQAStatus*.TestResultCode is null)

Set *CurrentLinearityStatus* = "OOC-Recertification Test Has Critical Errors".

else if (*LinearityTestRecordsByLocationForQAStatus*.TestResultCode = "FAILED")

Set *CurrentLinearityStatus* = "OOC-Recertification Test Failed".

else if (*LinearityTestRecordsByLocationForQAStatus*.TestResultCode = "ABORTED")

Set *CurrentLinearityStatus* = "OOC-Recertification Test Aborted".

If (*InvalidLinearityRecord* is null)

Locate the earliest record in *LinearityTestRecordsByLocationForQAStatus* where the ComponentID is equal to the *ApplicableComponentID*, the SpanScaleCode is equal to the *CurrentAnalyzerRangeUsed*, the CalculatedTestResult is equal to "INVALID" and the EndDate/Hour is on or after the *PriorLinearityEventRecord*.ConditionalDataBeginDate/Hour and is before the EndDate/EndHour of the *LinearityTestRecordsByLocationForQAStatus* record retrieved above.

if (*LinearityTestRecordsByLocationForQAStatus* is found)

Set *InvalidLinearityRecord* = the found record in *LinearityTestRecordsByLocationForQAStatus*.

if (*PriorLinearityEventRecord*.SystemTypeCode == "HG") AND (*PriorLinearityEventRecord*.EventCode in set {"100", "101", "120", "125"})

Set **CurrentLinearityStatus** = "IC-Skip Duplicate Checking for Hg Conditional Data".

if (**CurrentLinearityStatus** is null AND **Annual Reporting Requirement** == false)

If (**SubsequentLinearityRecord** is not null and **SubsequentLinearityRecord.EndDate/Hour** is greater than October 30th of the year of the **CurrentDateHour**) OR (**SubsequentLinearityRecord** is null and the **CurrentDateHour** is in the 3rd quarter))

Set **CurrentLinearityStatus** = "OOC-Conditional Period Expired".

if (**CurrentLinearityStatus** is null)

if (**PriorLinearityEventRecord.LinearityCertEvent** == "Y") and (**PriorLinearityEventRecord.SystemTypeCode** is NOT in set (ST))

if (**PriorLinearityEventRecord.EventCode** = 125)

If (**PriorLinearityEventRecord.MonitoringSystemID** is null)

Set **CurrentLinearityStatus** = "Invalid Certification Event"

else if (the associated BeginDate of the system in the **PriorLinearityEventRecord** is null)

Set **CurrentLinearityStatus** = "Invalid Monitor System"

else

If (the associated SystemTypeCode of the system in the **PriorLinearityEventRecord** == "SO2")

Locate the record in **LocationProgramRecordsByHourLocation** with the latest UnitMonitorCertBeginDate where the ProgramCode is in **ProgramRequiresSo2SystemCertificationList** and the UnitMonitorCertBeginDate is ON OR BEFORE the associated BeginDate of the system in the **PriorLinearityEventRecord**.

If (the record in **LocationProgramRecordsByHourLocation** is not found)

Locate the record in **LocationProgramRecordsByHourLocation** with the latest EmissionsRecordingBeginDate where the ProgramCode is in **ProgramRequiresSo2SystemCertificationList** and the EmissionsRecordingBeginDate is ON OR BEFORE the associated BeginDate of the system in the **PriorLinearityEventRecord**.

else if (the associated SystemTypeCode of the system in the **PriorLinearityEventRecord** == "NOX")

Locate the record in **LocationProgramRecordsByHourLocation** with the latest UnitMonitorCertBeginDate where the ProgramCode is in **ProgramRequiresNoxSystemCertificationList** and the UnitMonitorCertBeginDate is ON OR BEFORE the associated BeginDate of the system in the **PriorLinearityEventRecord**.

If (the record in **LocationProgramRecordsByHourLocation** is not found)

Locate the record in **LocationProgramRecordsByHourLocation** with the latest EmissionsRecordingBeginDate where the ProgramCode is in **ProgramRequiresNoxSystemCertificationList** and the EmissionsRecordingBeginDate is ON OR BEFORE the associated BeginDate of the system in the **PriorLinearityEventRecord**.

else if (the associated SystemTypeCode of the system in the **PriorLinearityEventRecord** == "NOXC")

Locate the record in **LocationProgramRecordsByHourLocation** with the latest UnitMonitorCertBeginDate where the ProgramCode is in **ProgramRequiresNoxcSystemCertificationList** and the UnitMonitorCertBeginDate is ON OR BEFORE the associated BeginDate of the system in the **PriorLinearityEventRecord**.

If (the record in **LocationProgramRecordsByHourLocation** is not found)  
Locate the record in **LocationProgramRecordsByHourLocation** with the latest EmissionsRecordingBeginDate where the ProgramCode is in **ProgramRequiresNoxcSystemCertificationList** and the EmissionsRecordingBeginDate is ON OR BEFORE the associated BeginDate of the system in the **PriorLinearityEventRecord**.

else if (the associated SystemTypeCode of the system in the **PriorLinearityEventRecord** == "HG")

Locate the record in **LocationProgramRecordsByHourLocation** with the latest UnitMonitorCertBeginDate where the ProgramCode is in set {MATS} and the UnitMonitorCertBeginDate is ON OR BEFORE the associated BeginDate of the system in the **PriorLinearityEventRecord**.

If (the record in **LocationProgramRecordsByHourLocation** is not found)  
Locate the record in **LocationProgramRecordsByHourLocation** with the latest EmissionsRecordingBeginDate where the ProgramCode is in set {MATS} and the EmissionsRecordingBeginDate is ON OR BEFORE the associated BeginDate of the system in the **PriorLinearityEventRecord**.

else

Locate the record in **LocationProgramRecordsByHourLocation** with the latest UnitMonitorCertBeginDate where the UnitMonitorCertBeginDate is ON OR BEFORE the associated BeginDate of the system in the **PriorLinearityEventRecord**.

If (the record in **LocationProgramRecordsByHourLocation** is not found)  
Locate the record in **LocationProgramRecordsByHourLocation** with the latest EmissionsRecordingBeginDate where the EmissionsRecordingBeginDate is ON OR BEFORE the associated BeginDate of the system in the **PriorLinearityEventRecord**.

If (the record in **LocationProgramRecordsByHourLocation** is not found)  
Set **CurrentLinearityStatus** = "Missing Program".

else if (**LocationProgramRecordsByHourLocation**.UnitMonitorCertDeadline is not null)

if (CurrentDate is prior to the **LocationProgramRecordsByHourLocation**.UnitMonitorCertDeadline)  
Set **CurrentLinearityStatus** = "IC-Conditional".

else

Set **CurrentLinearityStatus** = "OOC-Conditional Period Expired".

else

if (CurrentDate is prior to the **LocationProgramRecordsByHourLocation**.UnitMonitorCertBeginDate + 180 days)

---

```
Set CurrentLinearityStatus = "IC-Conditional".

else
    Set CurrentLinearityStatus = "OOC-Conditional Period Expired".

else

    If (the number of calendar days ON OR AFTER the
PriorLinearityEventRecord.QACertEventDate and ON OR BEFORE the CurrentDateHour >
    180)
        Set CurrentLinearityStatus = "OOC-Conditional Period Expired".

    else if (the quarter of the PriorLinearityEventRecord.QACertEventDate is equal to the quarter of
    the CurrentDateHour)

        If (the number of calendar days ON OR AFTER the
PriorLinearityEventRecord.QACertEventDate and ON OR BEFORE the
CurrentDateHour > 90)

            If ( PrimaryBypassActiveForHour is true AND QaStatusComponentTypeCode
            is "CO2", "NOX" or "O2" )

                If ( Days in QaCertEventSuppDataDictionaryArray for the current
                location and QA Cert Event Date where QaCertEventKey is equal to
                PriorLinearityEventRecord.QaCertEventKey > 90 )
                    Set CurrentLinearityStatus = "OOC-Conditional Period
                    Expired".
                Else
                    Set CurrentLinearityStatus = "IC-Conditional".
            Else
                Set CurrentLinearityStatus = "IC-Conditional".

        Else if ( Rpt Period Op Hours Accumulator Array for the location == -1)
            Set CurrentLinearityStatus = "Invalid Op Data".

        else if (the number of calendar days ON OR AFTER the
PriorLinearityEventRecord.QACertEventDate and ON OR BEFORE the
CurrentDateHour is equal to Rpt Period Op Days Accumulator Array
        for the location)
            Set CurrentLinearityStatus = "OOC-Conditional Period
            Expired".

        else
            Set CurrentLinearityStatus = "IC-Conditional".

    else
        Set CurrentLinearityStatus = "IC-Conditional".

    else if (PriorLinearityEventRecord.MinOpDaysPriorQuarter is null)

        Set PriorLinearityEventRecord.MinOpDaysPriorQuarter = 0
        Set PriorLinearityEventRecord.MaxOpDaysPriorQuarter = 0

        for each quarter beginning with the quarter of the
PriorLinearityEventRecord.QACertEventDate and continuing through the quarter
        BEFORE the CurrentDateHour:

            if (EarliestLocationReportDate <= the last day of the quarter being checked)

                If ( PrimaryBypassActiveForHour is true AND
```



***QaStatusComponentTypeCode*** is "CO2", "NOX" or "O2" )

Locate a record in

***SystemOperatingSuppDataRecordsByLocation*** where:

- 1) SystemId is equal to  
***QaStatusPrimaryOrPrimaryBypassSystemId***.
- 2) Year is equal to the year being checked.
- 3) Quarter is equal to the quarter being checked.
- 4) OpSuppDataTypeCode = "OP".

If ( ***SystemOperatingSuppDataRecordsByLocation*** is found )  
Set *OperatingDayCount* =  
***SystemOperatingSuppDataRecordsByLocation***.Days.

Else

Set *OperatingDayCount* = null.

Else

Locate the record in ***OperatingSuppDataRecordsbyLocation***  
where the OpTypeCode is equal to "OPDAYS" and the reporting  
period is equal to the quarter being checked.

If ( ***OperatingSuppDataRecordsbyLocation*** is found )  
Set *OperatingDayCount* =  
***OperatingSuppDataRecordsbyLocation***.OpValue.

Else

Set *OperatingDayCount* = null.

if ( *OperatingDayCount* is null )

Set ***PriorLinearityEventRecord***.MinOpDaysPriorQuarter = -1  
Set ***LinearityMissingOpDataInfo*** = "[YEAR] Q[QTR]" (where  
[YEAR] is the year of the quarter being checked and [QTR] is  
the number of the quarter being checked.  
exit for.

else if ( the quarter being checked is the quarter of the  
***PriorLinearityEventRecord***.QaCertEventDate )

*supplementalCount* = null.

If ( ***PrimaryBypassActiveForHour*** is true AND  
***QaStatusComponentTypeCode*** is "CO2", "NOX" or "O2"  
AND  
***PriorLinearityEventRecord***.QaCertEventDateSystemSuppDataE  
xists is true )

*supplementalCount* =  
***PriorLinearityEventRecord***.QaCertEventSystemOpDay  
sCount.

If ( *supplementalCount* is null AND  
***PriorLinearityEventRecord***.QaCertEventDateSuppDataExists is  
true )

*supplementalCount* =  
***PriorLinearityEventRecord***.QaCertEventOpDaysCount.

If ( *supplementalCount* is NOT null )

Set

***PriorLinearityEventRecord.MinOpDaysPriorQuarter =  
PriorLinearityEventRecord.MinOpDaysPriorQuarter +  
supplementalCount.***

Set

***PriorLinearityEventRecord.MaxOpDaysPriorQuarter =  
PriorLinearityEventRecord.MaxOpDaysPriorQuarter +  
supplementalCount.***

Else

If ( *OperatingDayCount* MINUS the number of  
calendar days in the quarter being checked that are  
PRIOR to the  
***PriorLinearityEventRecord.QACertEventDate > 0***)

Set

***PriorLinearityEventRecord.MinOpDaysPriorQ  
uarter = OperatingDayCount MINUS the  
number of calendar days in the quarter being  
checked that are PRIOR to the  
PriorLinearityEventRecord.QACertEventDate***

If ( *OperatingDayCount* is less than the number of  
calendar days in the quarter being checked that are ON  
OR AFTER the  
***PriorLinearityEventRecord.QACertEventDate***)

Set

***PriorLinearityEventRecord.MaxOpDaysPrior  
Quarter = OperatingDayCount.***

else

Set

***PriorLinearityEventRecord.MaxOpDaysPrior  
Quarter = the number of calendar days in the  
quarter being checked that are ON OR AFTER  
the  
PriorLinearityEventRecord.QACertEventDate.***

else

Set ***PriorLinearityEventRecord.MinOpDaysPriorQuarter =  
PriorLinearityEventRecord.MinOpDaysPriorQuarter +  
OperatingDayCount.***

Set ***PriorLinearityEventRecord.MaxOpDays PriorQuarter =  
PriorLinearityEventRecord.MaxOpDaysPriorQuarter +  
OperatingDayCount.***

If ( ***PrimaryBypassActiveForHour*** is true AND ***QaStatusComponentTypeCode*** is  
“CO2”, “NOX” or “O2” )

Set *CurrentOpDays* to Days in ***SystemOperatingSuppDataDictionaryArray*** for  
the current location where *SystemId* is equal to

```

        QaStatusPrimaryOrPrimaryBypassSystemId.
    Else
        Set CurrentOpDays to Rpt Period Op Days Accumulator Array for the Location.

    if (PriorLinearityEventRecord.MinOpDaysPriorQuarter == -1
        set CurrentLinearityStatus to "Missing Op Data"

    else if (PriorEventRecord.MinOpDaysPriorQuarter + CurrentOpDays > 90)
        Set CurrentLinearityStatus = "OOC-Conditional Period Expired".

    else if ( PriorEventRecord.MinOpDaysPriorQuarter ==
PriorEventRecord.MaxOpDaysPriorQuarter )
        Set CurrentLinearityStatus = "IC-Conditional".

    else if (PriorEventRecord.MaxOpDaysPriorQuarter + CurrentOpDays > 90)
        Set CurrentLinearityStatus = "Undetermined-Conditional Data".

    else
        Set CurrentLinearityStatus = "IC-Conditional".

    else
        Set CurrentLinearityStatus = "IC-Conditional".

else

    If (the quarter of the PriorLinearityEventRecord.ConditionalBeginDate is equal to the quarter of the
CurrentDateHour)

        If ( PrimaryBypass.ActiveForHour is true AND QaStatusComponentTypeCode is "CO2",
        "NOX" or "O2" )

            If ( Hours in QaCertEventSuppDataDictionaryArray for the current location and
            Conditional Data Begin Hour where QaCertEventKey is equal to
            PriorLinearityEventRecord.QaCertEventKey > 168 )
                Set CurrentLinearityStatus = "OOC-Conditional Period Expired".
            Else
                Set CurrentLinearityStatus = "IC-Conditional".
        Else
            Count the number of HourlyOpData records for the location where OpTime is greater
            than 0 and Date/Hour is ON OR AFTER the
            PriorLinearityEventRecord.ConditionalBeginDate/Hour and ON OR BEFORE the
            CurrentDateHour,

            If the number > 168,
                Set CurrentLinearityStatus = "OOC-Conditional Period Expired".

            else
                Set CurrentLinearityStatus = "IC-Conditional".

        else

            if (PriorLinearityEventRecord.MinOpHoursPriorQuarter is null)

                Set PriorLinearityEventRecord.MinOpHoursPriorQuarter = 0
                Set PriorLinearityEventRecord.MaxOpHoursPriorQuarter = 0

```

for each quarter beginning with the quarter of the  
**PriorLinearityEventRecord**.ConditionalBeginDate and continuing through the quarter  
 BEFORE the **CurrentDateHour**:

if (**EarliestLocationReportDate** <= the last day of the quarter being checked)

If ( **PrimaryBypassActiveForHour** is true AND  
**QaStatusComponentTypeCode** is "CO2", "NOX" or "O2" )

Locate a record in  
**SystemOperatingSuppDataRecordsByLocation** where:

- 1) SystemId is equal to  
**QaStatusPrimaryOrPrimaryBypassSystemId**.
- 2) Year is equal to the year being checked.
- 3) Quarter is equal to the quarter being checked.
- 4) OpSuppDataTypeCode = "OP" if **Annual Reporting Requirement** == true OR the quarter being checked != 2, otherwise "OPMJ".

If ( **SystemOperatingSuppDataRecordsByLocation** is found )  
 Set **OperatingHourCount** =  
**SystemOperatingSuppDataRecordsByLocation**.Hours.

Else  
 Set **OperatingHourCount** = null.

Else

if ( **Annual Reporting Requirement** == false ) AND ( the  
 quarter being checked == 2 )

Locate the record in  
**OperatingSuppDataRecordsbyLocation** where the  
 OpTypeCode is equal to "OSHOURLS" and the reporting  
 period is equal to the quarter being checked.

else

Locate the record in  
**OperatingSuppDataRecordsbyLocation** where the  
 OpTypeCode is equal to "OPHOURLS", FuelCode is  
 null, and the reporting period is equal to the quarter  
 being checked.

If ( **OperatingSuppDataRecordsByLocation** is found )  
 Set **OperatingHourCount** =  
**OperatingSuppDataRecordsByLocation**.OpValue.

Else  
 Set **OperatingHourCount** = null.

if ( **OperatingHourCount** is null )

Set **PriorLinearityEventRecord**.MinOpHoursPriorQuarter = -1  
 Set **LinearityMissingOpDataInfo** = "[YEAR] Q[QTR]" (where  
 [YEAR] is the year of the quarter being checked and [QTR] is  
 the number of the quarter being checked.)

exit for.

else if ( the quarter being checked is the quarter of the  
**PriorLinearityEventRecord**.ConditionalBeginDate )

*supplementalCount* = null.

If ( **PrimaryBypassActiveForHour** is true AND  
**QaStatusComponentTypeCode** is "CO2", "NOX" or "O2"  
AND  
**PriorLinearityEventRecord**.ConditionalBeginHourSystemSupp  
DataExists is true )

*supplementalCount* =  
**PriorLinearityEventRecord**.ConditionalBeginSystemO  
pHoursCount.

If ( *supplementalCount* is null AND  
**PriorLinearityEventRecord**.ConditionalBeginHourSuppDataExis  
ts is true )

*supplementalCount* =  
**PriorLinearityEventRecord**.ConditionalBeginOpHours  
Count.

If ( *supplementalCount* is NOT null )

Set  
**PriorLinearityEventRecord**.MinOpHoursPriorQuarter  
=  
**PriorLinearityEventRecord**.MinOpHoursPriorQuarter  
+ *supplementalCount*.  
Set  
**PriorLinearityEventRecord**.MaxOpHoursPriorQuarter  
=  
**PriorLinearityEventRecord**.MaxOpHoursPriorQuarter  
+ *supplementalCount*.

Else

If ( **OperatingHourCount** MINUS the number of  
calendar hours in the quarter being checked that are  
PRIOR to the  
**PriorLinearityEventRecord**.ConditionalBeginDate/Hou  
r > 0)

Set  
**PriorLinearityEventRecord**.MinOpHoursPrior  
Quarter = **OperatingHourCount** MINUS the  
number of calendar hours in the quarter being  
checked that are PRIOR to the  
**PriorLinearityEventRecord**.ConditionalBegin  
Date/Hour

If ( **OperatingHourCount** is less than the number of  
calendar hours in the quarter begin checked that are ON  
OR AFTER the  
**PriorLinearityEventRecord**.ConditionalBeginDate/Hou  
r)

```

Set
PriorLinearityEventRecord.MaxOpHoursPrior
Quarter = OperatingHourCount.

else

Set
PriorLinearityEventRecord.MaxOpHoursPrior
Quarter = the number of calendar hours in the
quarter being checked that are ON OR AFTER
the
PriorLinearityEventRecord.ConditionalBegin
Date/Hour.

else

Set PriorLinearityEventRecord.MinOpHoursPriorQuarter =
PriorLinearityEventRecord.MinOpHoursPriorQuarter +
OperatingHourCount.
Set PriorLinearityEventRecord.MaxOpHours PriorQuarter =
PriorLinearityEventRecord.MaxOpHoursPriorQuarter +
OperatingHourCount.

If ( PrimaryBypass.ActiveForHour is true AND QaStatusComponentTypeCode is "CO2",
"NOX" or "O2" )

Set CurrentOpHours to Hours in SystemOperatingSuppDataDictionaryArray for the
current location where SystemId is equal to QaStatusPrimaryOrPrimaryBypassSystemId.

Else

Set CurrentOpHours to Rpt Period Op Hours Accumulator Array for the Location.

if (PriorLinearityEventRecord.MinOpHoursPriorQuarter == -1)
set CurrentLinearityStatus to "Missing Op Data"

else if (Rpt Period Op Days Accumulator Array for the location == -1)

if (PriorEventRecord.MinOpHoursPriorQuarter > 168)
Set CurrentLinearityStatus = "OOC-Conditional Period Expired".

else
Set CurrentLinearityStatus = "Invalid Op Data".

else

if (PriorEventRecord.MinOpHoursPriorQuarter + CurrentOpHours > 168)
Set CurrentLinearityStatus = "OOC-Conditional Period Expired".

else if ( PriorEventRecord.MinOpHoursPriorQuarter ==
PriorEventRecord.MaxOpHoursPriorQuarter)
Set CurrentLinearityStatus = "IC-Conditional".

else if (PriorEventRecord.MaxOpHoursPriorQuarter + CurrentOpHours > 168)
Set CurrentLinearityStatus = "Undetermined-Conditional Data".

else
Set CurrentLinearityStatus = "IC-Conditional".

```

**Results:**ResultResponseSeverity

**Usage:**

- |   |                   |   |
|---|-------------------|---|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- CO2 Linearity Status Evaluation                  |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- Hg Linearity Status Evaluation                   |
| 3 | Process/Category: | Emissions Data Evaluation Report ----- NOX Linearity Status Evaluation                  |
| 4 | Process/Category: | Emissions Data Evaluation Report ----- NOXR Unused P-PB CO2C, NOXC or O2C Linearity Sta |
| 5 | Process/Category: | Emissions Data Evaluation Report ----- O2 Dry Linearity Status Evaluation               |
| 6 | Process/Category: | Emissions Data Evaluation Report ----- O2 Wet Linearity Status Evaluation               |
| 7 | Process/Category: | Emissions Data Evaluation Report ----- SO2 Linearity Status Evaluation                  |

**Check Code:** LINSTAT-6

**Check Name:** Determine Final Linearity Status

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Evaluates the determined Linearity Status and changes it if needed based on an ignored test or the status of the alternate range.

**Specifications:**

Set *AlternateLinearityRecord* = null

Set *AlternateInvalidLinearityRecord* = null

if (*CurrentLinearityStatus* begins with "OOC")

    if (*InvalidLinearityRecord* is not null)

        Set *CurrentLinearityStatus* = *CurrentLinearityStatus* & "\*".

    Return result *CurrentLinearityStatus*.

else if (*CurrentLinearityStatus* = "Invalid Monitor Span")

    if (*CurrentAnalyzerRangeUsed* = "H")

        Set *CurrentLinearityStatus* = *CurrentLinearityStatus* & " (High Scale)".

    else

        Set *CurrentLinearityStatus* = *CurrentLinearityStatus* & " (Low Scale)".

    Return result *CurrentLinearityStatus*.

else if (*DualRangeStatus* = true and *CurrentLinearityStatus* begins with "IC" or "Undetermined")

    if (*CurrentAnalyzerRangeUsed* = "H")

        Set *AlternateAnalyzerRange* = "L".

        Set *AlternateComponentID* = *LowRangeComponentID*.

    else

        Set *AlternateAnalyzerRange* = "H".

        Set *AlternateComponentID* = *HighRangeComponentID*.

for each record in *MonitorSystemComponentRecordsByHourLocation* where the ComponentID is equal to the *AlternateComponentID*

    Append *MonitorSystemComponentRecordsByHourLocation*.SystemID to *AlternateSystemIDs*.

if (*MonitorSystemComponentRecordsByHourLocation* is not found)

    Set *CurrentLinearityStatus* = "Invalid Monitor System Component".

    Return result *CurrentLinearityStatus*.

if (*CurrentMHVParameter* in set {SO2C, NOXC})

    Locate the record in *MonitorSpanRecordsByHourAndLocation* for the hour where the ComponentTypeCode is equal to the *QaStatusComponentTypeCode* and the SpanScaleCode is equal to the *AlternateAnalyzerRange*.



if (**MonitorSpanRecordsByHourAndLocation** is not found OR more than one **MonitorSpanRecordsByHourAndLocation** is found or **MonitorSpanRecordsByHourAndLocation.SpanValue** is null or is less than or equal to 0)

Set **CurrentLinearityStatus** = "Invalid Monitor Span".

if (**AlternateAnalyzerRange** = "H")

Set **CurrentLinearityStatus** = **CurrentLinearityStatus** & " (High Scale)".

else

Set **CurrentLinearityStatus** = **CurrentLinearityStatus** & " (Low Scale)".

Return result **CurrentLinearityStatus**.

else if (**MonitorSpanRecordsByHourAndLocation.SpanValue** <= 30)

If (**CurrentLinearityStatus** does not begin with "IC")

Return result **CurrentLinearityStatus**.

else

exit check.

Locate the most recent record in **LinearityTestRecordsByLocationForQAStatus** for the **AlternateComponentID** where the **SpanScaleCode** is equal to the **AlternateAnalyzerRange** and the **CalculatedTestResult** is not equal to "INVALID" and the **EndDate/Hour** is either:

a) prior to the **CurrentDateHour** OR

b) equal to the **CurrentDateHour** and the **EndMinute** is less than "45" and the **CalculatedTestResult** is equal to "PASSED" or "PASSAPS".

if (**LinearityTestRecordsByLocationForQAStatus** is found)

Set **AlternateLinearityRecord** = the found record in **LinearityTestRecordsByLocationForQAStatus**.

Locate all records in **QACertificationEventRecords** where:

the **ComponentID** is equal to the **AlternateComponentID**

AND **LinearityRequired** is equal to "Y",

AND the **QACertEventDate/Hour** is either:

a) prior to the **CurrentDateHour** OR

b) equal to both the **CurrentDateHour** and the **ConditionalDataBeginDate/Hour**;

AND either

a) **AlternateLinearityRecord** is null OR

b) **QACertEventDate/Hour** is after the **AlternateLinearityRecord.EndDate/Hour** OR

c) **QACertEventDate/Hour** is equal to the **AlternateLinearityRecord.EndDate/Hour** AND (**TestCompletionDate** is null or the **TestCompletionDate/Hour** is after the **AlternateLinearityRecord.EndDate/Hour**)

AND either

a) **DualRangeStatus** = false OR

b) **HighRangeComponentID** <> **LowRangeComponentID** OR

c) **QACertEventCode** <> 27 or 30 or 172 and **AlternateAnalyzerRange** = "H" OR

d) **QACertEventCode** <> 35 or 171 and **AlternateAnalyzerRange** = "L"

if (**QACertificationEventRecords** is found)

if (*QACertificationEventRecords*.ConditionalBeginDate/Hour is null or *CurrentDateHour* is prior to the *QACertificationEventRecords*.ConditionalBeginDate/Hour)

    If (*CurrentLinearityStatus* does not begin with "IC")

        Return result *CurrentLinearityStatus*.

else

    Locate the most recent record in *LinearityTestRecordsByLocationForQAStatus* for the *AlternateComponentID* where the SpanScaleCode is equal to the *AlternateAnalyzerRange*, the CalculatedTestResult is equal to "INVALID", and the EndDate/Hour is after the *QACertificationEventRecords*.QACertEventDate/Hour and prior to the *CurrentDateHour*.

    if (*LinearityTestRecordsByLocationForQAStatus* is found)

        Set *AlternateInvalidLinearityRecord* = the found record in

*LinearityTestRecordsByLocationForQAStatus*.

    else

        Set *AlternateInvalidLinearityRecord* = null.

    Locate the first record in *LinearityTestRecordsByLocationForQAStatus* where the ComponentID is equal to the *AlternateComponentID*, the SpanScaleCode is equal to the *AlternateAnalyzerRange*, the CalculatedTestResult is not equal to "INVALID", and the EndDate/Hour is on or after the *QACertificationEventRecords*.ConditionalDataBeginDate/Hour.

    if (*LinearityTestRecordsByLocationForQAStatus* is found)

        Set *AlternateLinearityRecord* = the found record in *LinearityTestRecordsByLocationForQAStatus*.

    if (*AlternateLinearityRecord*.QANeedsEvaluationFlag = "Y")

        Set *CurrentLinearityStatus* = "Alternate Range Recertification Test Not Yet Evaluated".

    else if (*AlternateLinearityRecord*.TestResultCode is null or is in set {FAILED, ABORTED})

        If (*AlternateInvalidLinearityRecord* is null)

            Locate the most recent record in *LinearityTestRecordsByLocationForQAStatus* for the *AlternateComponentID* where the SpanScaleCode is equal to the *AlternateAnalyzerRange*, the CalculatedTestResult is equal to "INVALID", and the EndDate/Hour is after the *QACertificationEventRecords*.QACertEventDate/Hour and prior to the EndDate/Hour of the *LinearityTestRecordsByLocationForQAStatus* record retrieved above.

        if (*LinearityTestRecordsByLocationForQAStatus* is found)

            Set *AlternateInvalidLinearityRecord* = the found record in

*LinearityTestRecordsByLocationForQAStatus*.

    if (*AlternateLinearityRecord*.TestResultCode is null)

        Set *CurrentLinearityStatus* = "OOC-Alternate Range Recertification Test Has Critical Errors".

    if (*AlternateInvalidLinearityRecord* is not null)

        Set *CurrentLinearityStatus* = *CurrentLinearityStatus* & "\*\*".

    else if (*AlternateLinearityRecord*.TestResultCode = "FAILED")

        Set *CurrentLinearityStatus* = "OOC-Alternate Range Recertification Test Failed".

    if (*AlternateInvalidLinearityRecord* is not null)

        Set *CurrentLinearityStatus* = *CurrentLinearityStatus* & "\*\*".

    else if (*AlternateLinearityRecord*.TestResultCode = "ABORTED")

Set **CurrentLinearityStatus** = "OOC-Alternate Range Recertification Test Aborted".  
if (**AlternateInvalidLinearityRecord** is not null)  
Set **CurrentLinearityStatus** = **CurrentLinearityStatus** & "\*".

If (**CurrentLinearityStatus** does not begin with "IC")  
Return result **CurrentLinearityStatus**.

else

if (**AlternateLinearityRecord** is found)  
if (**AlternateLinearityRecord.QANeedsEvaluationFlag** = "Y")  
Set **CurrentLinearityStatus** = "Alternate Range Test Not Yet Evaluated".

else if (**AlternateLinearityRecord.TestResultCode** is null or is in set {ABORTED, FAILED})

Locate the most recent record in **LinearityTestRecordsByLocationForQAStatus** for the **AlternateComponentID** where the **SpanScaleCode** is equal to the **AlternateAnalyzerRange** and the **EndDate/Hour** is prior to the **CurrentDateHour** and the **EndDate/Hour** is greater than the **AlternateLinearityRecord.EndDate/Hour** and the **CalculatedTestResult** is equal to "INVALID".

if (**LinearityTestRecordsByLocationForQAStatus** is found)  
Set **AlternateInvalidLinearityRecord** = the found record in **LinearityTestRecordsByLocationForQAStatus**.

if (**AlternateLinearityRecord.TestResultCode** = null)  
Set **CurrentLinearityStatus** = "OOC-Alternate Range Test Has Critical Errors".  
if (**AlternateInvalidLinearityRecord** is not null)  
Set **CurrentLinearityStatus** = **CurrentLinearityStatus** & "\*".

else if (**AlternateLinearityRecord.TestResultCode** = "FAILED")  
Set **CurrentLinearityStatus** = "OOC-Alternate Range Test Failed".  
if (**AlternateInvalidLinearityRecord** is not null)  
Set **CurrentLinearityStatus** = **CurrentLinearityStatus** & "\*".

else if (**AlternateLinearityRecord.TestResultCode** = "ABORTED")  
Set **CurrentLinearityStatus** = "OOC-Alternate Range Test Aborted".  
if (**AlternateInvalidLinearityRecord** is not null)  
Set **CurrentLinearityStatus** = **CurrentLinearityStatus** & "\*".

else

Set **CurrentLinearityStatus** = "OOC-No Prior Alternate Range Test or Event".

If (**CurrentLinearityStatus** does not begin with "IC")  
Return result **CurrentLinearityStatus**.

else

If (**CurrentLinearityStatus** does not begin with "IC")  
Return result **CurrentLinearityStatus**.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
Alternate Range Recertification Test Not Yet Evaluated	The [testtype] status for [key] could not be determined, because the prior [testtype] for the alternate range component with TestNumber [alttestnum] has not yet been evaluated.	Critical Error Level 1
Alternate Range Test Not Yet Evaluated	The [testtype] status for [key] could not be determined, because the prior [testtype] for the alternate range component with TestNumber [alttestnum] has not yet been evaluated.	Critical Error Level 1
Invalid Certification Event	The [testtype] status for [key] could not be determined, because the QA Certification Event record for QACertEventCode [code] QACertEventDate [eventdate] has a critical error.	Critical Error Level 1
Invalid Monitor Span (High Scale)	The [testtype] status for [key] could not be determined, because you did not report a single, valid high-scale [comptype] span record that was active during the test.	Critical Error Level 1
Invalid Monitor Span (Low Scale)	The [testtype] status for [key] could not be determined, because you did not report a single, valid low-scale [comptype] span record that was active during the test.	Critical Error Level 1
Invalid Monitor System	The [testtype] status for [key] could not be determined, because the Monitor System record for MonitoringSystemID [system] has a critical error.	Critical Error Level 1
Invalid Monitor System Component	The [testtype] status for [key] could not be determined, because you did not report any active Monitor System Component records for the alternate range of the component.	Critical Error Level 1
Invalid Op Data	The [testtype] status for [key] could not be determined, because the OperatingTime in at least one Hourly Operating Data records was missing or invalid.	Critical Error Level 1
Missing Op Data	The [testtype] status for [key] could not be determined, because the Op Supp Data record for OPHOURS, OSHOURS, or OPDAYS is missing for [MISSINGOPDATAINFO] (and possibly other previous reporting periods). If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
Missing Program	The [testtype] status for [key] could not be determined, because a Unit Program record associated with the initial certification event for QACertEventCode [code] QACertEventDate [eventdate] either does not exist or has a UnitMonitorCertificationBeginDate inconsistent with the BeginDate of the associated Monitor System record.	Critical Error Level 1
OOO-Alternate Range Recertification Test Aborted	The subsequent recertification [testtype] for the alternate range of the component for [key] with TestNumber [alttestnum] was aborted.	Critical Error Level 1
OOO-Alternate Range Recertification Test Aborted*	The subsequent recertification [testtype] for the alternate range of [key] with TestNumber [alttestnum] was aborted. An invalid [testtype] with TestNumber [altinvtestnum] was ignored.	Critical Error Level 1
OOO-Alternate Range Recertification Test Failed	The subsequent recertification [testtype] for the alternate range of the component for [key] with TestNumber [alttestnum] failed.	Critical Error Level 1
OOO-Alternate Range Recertification Test Failed*	The subsequent recertification [testtype] for the alternate range of the component for [key] with TestNumber [alttestnum] failed. An invalid [testtype] with TestNumber [altinvtestnum] was ignored.	Critical Error Level 1
OOO-Alternate Range Recertification Test Has Critical Errors	The subsequent recertification [testtype] for the alternate range of the component for [key] with TestNumber [alttestnum] has critical errors.	Critical Error Level 1

OOO-Alternate Range Recertification Test Has Critical Errors*	The subsequent recertification [testtype] for the alternate range of the component for [key] with TestNumber [alttestnum] has critical errors. An invalid [testtype] with TestNumber [altinvtestnum] was ignored.	Critical Error Level 1
OOO-Alternate Range Test Aborted	The prior [testtype] for the alternate range of the component for [key] with TestNumber [alttestnum] was aborted.	Critical Error Level 1
OOO-Alternate Range Test Aborted*	The prior [testtype] for the alternate range of the component for [key] with TestNumber [alttestnum] was aborted. An invalid [testtype] with TestNumber [altinvtestnum] was ignored.	Critical Error Level 1
OOO-Alternate Range Test Failed	The prior [testtype] for the alternate range of the component for [key] with TestNumber [alttestnum] failed.	Critical Error Level 1
OOO-Alternate Range Test Failed*	The prior [testtype] for the alternate range of the component for [key] with TestNumber [alttestnum] failed. An invalid [testtype] with TestNumber [altinvtestnum] was ignored.	Critical Error Level 1
OOO-Alternate Range Test Has Critical Errors	The prior [testtype] for the alternate range of the component for [key] with TestNumber [alttestnum] has critical errors.	Critical Error Level 1
OOO-Alternate Range Test Has Critical Errors*	The prior [testtype] for the alternate range of the component for [key] with TestNumber [alttestnum] has critical errors. An invalid [testtype] with TestNumber [altinvtestnum] was ignored.	Critical Error Level 1
OOO-Conditional Period Expired	The conditional data period for QACertEventCode [code] QACertEventDate [eventdate] for [key] has expired.	Critical Error Level 1
OOO-Conditional Period Expired*	The conditional data period for QACertEventCode [code] QACertEventDate [eventdate] for [key] has expired. A prior test was ignored.	Critical Error Level 1
OOO-Event	You reported a QA Certification Event record for QACertEventCode [code] QACertEventDate [eventdate], but you did not indicate the use of conditional data for [key].	Critical Error Level 1
OOO-Event*	You reported a QA Certification Event record for QACertEventCode [code] QACertEventDate [eventdate] for [key], but you did not indicate the use of conditional data. An invalid [testtype] was ignored.	Critical Error Level 1
OOO-Expired	The prior [testtype] for [key] with TestNumber [testnum] has expired.	Critical Error Level 1
OOO-Expired*	The prior [testtype] for [key] with TestNumber [testnum] has expired. An invalid prior [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-No Prior 3-Point SI or Event	You did not report a prior three-point Hg system integrity check or certification event for [key].	Critical Error Level 1
OOO-No Prior Alternate Range Test or Event	You did not report a prior [testtype] or certification event for the alternate range of the component for [key].	Critical Error Level 1
OOO-No Prior Test or Event	You did not report a prior [testtype] or certification event for [key].	Critical Error Level 1
OOO-No Prior Test or Event*	You did not report a valid prior [testtype] or certification event for [key]. An invalid [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Recertification Test Aborted	The subsequent recertification [testtype] for [key] with TestNumber [subtestnum] was aborted.	Critical Error Level 1
OOO-Recertification Test Aborted*	The subsequent recertification [testtype] for [key] with TestNumber [subtestnum] was aborted. An invalid [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Recertification Test Failed	The subsequent recertification [testtype] for [key] with TestNumber [subtestnum] failed.	Critical Error Level 1
OOO-Recertification Test Failed*	The subsequent recertification [testtype] for [key] with TestNumber [subtestnum] failed. An invalid [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Recertification Test Has Critical Errors	The subsequent recertification [testtype] for [key] with TestNumber [subtestnum] has critical errors.	Critical Error Level 1
OOO-Recertification Test Has Critical Errors*	The subsequent recertification [testtype] for [key] with TestNumber [subtestnum] has critical errors. An invalid [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1

OOO-Test Aborted	The applicable prior [testtype] for [key] with TestNumber [testnum] was aborted.	Critical Error Level 1
OOO-Test Aborted*	The prior [testtype] for [key] with TestNumber [testnum] was aborted. An invalid prior [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Test Failed	The applicable prior [testtype] for [key] with TestNumber [testnum] failed.	Critical Error Level 1
OOO-Test Failed*	The prior [testtype] for [key] with TestNumber [testnum] failed. An invalid prior [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Test Has Critical Errors	The applicable prior [testtype] for [key] with TestNumber [testnum] has critical errors.	Critical Error Level 1
OOO-Test Has Critical Errors*	The prior [testtype] for [key] with TestNumber [testnum] has critical errors. An invalid prior [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
Prior Test Not Yet Evaluated	The [testtype] status for [key] could not be determined, because the applicable prior [testtype] with TestNumber [testnum] has not yet been evaluated.	Critical Error Level 1
Recertification Test Not Yet Evaluated	The [testtype] status for [key] could not be determined, because the subsequent recertification [testtype] for the component with TestNumber [subtestnum] has not yet been evaluated.	Critical Error Level 1
Undetermined-Conditional Data	The software could not determine if the current hour was within the conditional data period for QACertEventCode [code] QACertEventDate [eventdate] for [key]	Informational Message

**Usage:**

- 1 Process/Category: Emissions Data Evaluation Report ----- CO2 Linearity Status Evaluation
- 2 Process/Category: Emissions Data Evaluation Report ----- Hg Linearity Status Evaluation
- 3 Process/Category: Emissions Data Evaluation Report ----- NOX Linearity Status Evaluation
- 4 Process/Category: Emissions Data Evaluation Report ----- NOXR Unused P-PB CO2C, NOXC or O2C Linearity Sta
- 5 Process/Category: Emissions Data Evaluation Report ----- O2 Dry Linearity Status Evaluation
- 6 Process/Category: Emissions Data Evaluation Report ----- O2 Wet Linearity Status Evaluation
- 7 Process/Category: Emissions Data Evaluation Report ----- SO2 Linearity Status Evaluation

**Check Code:** LINSTAT-7

**Check Name:** Ensure Certifying Three Level System Integrity Test Exists for Component

**Related Former Checks:**

**Applicability:** General Check

**Description:** For a Hg CEMS component, when LINSTAT-4 has assigned a status of IC, IC-Extension or IC-Grace, perform the following:

- 1) Locate the most recent 3-Level SI.
- 2) If one does not exist, return a result.
- 3) Otherwise, locate an intervening certification event (120, 125) for the component.
- 4) If an event was located, do nothing.
- 5) Otherwise, return "OOC- No Prior HGSI3 Test or Event".

**Specifications:**

Set *MatsCheckForHgsi3Ran* to false.

If (*CurrentLinearityStatus* is equal to "IC", "IC-Extension" or "IC-Grace")

If (*PriorLinearityRecord*.ComponentTypeCode is equal to "HG")

Locate the most recent record in *LinearityTestRecordsByLocationForQAStatus* where:

- 1) ComponentID is equal to *PriorLinearityRecord*.ComponentId.
- 2) TestTypeCode is equal to "HGSI3".
- 3) TestResultCode is equal to "PASSED" or "PASSAPS".
- 4) EndDateHour is prior to *CurrentDateHour*.

If NOT found,

Set *CurrentLinearityStatus* to "OOC-No Prior 3-Point SI or Event".

Else

Count records in *QACertificationEventRecords* where:

- 1) ComponentID is equal to *PriorLinearityRecord*.ComponentId.
- 2) QACertEventCode is equal to 120 or 125.
- 3) QACertEventDate/Hour is prior to *CurrentDateHour*.
- 4) QACertEventDate/Hour is after the EndDateHour of the located *LinearityTestRecordsByLocationForQAStatus* record.

If the count is greater than 0,

Set *CurrentLinearityStatus* to "OOC-No Prior 3-Point SI or Event".

Set *MatsCheckForHgsi3Ran* to true.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hg Linearity Status Evaluation
---	-------------------	---

**Check Category:**

**LME**



**Check Code:** LME-11

**Check Name:** Check LTFF System

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

For the LTFF record:

```
If MonitoringSystemID is null,  
    return result A.  
  
else  
    Locate the Monitor System record for the MonitoringSystemID.  
  
    If the associated SystemTypeCode is not equal to "LTOL" or "LTGS",  
        return result B.
```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a MonitoringSystemID in an LTFF record.	Fatal
B	The MonitoringSystemID reported in the LTFF record for [key] is not a long-term fuel flow system.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report --- Long Term Fuel Flow
1	Process/Category:	LME Emissions Data Generation LTFF Heat Input Data
1	Process/Category:	Emissions Data Entry Screen Evaluation LTFF Data Evaluation

**Check Code:** LME-13

**Check Name:** Check Long Term Fuel Flow Value

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

For the LTFF record:

    If the LongTermFuelFlowValue is null or is less than or equal to 0,  
        return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The [fieldname] reported in the LTFF record for [key] is missing or invalid.	Critical Error Level 1

Usage:		
1	Process/Category:	Emissions Data Evaluation Report --- Long Term Fuel Flow
1	Process/Category:	LME Emissions Data Generation LTFF Heat Input Data
1	Process/Category:	Emissions Data Entry Screen Evaluation LTFF Data Evaluation

**Check Code:** LME-14

**Check Name:** Check Long Term Fuel Flow UOM

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

For the LTFF record:

If the LongTermFuelFlowUOMCode is null,  
return result A.

Otherwise,  
If the SystemTypeCode is "LTOL" and the LongTermFuelFlowUOMCode is not in set {"LB", "GAL"},  
return result A.

If the SystemTypeCode is "LTGS" and the LongTermFuelFlowUOMCode is not equal to "SCF",  
return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The [fieldname] reported in the LTFF record for [key] is missing or invalid.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report --- Long Term Fuel Flow
1	Process/Category:	LME Emissions Data Generation LTFF Heat Input Data
1	Process/Category:	Emissions Data Entry Screen Evaluation LTFF Data Evaluation

**Check Code:** LME-15

**Check Name:** Check LTFF GCV

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

For the LTFF record:

    If the GrossCalorificValue is null or is less than or equal to 0,  
        return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The [fieldname] reported in the LTFF record for [key] is missing or invalid.	Critical Error Level 1

Usage:		
1	Process/Category:	Emissions Data Evaluation Report --- Long Term Fuel Flow
1	Process/Category:	LME Emissions Data Generation LTFF Heat Input Data
1	Process/Category:	Emissions Data Entry Screen Evaluation LTFF Data Evaluation

**Check Code:** LME-16

**Check Name:** Check LTFF GCV UOM

**Related Former Checks:**

**Applicability:** LME Check

**Description:****Validation Tables:**

Fuel Type Reality Checks for GCV (Cross Check Table)

Fuel Type Warning Levels for GCV (Cross Check Table)

Fuel Type Reality Checks for GCV (Cross Check Table)

Fuel Type Warning Levels for GCV (Cross Check Table)

Fuel Type Reality Checks for GCV (Cross Check Table)

Fuel Type Warning Levels for GCV (Cross Check Table)

**Specifications:**

For the LTFF record:

***LME Gen LTFF Heat Input*** = null.

If the GCVUnitsOfMeasureCode is null,  
return result A.

Otherwise,

If the LongTermFuelFlowUOMCode is "LB" and the GCVUnitsOfMeasureCode is not equal to "BTULB",  
return result A.

If the LongTermFuelFlowUOMCode is "GAL" and the GCVUnitsOfMeasureCode is not equal to "BTUGAL",  
return result A.

If the LongTermFuelFlowUOMCode is "SCF" and the GCVUnitsOfMeasureCode is not equal to "BTUSCF",  
return result A.

Otherwise,

If GrossCalorificValue is greater than 0 and LongTermFuelFlowValue is greater than 0,  
Calculate ***LME Gen LTFF Heat Input*** = GrossCalorificValue \* LongTermFuelFlowValue / 1,000,000,  
rounded to the nearest integer.

*Max Expected GCV* = Lookup "Upper Value" in "Fuel Type Warning Levels for GCV Cross Check Table"  
where "Fuel Code - Units Of Measure" column = concatenation of (FuelCode, " - ",  
LongTermFuelFlowUOMCode )

*Min Expected GCV* = Lookup "Lower Value" in "Fuel Type Warning Levels for GCV Cross Check Table"  
where "Fuel Code - Units Of Measure" column = concatenation of (FuelCode, " - ",  
LongTermFuelFlowUOMCode )

*Max Allowed GCV* = Lookup "Upper Value" in "Fuel Type Reality Checks for GCV Cross Check Table"  
where "Fuel Code - Units Of Measure" column = concatenation of (FuelCode, " - ",  
LongTermFuelFlowUOMCode )

*Min Allowed GCV* = Lookup "Lower Value" in "Fuel Type Reality Checks for GCV Cross Check Table"  
where "Fuel Code - Units Of Measure" column = concatenation of (FuelCode, " - ",  
LongTermFuelFlowUOMCode )

if (*Max Allowed GCV* is not null AND GrossCalorificValue > *Max Allowed GCV*) OR (*Min Allowed GCV* is not  
null AND GrossCalorificValue < *Min Allowed GCV*)  
return result B

else

if (*Min Expected GCV* is not null AND GrossCalorificValue < *Min Expected GCV*) OR (*Max Expected GCV*  
is not null AND GrossCalorificValue > *Max Expected GCV*)  
return result C

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The [fieldname] reported in the LTFF record for [key] is missing or invalid.	Critical Error Level 1
B	The GrossCalorificValue reported in the long-term fuel flow record for [key] is outside the range of allowable values for the fuel type [fuelcd].	Critical Error Level 1
C	The GrossCalorificValue reported in the long-term fuel flow record for [key] is outside the range of expected values for the fuel type [fuelcd].	Non-Critical Error

Usage:

1	Process/Category:	Emissions Data Evaluation Report --- Long Term Fuel Flow
1	Process/Category:	LME Emissions Data Generation LTFF Heat Input Data
1	Process/Category:	Emissions Data Entry Screen Evaluation LTFF Data Evaluation

**Check Code:** LME-41

**Check Name:** Check LTFF Fuel Flow Period Code

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

For the LTFF record:

If **LME OS** is equal to true,  
If the Quarter of the **Current Reporting Period** is equal to 2,  
If the FuelFlowPeriodCode is null,  
return result A.

Otherwise,  
If the FuelFlowPeriodCode is not null,  
return result B.

Otherwise,  
If the FuelFlowPeriodCode is not null,  
return result C.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a FuelFlowPeriodCode in the LTFF record for [key]. This value is required for LME units with an ozone-season qualification during the second quarter.	Critical Error Level 1
B	You reported a FuelFlowPeriodCode in the LTFF record for [key], but this value is only appropriate during the second quarter.	Critical Error Level 1
C	You reported a FuelFlowPeriodCode in the LTFF record for [key], but this value is only appropriate for LME units with an ozone-season qualification.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report --- Long Term Fuel Flow

**Check Code:** LME-42

**Check Name:** Check LTFF Total Heat Input

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Validation Tables:**

Hourly Emissions Tolerances (Cross Check Table)

**Specifications:**

For the Current LTFF record:

If **LME Gen LTFF Heat Input** is not null,  
If **LME Total Heat Input Array** for the location is greater than or equal to 0,  
add **LME Gen LTFF Heat Input** to **LME Total Heat Input Array** for the location.  
If **LME OS** is true and the **Current LTFF Record.FuelFlowPeriodCode** is equal to "A",  
add **LME Gen LTFF Heat Input** to **LME April Total Heat Input Array** for the location.

If (the LocationName begins with "CP")  
If **LME CP Total Heat Input** is greater than or equal to 0,  
add **LME Gen LTFF Heat Input** to **LME CP Total Heat Input**.  
If **LME OS** is true and the **Current LTFF Record.FuelFlowPeriodCode** is equal to "A",  
add **LME Gen LTFF Heat Input** to **LME CP April Heat Input**.

else

Set **LME Total Heat Input Array** for the location to -1.

If (the LocationName begins with "CP")  
set **LME CP Total Heat Input** to -1.

If (the LocationName begins with "CP")

**Rpt Period HI Calculated Accumulator Array** for this location = **LME Total Heat Input Array** for the location.  
**April HI Calculated Accumulator Array** for this location = **LME Total April Input Array** for the location

If ( Quarter is equal to 2 )  
**OS HIT Calculated Accumulator Array** for this location = **Rpt Period HI Calculated Accumulator Array** for this location - **April HI Calculated Accumulator Array** for this location.

Else If ( Quarter is equal to 3 )  
**OS HIT Calculated Accumulator Array** for this location = **Rpt Period HI Calculated Accumulator Array** for this location.

**Expected Summary Value HI Array** for this location = true

If **Current LTFF Record.TotalHeatInput** is greater than or equal to 0,

If (the LocationName begins with "CP" AND **Rpt Period HI Reported Accumulator Array** for this location is greater than or equal to 0)

**Rpt Period HI Reported Accumulator Array** for this location = **Rpt Period HI Reported Accumulator Array** for this location + **Current LTFF Record.TotalHeatInput**

If **LME Gen LTFF Heat Input** is not null AND **Current LTFF Record.TotalHeatInput** is not equal to **LME Gen LTFF Heat Input**,

**Heat Input Tolerance** = Lookup Tolerance from Cross-Check Table "Hourly Emissions Tolerances" where  
Parameter = "HI" AND  
UOM = "MMBTUHR"



```

    if (ABS(Current LTFF Record.TotalHeatInput - LME Gen LTFF Heat Input) > Heat Input Tolerance)
        return result A.

else
    If (the LocationName begins with "CP")
        Rpt Period HI Reported Accumulator Array for this location = -1.

    return result B

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The TotalHeatInput reported in the LTFF record for [key] is inconsistent with the recalculated value.	Critical Error Level 1
B	The [fieldname] reported in the LTFF record for [key] is missing or invalid.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report --- Long Term Fuel Flow
---	-------------------	--

**Check Code:** LME-10  
**Check Name:** Determine Total Load for Reporting Period  
**Related Former Checks:** LME-EXP8A  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

Set *LME Gen LTFF Heat Input Array*, *LME Gen Total Heat Input Array*, *LME Gen Total Load Array*, *LME Gen Total SO2M Array*, *LME Gen Total NOXM Array*, *LME Gen Total CO2M Array*, *LME Gen Total Op Time Array*, *LME Gen Total Op Hours Array*, and *LME Gen LTFF Total Op Time Array* to 0 for each location in the monitor configuration.  
Set *LME Gen LTFF April Heat Input Array*, *LME Gen April Heat Input Array*, *LME Gen April Load Array*, *LME Gen April NOXM Array*, *LME Gen April Op Time Array*, *LME Gen April Op Hours Array*, and *LME Gen LTFF April Op Time Array* to 0 for each location in the monitoring configuration.  
Set *LME Gen CP Total Heat Input*, *LME Gen Total Load*, and *LME Gen Total Optime* to 0.  
Set *LME Gen CP April Heat Input*, *LME Gen April Load*, and *LME Gen April Optime* to 0.  
Set *LME Gen Annual* and *LME Gen OS* to false.  
Set *LME Gen HI Method* and *LME Gen HI Substitute Data Code* to null.

Locate MonitorMethod records for all locations in the monitoring configuration where ParameterCode = "HIT", BeginDate is on or before the first day of the reporting period, and the EndDate is null or is on or after the last day of the reporting period.

If any location does not have a retrieved record,  
return result A.

Otherwise,

Set *LME Year Start Quarter* to the quarter of the current reporting period.

Locate a MonitorQualification for all units in the monitoring configuration where the QualificationTypeCode is equal to "LMEA" or "LMES", BeginDate is on or before the last day of the reporting period, and the EndDate is null or is on or after January 1 of the year of the reporting period.

If a record with QualificationTypeCode equal to "LMEA" is found,  
set *LME Gen Annual* to true.

If a record with QualificationTypeCode equal to "LMES" is found,  
set *LME Gen OS* to true.

If *LME Gen Annual* AND *LME Gen OS* are both false,  
return result B.

else if *LME Gen Annual* is false AND the Quarter of the reporting period is equal to 1 or 4,  
return result C.

Otherwise,

If the Quarter of the reporting period is greater than 1,

If *LME Gen Annual* is equal to true,  
set *LME Year Start Quarter* to 1.  
else  
set *LME Year Start Quarter* to 2.

If MethodCode in all the retrieved Method records is equal to "MHHI",  
*LME Gen HI Method* = "MHHI".

Locate an LTFF record for any location during the reporting period.

If found,  
return result D.

If MethodCode in all the retrieved Method records is in set {LTFF, CALC, LTFCALC},

***LME Gen HI Method*** = "LTFF".

If SubstituteDataCode in any retrieved record is equal to "MHHI",  
***LME Gen HI Substitute Data Code*** = "MHHI".

For each ***Hourly Op Data*** record for the configuration:

If ***Hourly Op Data.HourLoad*** is not null and is less than 0,  
return result E.

else if ***Hourly Op Data.OpTime*** for any hour is null, less than 0, or greater than 1,  
return result F.

else if ***Hourly Op Data.OpTime*** is greater than 0 and ***Hourly Op Data.HourLoad*** is null,  
return result E.

else if ***Hourly Op Data.OpTime*** is greater than 0 AND ***Hourly Op Data.MHHI Indicator*** is not equal to 1,  
Add HourLoad \* OpTime to ***LME Gen Total Load Array*** for the location.  
Add HourLoad \* OpTime to ***LME Gen Total Load***.  
Add OpTime to ***LME Gen Total Optime***.  
Add OpTime to ***LME Gen LTFF Total Op Time Array*** for location.

If the month of ***Hourly Op Data.Date*** is April AND ***LME Gen OS*** is equal to true,  
Add HourLoad \* OpTime to ***LME Gen April Load Array*** for the location.  
Add HourLoad \* OpTime to ***LME Gen April Load***.  
Add OpTime to ***LME Gen April Optime***.  
Add OpTime to ***LME Gen LTFF April Op Time Array*** for location

If ***LME Gen OS*** is equal to true and the Quarter of the reporting period is equal to 2,

Locate an LTFF record for any location in the monitoring configuration during the reporting period where the FuelFlowPeriodCode is equal to "A".

If found and the ***LME Gen April Load*** is equal to 0 and ***LME Gen April Optime*** is equal to 0,  
return result J.

Else if not found AND (***LME Gen April Load*** is greater than 0 or ***LME Gen April Optime*** is greater than 1),  
return result K.

Otherwise,

Locate an LTFF record for any location in the monitoring configuration during the reporting period where the FuelFlowPeriodCode is equal to "MJ".

If found,

If (***LME Gen Total Load - LME Gen April Load***) is equal to 0 and (***LME Gen Total Optime - LME Gen April Optime***) is equal to 0,  
return result L.

If not found,

---

If (***LME Gen Total Load - LME Gen April Load***) is greater than 0 or (***LME Gen Total Optime - LME Gen April Optime***) is greater than 1,  
return result M.

Otherwise,

Locate an LTFF record for any location in the monitoring configuration during the reporting period.

If found,

If ***LME Gen Total Load*** is equal to 0 and ***LME Gen Total Optime*** is equal to 0,  
return result G.

If not found,

If ***LME Gen Total Load*** is greater than 0 or ***LME Gen Total Optime*** is greater than 1,  
return result I.

Otherwise,

return result H.

Do not process remaining categories if fatal error is returned.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You have not reported an active HIT method in your monitoring plan for at least one monitoring location in the configuration.	Fatal
B	You have not reported an active LMEA or LMES qualification record for this configuration in your monitoring plan.	Fatal
C	You have not reported an active LMEA qualification record for this configuration in your monitoring plan, but the reporting period is the first or fourth quarter. Only annual LME units should report in the first or fourth quarter.	Fatal
D	You have reported MHHI as the heat input method for this configuration, but you have reported a long-term fuel flow record.	Fatal
E	You have reported LTFF as the heat input method for this configuration, but the LoadValue in at least one hourly record is missing or invalid.	Fatal
F	You have reported LTFF as the heat input method for this configuration, but the OperatingTime in at least one hourly record is missing or invalid.	Fatal
G	You have reported a long-term fuel flow record for this reporting period, but the sum of the load and operating time values in the hourly records (where MHHIIndicator is not equal to 1) are equal to 0.	Fatal
H	You have not reported the same heat input method in your monitoring plan for all locations in the configuration during the reporting period.	Fatal
I	You have reported LTFF as the heat input method for this configuration, but you have not reported a long-term fuel flow record for this reporting period.	Critical Error Level 1
J	You have reported a long-term fuel flow record for April, but the sum of the load and operating time values in the hourly records (where MHHIIndicator is not equal to 1) are equal to 0.	Fatal
K	You have reported LTFF as the heat input method for this ozone-season reporting configuration, but you have not reported a long-term fuel flow record for April.	Critical Error Level 1
L	You have reported a long-term fuel flow record for May and June, but the sum of the load and operating time values in the hourly records (where MHHIIndicator is not equal to 1) are equal to 0.	Fatal
M	You have reported LTFF as the heat input method for this ozone-season reporting configuration, but you have not reported a long-term fuel flow record for May/June.	Critical Error Level 1

**Usage:**

1 Process/Category: LME Emissions Data Generation LME Initialization

**Check Code:** LME-12

**Check Name:** Check LTFF Fuel Flow Period Code

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

For the LTFF record:

If *LME Gen OS* is equal to true,  
If the Quarter of the reporting period is equal to 2,  
If the FuelFlowPeriodCode is null,  
return result A.

Otherwise,  
If the FuelFlowPeriodCode is not null,  
return result B.

Otherwise,  
If the FuelFlowPeriodCode is not null,  
return result C.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a FuelFlowPeriodCode in the LTFF record for [key]. This value is required for LME units with an ozone-season qualification during the second quarter.	Critical Error Level 1
B	You reported a FuelFlowPeriodCode in the LTFF record for [key], but this value is only appropriate during the second quarter.	Critical Error Level 1
C	You reported a FuelFlowPeriodCode in the LTFF record for [key], but this value is only appropriate for LME units with an ozone-season qualification.	Critical Error Level 1

**Usage:**

1 Process/Category: LME Emissions Data Generation LTFF Heat Input Data

**Check Code:** LME-17  
**Check Name:** Check LTFF Total Heat Input  
**Related Former Checks:**  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

For the LTFF record:

If *LME Gen LTFF Heat Input* is not null and is greater than or equal to 0 ,

if *LME Gen Total Heat Input Array* for the location is greater than or equal to 0,  
add *LME Gen LTFF Heat Input* to *LME Gen LTFF Heat Input Array* for the location.  
If *LME Gen OS* is true and the FuelFlowPeriodCode is equal to "A",  
add *LME Gen LTFF Heat Input* to *LME Gen LTFF April Heat Input Array* for the location.

If Location is a common pipe,  
If *LME Gen CP Total Heat Input* is greater than or equal to 0,  
add *LME Gen LTFF Heat Input* to *LME Gen CP Total Heat Input*.  
If *LME Gen OS* is true and the FuelFlowPeriodCode is equal to "A",  
add *LME Gen LTFF Heat Input* to *LME Gen CP April Heat Input*.

Otherwise,  
If Location is a common pipe,  
set *LME Gen CP Total Heat Input* to -1.

Set *LME Gen LTFF Heat Input Array* for the location to -1.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	obsolete	No Errors

**Usage:**

1	Process/Category:	LME Emissions Data Generation LTFF Heat Input Data
---	-------------------	--

**Check Code:** LME-21

**Check Name:** Locate Hourly Op Record for LME Unit

**Related Former Checks:**

**Applicability:**

**Description:**

**Specifications:**

Set *Current LME Hourly Op Record* to null.

Set *Generate LME* to false.

If *LME Gen Annual* = true

Locate all Monitor Method records for the unit and the hour where the ParameterCode is equal to "SO2M", "NOXM", or "CO2M", and the MethodCode is equal to "LME".

else

Locate all Monitor Method records for the unit and the hour where the ParameterCode is equal to "NOXM" and the MethodCode is equal to "LME".

If found,

Set *LME Gen Parameters* to the list of ParameterCodes in the retrieved records.

Otherwise,

Set *LME Gen Parameters* to null.

Locate an Hourly Op Data record for the unit and the hour.

If found,

If *LME Gen Parameters* is null,  
return result A.

else

Set *Current LME Hourly Op Record* to the retrieved record.

Set *Generate LME* to true.

if *LME Gen Annual* is equal to false, and the current date is in the month of April,  
return result B.

Otherwise,

If *LME Gen Parameters* is not null, AND

(*LME Gen Annual* is equal to true OR the current date is in the months of May thru September),  
return result C.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	There is no active LME method in your monitoring plan.	Critical Error Level 1
B	You reported an LME Hourly record for April, but the unit does not have an annual LME qualification. Emissions for this hour will not be included in the totals reported in the Summary Value record.	Informational Message
C	You did not report an LME Hourly record for the hour.	Critical Error Level 1



Usage:

1	Process/Category:	LME Emissions Data Generation Hourly Emissions Data
---	-------------------	---

**Check Code:** LME-22

**Check Name:** Check LME Op Time

**Related Former Checks:** LME-EXP2

**Applicability:** LME Check

**Description:**

**Specifications:**

If *Current LME Hourly Op Record* is not null,

    If OpTime is null, or is not between 0 and 1 inclusive,  
        Set *LME Gen Total Op Time Array* for location to -1, *Generate LME* to false, and return result A.

    Otherwise,  
        If OpTime is greater than 0, AND *LME Gen Total Op Time Array* for location is greater than or equal to 0,  
            Add 1 to *LME Gen Total Op Hours Array* for location.  
            Add OpTime to *LME Gen Total Op Time Array* for location.

        If current date in the month of April,  
            Add 1 to *LME Gen April Op Hours Array* for location.  
            Add OpTime to *LME Gen April Op Time Array* for location.

Results:		
Result	Response	Severity
A	The [fieldname] reported in the LME Hourly record is missing or invalid.	Critical Error Level 1

Usage:		
1	Process/Category:	LME Emissions Data Generation Hourly Emissions Data

**Check Code:** LME-24  
**Check Name:** Check LME Load Value  
**Related Former Checks:** LME-EXP5  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

If *Current LME Hourly Op Record* is not null,  
  
    If LoadValue is less than 0,  
        set *Generate LME* to false, and return result A.  
  
    else if LoadValue is null,  
  
        If OperatingTime is greater than 0,  
            If *LME Gen HI Method* is equal to "LTFF"  
                set *Generate LME* to false, and return result B.  
  
            Otherwise  
                return result C.  
  
    else  
        If OperatingTime is equal to 0,  
            return result D.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The [fieldname] reported in the LME Hourly record is invalid.	Critical Error Level 1
B	You did not report a LoadValue in the LME Hourly record.	Critical Error Level 1
C	You did not report a LoadValue in the LME Hourly record.	Non-Critical Error
D	You reported a LoadValue in the LME Hourly record. This field should be blank for a non-operating hour.	Critical Error Level 1

**Usage:**  
1      Process/Category:      LME Emissions Data Generation Hourly Emissions Data

**Check Code:** LME-26

**Check Name:** Check LME Load UOM

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

If *Current LME Hourly Op Record* is not null,

    If LoadValue is null,  
        If LoadUOMCode is not null,  
            return result A.

    Otherwise,  
        If LoadUOMCode is not equal to "MW", "KLBHR", or "MMBTUHR",  
            set *Generate LME* to false, and return result A.

    Otherwise,  
        Locate Monitor Load record for the location and hour.

        If not found, or more than one record is found, or the MaximumLoadUnitsOfMeasureCode is null,  
            set *Generate LME* to false, and return result B.

        Otherwise,  
            If the LoadUOMCode is not equal to the MaximumLoadUnitsOfMeasureCode in the retrieved record,  
                set *Generate LME* to false, and return result C.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The [fieldname] reported in the LME Hourly record is missing or invalid.	Critical Error Level 1
B	You have not reported a single, active, valid Monitor Load record in your monitoring plan.	Critical Error Level 1
C	The LoadUOMCode in the LME Hourly record is not consistent with the value in the Monitor Load record in your monitoring plan.	Critical Error Level 1

**Usage:**

1	Process/Category:	LME Emissions Data Generation Hourly Emissions Data
1	Process/Category:	Emissions Data Entry Screen Evaluation Hourly Op Data Evaluation

**Check Code:** LME-27

**Check Name:** Check LME Fuel Code List

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

If *Current LME Hourly Op Record* is not null,

    If OpTime is greater than 0, and FuelCodeList is null,  
        set *Generate LME* to false, and return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a value in the FuelCodeList in the LME Hourly record, but the unit operated during the hour.	Critical Error Level 1

Usage:		
1	Process/Category:	LME Emissions Data Generation Hourly Emissions Data
1	Process/Category:	Emissions Data Entry Screen Evaluation Hourly Op Data Evaluation

**Check Code:** LME-28  
**Check Name:** Calculate Heat Input for LME Unit  
**Related Former Checks:** LME-EXP3B, LME-EXP9A  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

*LME Gen Heat Input Record* = null  
*LME Calc Heat Input* = null  
*LME Gen Fuel Code* = null

If *Generate LME* is equal to true,

If *Current LME Hourly Op Record*.OperatingTime is greater than 0,

If *LME Gen HI Method* is equal to "MHHI" or *Current LME Hourly Op Record*.MHHIIndicator is equal to 1,

Locate all Monitor Default records for the hour and location where the ParameterCode is equal to "MHHI".

If one record is found, the DefaultValue is greater than 0, and the DefaultUnitsOfMeasureCode is equal to "MMBTUHR".

Calculate *LME Calc Heat Input* = DefaultValue \* *Current LME Hourly Op Record*.OpTime, rounded to one decimal place.

Otherwise,

If *LME Gen Parameters* contains "SO2M",

set *LME Gen Total SO2M Array* for location to -1.

If *LME Gen Parameters* contains "NOXM",

set *LME Gen Total NOXM Array* for location to -1.

If *LME Gen Parameters* contains "CO2M",

set *LME Gen Total CO2M Array* for location to -1.

set *LME Gen Total Heat Input Array* for location to -1, and return result A.

else if *LME Gen HI Method* is equal to "LTFF",

If *LME Gen CP Total Heat Input* is greater than or equal to 0, *LME Gen Total Heat Input Array* for the location is greater than or equal to 0, AND *Current LME Hourly Op Record*.HourLoad is greater than or equal to 0,

If *LME Gen OS* is equal to true, and the Quarter of the reporting period is equal to 2,

If the current date is in the month of April,

if *LME Gen April Load* is greater than 0,

If *Current LME Hourly Op Record*.HourLoad is equal to 0

Set *LME Calc Heat Input* = 0

else

Calculate *LME Calc Heat Input* = (*LME Gen CP April Heat Input* \* *Current LME Hourly Op Record*.HourLoad \* *Current LME Hourly Op Record*.OpTime / *LME Gen April Load*) + (*LME Gen LTFF April Heat Input Array* for the location \* *Current LME Hourly Op Record*.HourLoad \* *Current LME Hourly Op Record*.OpTime / *LME Gen April Load Array* for the location), and round the result to 1 decimal place.

else if *LME Gen April Optime* is greater than 0,

Calculate ***LME Calc Heat Input*** = (***LME Gen CP April Heat Input*** \* ***Current LME Hourly Op Record.OpTime*** / ***LME Gen April Optime***) + (***LME Gen LTFF April Heat Input Array*** for the location \* ***Current LME Hourly Op Record.OpTime*** / ***LME Gen LTFF April Op Time Array*** for the location), and round the result to 1 decimal place.

Otherwise,

if ***LME Gen Total Load*** is greater than 0,

If ***Current LME Hourly Op Record.HourLoad*** is equal to 0,  
Set ***LME Calc Heat Input*** = 0

else

Calculate ***LME Calc Heat Input*** = ((***LME Gen CP Total Heat Input*** - ***LME Gen CP April Heat Input***) \* ***Current LME Hourly Op Record.HourLoad*** \* ***Current LME Hourly Op Record.OpTime*** / (***LME Gen Total Load*** - ***LME Gen April Load***)) + ((***LME Gen LTFF Heat Input Array*** for the location - ***LME Gen LTFF April Heat Input Array*** for the location) \* ***Current LME Hourly Op Record.HourLoad*** \* ***Current LME Hourly Op Record.OpTime*** / (***LME Gen Total Load Array*** for the location - ***LME Gen April Load Array*** for the location)), and round the result to 1 decimal place.

else if ***LME Gen Total Optime*** is greater than 0,

Calculate ***LME Calc Heat Input*** = ((***LME Gen CP Total Heat Input*** - ***LME Gen CP April Heat Input***) \* ***Current LME Hourly Op Record.OpTime*** / (***LME Gen Total Optime*** - ***LME Gen April Optime***)) + ((***LME Gen LTFF Heat Input Array*** for the location - ***LME Gen LTFF April Heat Input Array*** for the location) \* ***Current LME Hourly Op Record.OpTime*** / (***LME Gen Total Optime Array*** for the location - ***LME Gen LTFF April Op Time Array*** for the location)), and round the result to 1 decimal place.

Otherwise,

if ***LME Gen Total Load*** is greater than 0,

If ***Current LME Hourly Op Record.HourLoad*** is equal to 0,  
Set ***LME Calc Heat Input*** = 0

else

Calculate ***LME Calc Heat Input*** = (***LME Gen CP Total Heat Input*** \* ***Current LME Hourly Op Record.HourLoad*** \* ***Current LME Hourly Op Record.OpTime*** / ***LME Gen Total Load***) + (***LME Gen LTFF Heat Input Array*** for the location \* ***Current LME Hourly Op Record.HourLoad*** \* ***Current LME Hourly Op Record.OpTime*** / ***LME Gen Total Load Array*** for the location), and round the result to 1 decimal place.

else if ***LME Gen Total Optime*** is greater than 0,

Calculate ***LME Calc Heat Input*** = (***LME Gen CP Total Heat Input*** \* ***Current LME Hourly Op Record.OpTime*** / ***LME Gen Total Optime***) + (***LME Gen LTFF Heat Input Array*** for the location \* ***Current LME Hourly Op Record.OpTime*** / ***LME Gen LTFF Total Op Time Array*** for the location), and round the result to 1 decimal place.

If *LME Calc Heat Input* is not null,

If *LME Calc Heat Input* is greater than 999,999.9

If *LME Gen Parameters* contains "SO2M",

set *LME Gen Total SO2M Array* for location to -1.

If *LME Gen Parameters* contains "NOXM",

set *LME Gen Total NOXM Array* for location to -1.

If *LME Gen Parameters* contains "CO2M",

set *LME Gen Total CO2M Array* for location to -1.

set *LME Calc Heat Input* to null, *LME Gen Total Heat Input Array* for location to -1, and return result B.

else if *LME Calc Heat Input* is greater than or equal to 0,

*LME Gen Heat Input Record.HourID* = *Current LME Hourly Op Record.HourID*

*LME Gen Heat Input Record.ParameterCode* = "HIT"

*LME Gen Heat Input Record.AdjustedHourlyValue* = *LME Calc Heat Input*

If *Current LME Hourly Op Record.MHHIndicator* is equal to 1,

*LME Gen Heat Input Record.MODCCode* = "45"

If *LME Gen Total Heat Input Array* for location is greater than or equal to 0,

Add *LME Calc Heat Input* to *LME Gen Total Heat Input Array* for location.

If current date in the month of April,

Add *LME Calc Heat Input* to *LME Gen April Heat Input Array* for location.

Otherwise,

If *LME Gen Parameters* is not null, AND

(*LME Gen Annual* is equal to true OR the current date is in the months of May thru September),

If *LME Gen Parameters* contains "SO2M",

set *LME Gen Total SO2M Array* for location to -1.

If *LME Gen Parameters* contains "NOXM",

set *LME Gen Total NOXM Array* for location to -1.

If *LME Gen Parameters* contains "CO2M",

set *LME Gen Total CO2M Array* for location to -1.

set *LME Gen Total Heat Input Array* for location to -1.



Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a single, active, valid default record for MHHI in your monitoring plan.	Critical Error Level 1
B	The value calculated for [param] in the LME Hourly record exceeds the maximum value.	Critical Error Level 1

Usage:

1	Process/Category:	LME Emissions Data Generation Hourly Emissions Data
---	-------------------	---

**Check Code:** LME-29  
**Check Name:** Calculate SO2 Mass for LME Unit  
**Related Former Checks:** LME-EXP3C, LME-EXP9C  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

***LME Gen SO2M Record*** = null

If ***LME Gen Parameters*** contains "SO2M" and ***Current LME Hourly Op Record*** is not null,

    If ***Current LME Hourly Op Record***.FuelCodeList is not null,

***SO2 Rate*** = 0  
        ***SO2 Fuel*** = null

    For each FuelCode in the ***Current LME Hourly Op Record***.FuelCodeList

        Locate all Monitor Default Records for the location and hour where ParameterCode is equal to "SO2R", DefaultPurposeCd = "LM", and FuelCode is equal to the current FuelCode.

        If one and only one record is found, the DefaultValue is greater than 0, and DefaultUnitsOfMeasureCode is equal to "LBMMBTU",

            If ***SO2 Rate*** is less than the DefaultValue in the retrieved record,  
                set ***SO2 Rate*** to the DefaultValue.  
                set ***SO2 Fuel*** to the current FuelCode.

        Otherwise,

            set ***LME Gen Total SO2M Array*** for location to -1, ***LME Gen Fuel Code*** to the current FuelCode,  
            and return result A.

If ***LME Calc Heat Input*** is not null and is greater than or equal to 0 AND ***SO2 Rate*** is greater than 0,

    Calculate ***SO2 Mass*** = ***LME Calc Heat Input*** \* ***SO2 Rate***, and round the result to 1 decimal place.

    If ***SO2 Mass*** is greater than 99,999.9

        set ***LME Gen Total SO2M Array*** for location to -1, and return result B.

    Otherwise,

***LME Gen SO2M Record***.HourID = ***Current LME Hourly Op Record***.HourID  
        ***LME Gen SO2M Record***.ParameterCode = "SO2M"  
        ***LME Gen SO2M Record***.AdjustedHourlyValue = ***SO2 Mass***  
        ***LME Gen SO2M Record***.FuelCode = ***SO2 Fuel***

    If ***LME Gen Total SO2M Array*** for location is greater than or equal to 0,  
        Add ***SO2 Mass*** to ***LME Gen Total SO2M Array*** for location.

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a single, active, valid [defparm] default record for FuelCode [fuel] in your monitoring plan.	Critical Error Level 1
B	The value calculated for [param] in the LME Hourly record exceeds the maximum value.	Critical Error Level 1

Usage:

1	Process/Category:	LME Emissions Data Generation Hourly Emissions Data
---	-------------------	---

**Check Code:** LME-30  
**Check Name:** Calculate NOX Mass for LME Unit  
**Related Former Checks:** LME-EXP3A, LME-EXP9B  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

*LME Gen NOXM Record* = null

If *LME Gen Parameters* contains "NOXM" and *Current LME Hourly Op Record* is not null and *Current LME Hourly Op Record*.OpTime is greater than 0,

If *Current LME Hourly Op Record*.FuelCodeList is not null,

*NOX Rate* = 0

*NOX Fuel* = null

For each FuelCode in the *Current LME Hourly Op Record*.FuelCodeList

If *Current LME Hourly Op Record*.OperatingConditionCode is null,

Locate all Monitor Default Records for the location and hour where ParameterCode is equal to "NOXR", DefaultPurposeCd = "LM", OperatingConditionCode = "A", and FuelCode is equal to the current FuelCode.

else if *Current LME Hourly Op Record*.OperatingConditionCode == "U",

Locate all Monitor Default Records for the location and hour where ParameterCode is equal to "NORX", DefaultPurposeCd = "MD", the OperatingConditionCode is equal to "U", and FuelCode is equal to the current FuelCode.

else

Locate all Monitor Default Records for the location and hour where ParameterCode is equal to "NOXR", DefaultPurposeCd = "LM", the OperatingConditionCode is equal to *Current LME Hourly Op Record*.OperatingConditionCode, and FuelCode is equal to the current FuelCode.

If one and only one record is found, the DefaultValue is greater than 0, and DefaultUnitsOfMeasureCode is equal to "LBMMBTU",

If *NOX Rate* is less than the DefaultValue in the retrieved record,  
set *NOX Rate* to the DefaultValue.  
set *NOX Fuel* to the current FuelCode.

Otherwise,

*LME Gen Total NOXM Array* for location to -1.  
Set *LME Gen Fuel Code* to the current FuelCode.

If *Current LME Hourly Op Record*.OperatingConditionCode is null,  
return result A.

else  
return result B.

If *LME Calc Heat Input* is not null and is greater than or equal to 0 AND *NOX Rate* is greater than 0,

Calculate *NOX Mass* = *LME Calc Heat Input* \* *NOX Rate*, and round the result to 1 decimal place.

If *NOX Mass* is greater than 99,999.9

set **LME Gen Total NOXM Array** for location to -1, and return result C.

Otherwise,

**LME Gen NOXM Record.HourID** = **Current LME Hourly Op Record.HourID**

**LME Gen NOXM Record.ParameterCode** = "NOXM"

**LME Gen NOXM Record.AdjustedHourlyValue** = *NOX Mass*

**LME Gen NOXM Record.FuelCode** = *NOX Fuel*

**LME Gen NOXM Record.OperatingConditionCode** = **Current LME Hourly Op Record.OperatingConditionCode**

If **LME Gen Total NOXM Array** for location is greater than or equal to 0,

Add *NOX Mass* to **LME Gen Total NOXM Array** for location.

If current date in the month of April,

Add *NOX Mass* to **LME Gen April NOXM Array** for location.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a single, active, valid [defparm] default record for FuelCode [fuel] in your monitoring plan.	Critical Error Level 1
B	You did not report a single, active, valid [defparm] default record for FuelCode [fuel] OperatingConditionCode [cond] in your monitoring plan.	Critical Error Level 1
C	The value calculated for [param] in the LME Hourly record exceeds the maximum value.	Critical Error Level 1

Usage:

1	Process/Category:	LME Emissions Data Generation Hourly Emissions Data
---	-------------------	---

**Check Code:** LME-31  
**Check Name:** Calculate CO2 Mass for LME Unit  
**Related Former Checks:** LME-EXP3D, LME-EXP9D  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

***LME Gen CO2M Record*** = null

If ***LME Gen Parameters*** contains "CO2M" and ***Current LME Hourly Op Record*** is not null,

    If ***Current LME Hourly Op Record***.FuelCodeList is not null,

***CO2 Rate*** = 0  
        ***CO2 Fuel*** = null

    For each FuelCode in the ***Current LME Hourly Op Record***.FuelCodeList

        Locate all Monitor Default Records for the location and hour where ParameterCode is equal to "CO2R", DefaultPurposeCd = "LM", and FuelCode is equal to the current FuelCode.

        If one and only one record is found, the DefaultValue is greater than 0, and DefaultUnitsOfMeasureCode is equal to "TNMMBTU",

            If ***CO2 Rate*** is less than the DefaultValue in the retrieved record,  
                set ***CO2 Rate*** to the DefaultValue.  
                set ***CO2 Fuel*** to the current FuelCode.

        Otherwise,

            set ***LME Gen Total CO2M Array*** for location to -1, ***LME Gen Fuel Code*** to the current FuelCode,  
            and return result A.

If ***LME Calc Heat Input*** is not null and is greater than or equal to 0 AND ***CO2 Rate*** is greater than 0,

    Calculate ***CO2 Mass*** = ***LME Calc Heat Input*** \* ***CO2 Rate***, and round the result to 1 decimal place.

    If ***CO2 Mass*** is greater than 99,999,999.9

        set ***LME Gen Total CO2M Array*** for location to -1, and return result B.

    Otherwise,

***LME Gen CO2M Record***.HourID = ***Current LME Hourly Op Record***.HourID  
        ***LME Gen CO2M Record***.ParameterCode = "CO2M"  
        ***LME Gen CO2M Record***.AdjustedHourlyValue = ***CO2 Mass***  
        ***LME Gen CO2M Record***.FuelCode = ***CO2 Fuel***

    If ***LME Gen Total CO2M Array*** for location is greater than or equal to 0,  
        Add ***CO2 Mass*** to ***LME Gen Total CO2M Array*** for location.

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a single, active, valid [defparm] default record for FuelCode [fuel] in your monitoring plan.	Critical Error Level 1
B	The value calculated for [param] in the LME Hourly record exceeds the maximum value.	Critical Error Level 1

Usage:

1	Process/Category:	LME Emissions Data Generation Hourly Emissions Data
---	-------------------	---



**Check Code:** LME-32  
**Check Name:** Calculate HIT Summary Values  
**Related Former Checks:**  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

***LME Summary Heat Input Record*** = null

If location is a common pipe,

*tempHIT* = ***LME Gen LTFF Heat Input Array*** for the location

*tempAprilHIT* = ***LME Gen LTFF April Heat Input Array*** for the location

else

*tempHIT* = If ***LME Gen Total Heat Input Array*** for the location

*tempAprilHIT* = ***LME Gen April Heat Input Array*** for the location

If *tempHIT* is greater than or equal to 0,

***LME Summary Heat Input Record.MonLocId*** = current location ID

***LME Summary Heat Input Record.ReportingPeriodId*** = current reporting period ID

***LME Summary Heat Input Record.ParameterCode*** = "HIT"

If ***LME Gen OS*** == true and ***LME Gen Annual*** == false and Quarter of Reporting Period is equal to 2,

***LME Summary Heat Input Record.CurrentReportingPeriodTotal*** = *tempHIT* - *tempAprilHIT*, rounded to 0 decimal places.

else

***LME Summary Heat Input Record.CurrentReportingPeriodTotal*** = *tempHIT*, rounded to 0 decimal places.

If ***LME Gen OS*** == true,

If Quarter of Reporting Period is equal to 2,

***LME Summary Heat Input Record.OzoneSeasonToDateTotal*** = *tempHIT* - *tempAprilHIT*, rounded to 0 decimal places.

else if Quarter of Reporting Period is equal to 3,

***LME Summary Heat Input Record.OzoneSeasonToDateTotal*** = *tempHIT*, rounded to 0 decimal places.

else if Quarter of Reporting Period is equal to 4 AND ***LME Year Start Quarter*** is less than 4,

Locate the ***Op Supp Data*** records for the location WHERE the reporting period is the third quarter of the Year of the Reporting Period and ***OpTypeCode*** = "HIT".

If found,

***LME Summary Heat Input Record.OzoneSeasonToDateTotal*** = OpValue in the retrieved record.

if Quarter of Reporting Period is equal to 3 or 4 AND ***LME Year Start Quarter*** is less than 3,

Locate the ***Op Supp Data*** records for the location WHERE the reporting period is the second quarter of the Year of the Reporting Period and ***OpTypeCode*** = "HITOS".

If found,

add OpValue in the retrieved record to ***LME Summary Heat Input Record.OzoneSeasonToDateTotal***.

If ***LME Gen Annual*** == true,

***LME Summary Heat Input Record.YearToDateTotal*** = ***LME Summary Heat Input Record.CurrentReportingPeriodTotal***, rounded to 0 decimal places.

If the quarter of the current reporting period is greater than the **LME Year Start Quarter**,

For each reporting period in the year of the current reporting period and in a quarter that is on or after the **LME Year Start Quarter** and is prior to the current reporting period.

Locate the **Op Supp Data** records for the location and reporting period WHERE the OpTypeCode = "HIT".

If found,

add OpValue in the retrieved record to **LME Summary Heat Input Record**.YearToDateTotal.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The program could not determine ozone-season-to-date totals for [osparam], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
B	The program could not determine year-to-date for [param], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1

**Usage:**

1	Process/Category:	LME Emissions Data Generation Summary Value Data
---	-------------------	--

**Check Code:** LME-33  
**Check Name:** Calculate OPTIME Summary Values  
**Related Former Checks:**  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

*LME Summary Op Time Record* = null

If location is a unit AND *LME Gen Total Op Time Array* for the location is greater than or equal to 0,

*LME Summary Op Time Record*.MonLocId = current location ID  
*LME Summary Op Time Record*.ReportingPeriodId = current reporting period ID  
*LME Summary Op Time Record*.ParameterCode = "OPTIME"

If *LME Gen OS* == true and *LME Gen Annual* == false and Quarter of Reporting Period is equal to 2,  
*LME Summary Op Time Record*.CurrentReportingPeriodTotal = *LME Gen Total Op Time Array* for the location - *LME Gen April Op Time Array* for the location.

else

*LME Summary Op Time Record*.CurrentReportingPeriodTotal = *LME Gen Total Op Time Array* for the location.

If *LME Gen OS* == true,

If Quarter of Reporting Period is equal to 2,

*LME Summary Op Time Record*.OzoneSeasonToDateTotal = *LME Gen Total Op Time Array* for the location -  
*LME Gen April Op Time Array* for the location.

else if Quarter of Reporting Period is equal to 3,

*LME Summary Op Time Record*.OzoneSeasonToDateTotal = *LME Gen Total Op Time Array* for the location.

else if Quarter of Reporting Period is equal to 4 AND *LME Year Start Quarter* is less than 4,

Locate the *Op Supp Data* records for the location WHERE the reporting period is the third quarter of the Year of the Reporting Period and OpTypeCode = "OPTIME".

If found,

*LME Summary Op Time Record*.OzoneSeasonToDateTotal = OpValue in the retrieved record.

if Quarter of Reporting Period is equal to 3 or 4 AND *LME Year Start Quarter* is less than 3,

Locate the *Op Supp Data* records for the location WHERE the reporting period is the second quarter of the current year and OpTypeCode = "OSTIME".

If found,

add OpValue in the retrieved record to *LME Summary Op Time Record*.OzoneSeasonToDateTotal.

If *LME Gen Annual* == true,

*LME Summary Op Time Record*.YearToDateTotal = *LME Summary Op Time Record*.CurrentReportingPeriodTotal.

If the quarter of the current reporting period is greater than the *LME Year Start Quarter*,

For each reporting period in the year of the current reporting period and in a quarter that is on or after the *LME Year Start Quarter* and is prior to the current reporting period.

Locate the *Op Supp Data* records for the location and reporting period WHERE the OpTypeCode = "OPTIME".

If found,  
add OpValue in the retrieved record to *LME Summary Op Time Record*.YearToDateTotal.

Results:

Result	Response	Severity
A	The program could not determine ozone-season-to-date totals for [osparam], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
B	The program could not determine year-to-date for [param], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1

Usage:

1	Process/Category:	LME Emissions Data Generation Summary Value Data
---	-------------------	--

**Check Code:** LME-34  
**Check Name:** Calculate OPHOURS Summary Values  
**Related Former Checks:**  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

*LME Summary Op Hours Record* = null

If location is a unit AND *LME Gen Total Op Time Array* for the location is greater than or equal to 0,

*LME Summary Op Hours Record.MonLocId* = current location ID

*LME Summary Op Hours Record.ReportingPeriodId* = current reporting period ID

*LME Summary Op Hours Record.ParameterCode* = "OPHOURS"

If *LME Gen OS* == true and *LME Gen Annual* == false and Quarter of Reporting Period is equal to 2,

*LME Summary Op Hours Record.CurrentReportingPeriodTotal* = *LME Gen Total Op Hours Array* for the location -  
*LME Gen April Op Hours Array* for the location.

else

*LME Summary Op Hours Record.CurrentReportingPeriodTotal* = *LME Gen Total Op Hours Array* for the location.

If *LME Gen OS* == true,

If Quarter of Reporting Period is equal to 2,

*LME Summary Op Hours Record.OzoneSeasonToDateTotal* = *LME Gen Total Op Hours Array* for the location -  
*LME Gen April Op Hours Array* for the location.

else if Quarter of Reporting Period is equal to 3,

*LME Summary Op Hours Record.OzoneSeasonToDateTotal* = *LME Gen Total Op Hours Array* for the location.

else if Quarter of Reporting Period is equal to 4 AND *LME Year Start Quarter* is less than 4,

Locate the *Op Supp Data* records for the location WHERE the reporting period is the third quarter of the Year of the Reporting Period and OpTypeCode = "OPHOURS".

If found,

*LME Summary Op Hours Record.OzoneSeasonToDateTotal* = OpValue in the retrieved record.

if Quarter of Reporting Period is equal to 3 or 4 AND *LME Year Start Quarter* is less than 3,

Locate the *Op Supp Data* records for the location WHERE the reporting period is the second quarter of the current year and OpTypeCode = "OSHOURS".

If found,

add OpValue in the retrieved record to *LME Summary Op Hours Record.OzoneSeasonToDateTotal*.

If *LME Gen Annual* == true,

*LME Summary Op Hours Record.YearToDateTotal* = *LME Summary Op Hours Record.CurrentReportingPeriodTotal*.

If the quarter of the current reporting period is greater than the *LME Year Start Quarter*,

For each reporting period in the year of the current reporting period and in a quarter that is on or after the *LME Year Start Quarter* and is prior to the current reporting period.

Locate the *Op Supp Data* records for the location and reporting period WHERE the OpTypeCode = "OPHOURS".

If found,

add OpValue in the retrieved record to *LME Summary Op Hours Record*.YearToDateTotal.

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The program could not determine ozone-season-to-date totals for [osparam], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
B	The program could not determine year-to-date for [param], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1

Usage:

1	Process/Category:	LME Emissions Data Generation Summary Value Data
---	-------------------	--

**Check Code:** LME-35  
**Check Name:** Calculate SO2M Summary Values  
**Related Former Checks:**  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

*LME Summary SO2M Record* = null

If location is a unit, *LME Gen Annual* == true, AND *LME Gen Total SO2M Array* for the location is greater than or equal to 0,

Locate a Monitor Method record for the unit where the ParameterCode is equal to "SO2M", and the MethodCode is equal to "LME", BeginDate is on or before the first day of the reporting period, and the EndDate is null or is on or after the last day of the reporting period.

If found,

*LME Summary SO2M Record*.MonLocId = current location ID  
*LME Summary SO2M Record*.ReportingPeriodId = current reporting period ID  
*LME Summary SO2M Record*.ParameterCode = "SO2M"  
*LME Summary SO2M Record*.CurrentReportingPeriodTotal = *LME Gen Total SO2M Array* for the location / 2000, rounded to one decimal place.  
*LME Summary SO2M Record*.YearToDateTotal = *LME Summary SO2M Record*.CurrentReportingPeriodTotal.

If the quarter of the current reporting period is greater than the *LME Year Start Quarter*,

For each reporting period in the year of the current reporting period and in a quarter that is on or after the *LME Year Start Quarter* and is prior to the current reporting period.

Locate the *Op Supp Data* records for the location and reporting period WHERE the OpTypeCode = "SO2M".

If found,

add OpValue in the retrieved record to *LME Summary SO2M Record*.YearToDateTotal.

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The program could not determine year-to-date for [param], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1

## Usage:

1	Process/Category:	LME Emissions Data Generation Summary Value Data
---	-------------------	--

**Check Code:** LME-36

**Check Name:** Calculate CO2M Summary Values

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

*LME Summary CO2M Record* = null

If location is a unit, *LME Gen Annual* == true, AND *LME Gen Total CO2M Array* for the location is greater than or equal to 0,

Locate a Monitor Method record for the unit where the ParameterCode is equal to "CO2M", and the MethodCode is equal to "LME", BeginDate is on or before the first day of the reporting period, and the EndDate is null or is on or after the last day of the reporting period.

If found,

*LME Summary CO2M Record*.MonLocId = current location ID  
*LME Summary CO2M Record*.ReportingPeriodId = current reporting period ID  
*LME Summary CO2M Record*.ParameterCode = "CO2M"  
*LME Summary CO2M Record*.CurrentReportingPeriodTotal = *LME Gen Total CO2M Array* for the location.  
*LME Summary CO2M Record*.YearToDateTotal = *LME Summary CO2M Record*.CurrentReportingPeriodTotal.

If the quarter of the current reporting period is greater than the *LME Year Start Quarter*,

For each reporting period in the year of the current reporting period and in a quarter that is on or after the *LME Year Start Quarter* and is prior to the current reporting period.

Locate the *Op Supp Data* records for the location and reporting period WHERE the OpTypeCode = "CO2M".

If found,

add OpValue in the retrieved record to *LME Summary CO2M Record*.YearToDateTotal.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The program could not determine year-to-date for [param], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1

#### Usage:

1	Process/Category:	LME Emissions Data Generation Summary Value Data
---	-------------------	--



**Check Code:** LME-37  
**Check Name:** Calculate NOXM Summary Values  
**Related Former Checks:**  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

*LME Summary NOXM Record* = null

If location is a unit AND *LME Gen Total NOXM Array* for the location is greater than or equal to 0,

Locate a Monitor Method record for the unit where:

- 1) ParameterCode is equal to "NOXM".
- 2) MethodCode is equal to "LME".
- 3) BeginDate is on or before:
  - a) May 1st of the year of the reporting period when the reporting period is for the 2nd quarter AND *LME Gen OS* is equal to true.
  - b) The first day of the reporting period otherwise.
- 4) EndDate is null or is on or after the last day of the reporting period.

If found,

*LME Summary NOXM Record*.MonLocId = current location ID  
*LME Summary NOXM Record*.ReportingPeriodId = current reporting period ID  
*LME Summary NOXM Record*.ParameterCode = "NOXM"

If *LME Gen OS* == true and *LME Gen Annual* == false and Quarter of Reporting Period is equal to 2,  
*LME Summary NOXM Record*.CurrentReportingPeriodTotal = (*LME Gen Total NOXM Array* for the location -  
*LME Gen April NOXM Array* for the location) / 2000, rounded to one decimal place.

else

*LME Summary NOXM Record*.CurrentReportingPeriodTotal = *LME Gen Total NOXM Array* for the location /  
2000, rounded to one decimal place.

If *LME Gen OS* == true,

If Quarter of Reporting Period is equal to 2,

*LME Summary NOXM Record*.OzoneSeasonToDateTotal = (*LME Gen Total NOXM Array* for the  
location - *LME Gen April NOXM Array* for the location) / 2000, rounded to one decimal place.

else if Quarter of Reporting Period is equal to 3,

*LME Summary NOXM Record*.OzoneSeasonToDateTotal = *LME Gen Total NOXM Array* for the  
location / 2000, rounded to one decimal place.

else if Quarter of Reporting Period is equal to 4 AND *LME Year Start Quarter* is less than 4,

Locate the *Op Supp Data* records for the location WHERE the reporting period is the third quarter of the  
Year of the Reporting Period and OpTypeCode = "NOXM".

If found,

*LME Summary NOXM Record*.OzoneSeasonToDateTotal = OpValue in the retrieved record.

if Quarter of Reporting Period is equal to 3 or 4 AND *LME Year Start Quarter* is less than 3,

Locate the *Op Supp Data* records for the location WHERE the reporting period is the second quarter of the  
current year and OpTypeCode = "NOXMOS".

If found,

add OpValue in the retrieved record to *LME Summary NOXM Record*.OzoneSeasonToDateTotal.

If *LME Gen Annual* == true,  
    *LME Summary NOXM Record*.YearToDateTotal = *LME Summary NOXM Record*.CurrentReportingPeriodTotal.

If the quarter of the current reporting period is greater than the *LME Year Start Quarter*,

    For each reporting period in the year of the current reporting period and in a quarter that is on or after the *LME Year Start Quarter* and is prior to the current reporting period.

        Locate the *Op Supp Data* records for the location and reporting period WHERE the OpTypeCode = "NOXM".

        If found,  
            add OpValue in the retrieved record to *LME Summary NOXM Record*.YearToDateTotal.

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The program could not determine ozone-season-to-date totals for [osparam], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
B	The program could not determine year-to-date for [param], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1

Usage:

1	Process/Category:	LME Emissions Data Generation Summary Value Data
---	-------------------	--

**Check Code:** LME-38  
**Check Name:** Calculate NOXR Summary Values  
**Related Former Checks:**  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

*LME Summary NOXR Record* = null

If *LME Summary Heat Input Record* and *LME Summary NOXM Record* are both not null,

Locate a Program record for the unit where the ProgramCode is equal to "ARP", the Class is not equal to "NA", UnitMonitorCertBeginDate is on or before the last day of the reporting period, and the EndDate is null or is on or after the first day of the reporting period.

If found,

*LME Summary NOXR Record*.MonLocId = current location ID  
*LME Summary NOXR Record*.ReportingPeriodId = current reporting period ID  
*LME Summary NOXR Record*.ParameterCode = "NOXR"

If *LME Summary NOXM Record*.ReportingPeriodTotal == 0  
*LME Summary NOXR Record*.CurrentReportingPeriodTotal = 0

else

*LME Summary NOXR Record*.CurrentReportingPeriodTotal = *LME Gen Total NOXM Array* for the location /  
*LME Summary Heat Input Record*.ReportingPeriodTotal, rounded to 3 decimal places.

If the quarter of the current reporting period is greater than the *LME Year Start Quarter*,

If *LME Summary Heat Input Record*.YearToDateTotal is not null,

*NOxTotal* = *LME Gen Total NOXM Array* for the location.

For each reporting period in the year of the current reporting period and in a quarter that is on or after the *LME Year Start Quarter* and is prior to the current reporting period.

Locate the *Op Supp Data* records for the location and reporting period WHERE the OpTypeCode = "NOXR".

If found,

*NOXRValue* = OpValue.

Locate the *Op Supp Data* records for the location and reporting period WHERE the OpTypeCode = "HIT".

If found,

Add OpValue \* *NOXRValue* (rounded to 1 decimal) to *NOxTotal*.

If *NOxTotal* == 0,

*LME Summary NOXR Record*.YearToDateTotal = 0.

else

*LME Summary NOXR Record*.YearToDateTotal = *NOxTotal* / *LME Summary Heat Input Record*.YearToDateTotal, rounded to 3 decimal places.

else

*LME Summary NOXR Record*.YearToDateTotal = *LME Summary NOXR Record*.CurrentReportingPeriodTotal.

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The program could not determine year-to-date for [param], because the Op Supp Data record for this parameter is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
B	The program could not determine year-to-date for [param], because the Op Supp Data record for HIT is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1

Usage:

1	Process/Category:	LME Emissions Data Generation Summary Value Data
---	-------------------	--

**Check Code:** LME-40

**Check Name:** Check LME MHHI Indicator

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

If *Current LME Hourly Op Record* is not null,

    If MHHIIndicator is equal to 1,

        If *LME Gen HI Substitute Data* is not equal to "MHHI",

            set *Generate LME* to false, and return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported a MHHIIndicator, but you did not report an active LTFF heat input method with a SubstituteDataCode of "MHHI".	Critical Error Level 1

Usage:		
1	Process/Category:	LME Emissions Data Generation Hourly Emissions Data

**Check Code:** LME-44

**Check Name:** Check Fuel Codes against LTFF Records

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

If *Current LME Hourly Op Record* is not null and *LME Gen HI Method* = "LTFF",

If MHHIndicator is not equal to 1 and FuelCodeList is not null,

Locate all *Unit Stack Configuration Records* where the unit location is the location in the *Current LME Hourly Op Record*, the StackID begins with "CP", the BeginDate and BeginHour is on or before the Date and Hour in the *Current LME Hourly Op Record*, and the EndDate is null or the EndDate and EndHour is on or after the Date and Hour in the *Current LME Hourly Op Record*.

For each FuelCode in FuelCodeList,

Locate a *LTFF Record* for the configuration and reporting period where the location is the location in the *Current LME Hourly Op Record* or is any of the common pipes in the retrieved *Unit Stack Configuration Records*, and the FuelCode of the associated fuel flow system is equal to the FuelCode in the FuelCodeList that is being evaluated.

If not found for any FuelCode,  
set *Generate LME* to false, and return result A.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a Long Term Fuel Flow record for a fuel flow system for one or more fuels in the FuelCodeList in the LME Hourly record. If you burn a fuel that is not measured by a fuel flow meter, you must use maximum hourly heat input for the hour.	Critical Error Level 1

#### Usage:

1	Process/Category:	LME Emissions Data Generation Hourly Emissions Data
---	-------------------	---

**Check Code:** LME-45

**Check Name:** Duplicate LTFF Record

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

For the LTFF record:

Locate another LTFF record for the location with same ReportingPeriod, MonitoringSystemID, and FuelFlowPeriodCode as the current record.

If found,  
return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	Another [recordtype] record already exists with the same [fieldnames].	Fatal

**Usage:**

1	Process/Category:	LME Emissions Data Generation LTFF Heat Input Data
---	-------------------	--

**Check Code:** LME-18

**Check Name:** Check LME Begin Hour

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

For the LME Hourly Op record:

If BeginHour is null or is not between 0 and 23 (inclusive),  
return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The Hour is missing or invalid.	Fatal

**Usage:**

1	Process/Category:	Emissions Data Entry Screen Evaluation Hourly Op Data Evaluation
---	-------------------	--



**Check Code:** LME-19

**Check Name:** Check LME Begin Date

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

For the LME Hourly Op record:

If BeginDate is null or is not within the reporting period,  
return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The Date is missing or not within the reporting period.	Fatal

**Usage:**

1	Process/Category:	Emissions Data Entry Screen Evaluation Hourly Op Data Evaluation
---	-------------------	--

**Check Code:** LME-20  
**Check Name:** Duplicate LME Hourly Op Record  
**Related Former Checks:**  
**Applicability:** LME Check  
**Description:**  
**Specifications:**

For the LME Hourly Op record:

Locate another Hourly Op record for the location with same BeginDate and BeginHour.  
  
If found,  
return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	Another [recordtype] record already exists with the same [fieldnames].	Fatal

**Usage:**

1	Process/Category:	Emissions Data Entry Screen Evaluation Hourly Op Data Evaluation
---	-------------------	--

**Check Code:** LME-23

**Check Name:** Check LME Data Entry Screen Op Time

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

For the LME Hourly Op record:

If OpTime is null, or is not between 0 and 1 inclusive,  
return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The [fieldname] reported in the LME Hourly record is missing or invalid.	Critical Error Level 1

Usage:		
1	Process/Category:	Emissions Data Entry Screen Evaluation Hourly Op Data Evaluation

**Check Code:** LME-25

**Check Name:** Check LME Data Entry Screen Load Value

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

For the LME Hourly Op record:

If LoadValue is null,  
    If OperatingTime is greater than 0,  
        return result A.

else if LoadValue is less than 0,  
    return result A.

else  
    If OperatingTime is equal to 0,  
        return result B.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The [fieldname] reported in the LME Hourly record is missing or invalid.	Critical Error Level 1
B	You reported a LoadValue in the LME Hourly record. This field should be blank for a non-operating hour.	Non-Critical Error

**Usage:**

1      Process/Category:      Emissions Data Entry Screen Evaluation Hourly Op Data Evaluation

**Check Code:** LME-43

**Check Name:** Check LTFF Fuel Flow Period Code

**Related Former Checks:**

**Applicability:** LME Check

**Description:**

**Specifications:**

For the LTFF record:

    If the Quarter of the reporting period is not equal to 2,  
        If the FuelFlowPeriodCode is not null,  
            return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported a FuelFlowPeriodCode in the LTFF record for [key], but this value is only appropriate during the second quarter.	Critical Error Level 1

Usage:		
1	Process/Category:	Emissions Data Entry Screen Evaluation LTFF Data Evaluation

## **Check Category:**

# **MATS Calculated Hourly Value Checks**

**Check Code:** MATSCHV-1

**Check Name:** Initialize HGRE Calculated Hourly Data

**Related Former Checks:**

**Applicability:**

**Description:** This check sets generic parameters and output parameters for subsequent Calculated hourly checks for HGRE.

**Specifications:**

*CalculationConversionFactor* =  $6.24 \times 10^{-11}$

*CurrentDhvParameter* = *MatsHgDhvParameter*

*CurrentDhvRecordValid* = *MatsHgDhvValid*

*MatsDhvRecord* = *MatsHgDhvRecord*

*MatsMhvCalculatedValue* = *MatsMhvCalculatedHgcValue*

*MatsMhvRecord* = *MatsHgcMhvRecord*

*MatsMoistureEquationList* = {A-3}

*MatsDhvMeasuredModcList* to {36, 39}

*MatsDhvUnavailableModcList* to {38}

If *CurrentHourlyOpRecord*.MatsHourLoad is NOT equal to 0, AND is NOT null,

*FinalConversionFactor* =  $10^3 / \text{CurrentHourlyOpRecord.MatsHourLoad}$

Else

*FinalConversionFactor* = null

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg RE Calculation Verification
---	-------------------	--

**Check Code:** MATSCHV-2

**Check Name:** Initialize HCLRE Calculated Hourly Data

**Related Former Checks:**

**Applicability:**

**Description:** This check sets generic parameters and output parameters for subsequent Calculated hourly checks for HCLRE.

**Specifications:**

*CalculationConversionFactor* =  $9.43 \times 10^{-8}$

*CurrentDhvParameter* = *MatsHclDhvParameter*

*CurrentDhvRecordValid* = *MatsHclDhvValid*

*MatsDhvRecord* = *MatsHclDhvRecord*

*MatsMhvCalculatedValue* = *MatsMhvCalculatedHclcValue*

*MatsMhvRecord* = *MatsHclcMhvRecord*

*MatsMoistureEquationList* = {HC-3}

*MatsDhvMeasuredModcList* to {36, 39}

*MatsDhvUnavailableModcList* to {38}

If *CurrentHourlyOpRecord*.MatsHourLoad is NOT equal to 0, AND is NOT null,

*FinalConversionFactor* =  $1 / \text{CurrentHourlyOpRecord.MatsHourLoad}$

Else

*FinalConversionFactor* = null

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl RE Calculation Verification
---	-------------------	---



**Check Code:** MATSCHV-3

**Check Name:** Initialize HFRE Calculated Hourly Data

**Related Former Checks:**

**Applicability:**

**Description:** This check sets generic parameters and output parameters for subsequent Calculated hourly checks for HFRE.

**Specifications:**

*CalculationConversionFactor* =  $5.18 \times 10^{-8}$

*CurrentDhvParameter* = *MatsHfDhvParameter*

*CurrentDhvRecordValid* = *MatsHfDhvValid*

*MatsDhvRecord* = *MatsHfDhvRecord*

*MatsMhvCalculatedValue* = *MatsMhvCalculatedHfcValue*

*MatsMhvRecord* = *MatsHfcMhvRecord*

*MatsMoistureEquationList* = {HF-3}

*MatsDhvMeasuredModcList* to {36, 39}

*MatsDhvUnavailableModcList* to {38}

If *CurrentHourlyOpRecord*.MatsHourLoad is NOT equal to 0, AND is NOT null,

*FinalConversionFactor* =  $1 / \text{CurrentHourlyOpRecord.MatsHourLoad}$

Else

*FinalConversionFactor* = null

**Results:**

Result

Response

Severity

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HF RE Calculation Verification
---	-------------------	--

**Check Code:** MATSCHV-4

**Check Name:** Initialize SO2RE Calculated Hourly Data

**Related Former Checks:**

**Applicability:**

**Description:** This check sets generic parameters and output parameters for subsequent Calculated hourly checks for SO2RE.

**Specifications:**

*CalculationConversionFactor* =  $1.66 \times 10^{-7}$

*CurrentDhvParameter* = *MatsSo2DhvParameter*

*CurrentDhvRecordValid* = *MatsSo2DhvValid*

*MatsDhvRecord* = *MatsSo2DhvRecord*

*MatsMoistureEquationList* = {S-3}

*MatsDhvMeasuredModcList* to {36, 39}

*MatsDhvUnavailableModcList* to {38}

If *CurrentHourlyOpRecord*.MatsHourLoad is NOT equal to 0, AND is NOT null,

*FinalConversionFactor* =  $1 / \text{CurrentHourlyOpRecord.MatsHourLoad}$

Else

*FinalConversionFactor* = null

**Results:**

Result

Response

Severity

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS SO2 RE Calculation Verification
---	-------------------	---

**Check Code:** MATSCHV-5

**Check Name:** Initialize HGRH Calculated Hourly Data

**Related Former Checks:**

**Applicability:**

**Description:** This check sets generic parameters and output parameters for subsequent Calculated hourly checks for HGRH.

**Specifications:**

*CalculationConversionFactor* =  $6.24 \times 10^{-11}$

*CurrentDhvParameter* = *MatsHgDhvParameter*

*CurrentDhvRecordValid* = *MatsHgDhvValid*

*MatsDhvRecord* = *MatsHgDhvRecord*

*MatsMhvCalculatedValue* = *MatsMhvCalculatedHgcValue*

*MatsMhvRecord* = *MatsHgcMhvRecord*

*MatsMoistureEquationList* = {19-3, 19-3D, 19-4, 19-5, 19-8, 19-9}

*MatsDhvMeasuredModcList* to {36, 37}

*MatsDhvUnavailableModcList* to {38}

*FinalConversionFactor* =  $10^6$

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg RH Calculation Verification
---	-------------------	--

**Check Code:** MATSCHV-6

**Check Name:** Initialize HCLRH Calculated Hourly Data

**Related Former Checks:**

**Applicability:**

**Description:** This check sets generic parameters and output parameters for subsequent Calculated hourly checks for HCLRH.

**Specifications:**

*CalculationConversionFactor* =  $9.43 \times 10^{-8}$

*CurrentDhvParameter* = *MatsHclDhvParameter*

*CurrentDhvRecordValid* = *MatsHclDhvValid*

*MatsDhvRecord* = *MatsHclDhvRecord*

*MatsMhvCalculatedValue* = *MatsMhvCalculatedHclcValue*

*MatsMhvRecord* = *MatsHclcMhvRecord*

*MatsMoistureEquationList* = {19-3, 19-3D, 19-4, 19-5, 19-8, 19-9}

*MatsDhvMeasuredModcList* to {36, 37}

*MatsDhvUnavailableModcList* to {38}

*FinalConversionFactor* = 1

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl RH Calculation Verification
---	-------------------	---

Check Code: MATSCHV-7

Check Name: Initialize HFRH Calculated Hourly Data

Related Former Checks:

Applicability:

Description: This check sets generic parameters and output parameters for subsequent Calculated hourly checks for HFRH.

Specifications:

*CalculationConversionFactor* = 5.18 x 10 ^ -8  
*CurrentDhvParameter* = *MatsHfDhvParameter*  
*CurrentDhvRecordValid* = *MatsHfDhvValid*  
*MatsDhvRecord* = *MatsHfDhvRecord*  
*MatsMhvCalculatedValue* = *MatsMhvCalculatedHfcValue*  
*MatsMhvRecord* = *MatsHfMhvRecord*  
*MatsMoistureEquationList* = {19-3, 19-3D, 19-4, 19-5, 19-8, 19-9}  
  
*MatsDhvMeasuredModcList* to {36, 37}  
*MatsDhvUnavailableModcList* to {38}  
  
*FinalConversionFactor* = 1

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HF RH Calculation Verification
---	-------------------	--

Check Code: MATSCHV-8

Check Name: Initialize SO2RH Calculated Hourly Data

Related Former Checks:

Applicability:

Description: This check sets generic parameters and output parameters for subsequent Calculated hourly checks for SO2RH.

Specifications:

*CalculationConversionFactor* = 1.66 x 10 ^ -7  
*CurrentDhvParameter* = *MatsSo2DhvParameter*  
*CurrentDhvRecordValid* = *MatsSo2DhvValid*  
*MatsDhvRecord* = *MatsSo2DhvRecord*  
*MatsMoistureEquationList* = {19-3, 19-3D, 19-4, 19-5, 19-8, 19-9}  
  
*MatsDhvMeasuredModcList* to {36, 37}  
*MatsDhvUnavailableModcList* to {38}  
  
*FinalConversionFactor* = 1

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- MATS SO2 RH Calculation Verification
---	-------------------	---

**Check Code:** MATSCHV-9

**Check Name:** Determine the Calculation Concentration for a MATS Parameter

**Related Former Checks:**

**Applicability:**

**Description:** Determines the main concentration value to use in calculations.

**Specifications:**

*CalculationConcentration* = null

*CalculationConcentrationSubstituted* = false

If *CurrentDhvRecordValid* AND (*MatsDhvRecord.ModcCode* in *MatsDhvMeasuredModcList*)

If (*MatsMhvCalculatedValue* is not null)

*CalculationConcentration* = *MatsMhvCalculatedValue* (convert from Scientific Notation)

If (*MatsMhvRecordMatsMhvRecord* is not null) AND (*MatsMhvRecord.ModcCode* is equal to "34" or "35")

*CalculationConcentrationSubstituted* = true

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl RE Calculation Verification
2	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl RH Calculation Verification
3	Process/Category:	Emissions Data Evaluation Report ----- MATS HF RE Calculation Verification
4	Process/Category:	Emissions Data Evaluation Report ----- MATS HF RH Calculation Verification
5	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg RE Calculation Verification
6	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg RH Calculation Verification

**Check Code:** MATSCHV-10

**Check Name:** Determine the Calculation Concentration for SO2

**Related Former Checks:**

**Applicability:**

**Description:** Determines the SO2 concentration value to use in calculations.

**Specifications:**

*CalculationConcentration* = null

*CalculationConcentrationSubstituted* = false

If *CurrentDhvRecordValid* AND (*MatsDhvRecord*.ModcCode in *MatsDhvMeasuredModcList*)

    If *CurrentSo2MonitorHourlyRecord* is not null

*CalculationConcentration* = *CurrentSo2MonitorHourlyRecord*.UnadjustedHourlyValue

    If (*CurrentSo2MonitorHourlyRecord*.ModcCode in set {05, 06, 07, 08, 09, 10, 12, 13, 15, 18, 23, 55})

*CalculationConcentrationSubstituted* = true

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS SO2 RE Calculation Verification
2	Process/Category:	Emissions Data Evaluation Report ----- MATS SO2 RH Calculation Verification



**Check Code:** MATSCHV-11

**Check Name:** Determine the Calculation Flow

**Related Former Checks:**

**Applicability:**

**Description:** Determines the flow value for equations.

**Specifications:**

*CalculationFlow* = null

*CalculationFlowSubstituted* = false

If *CurrentDhvRecordValid* AND (*MatsDhvRecord*.ModcCode in *MatsDhvMeasuredModcList*)

    If (*CurrentStackFlowHourlyRecord* is NOT null)

*CalculationFlow* = *CurrentStackFlowHourlyRecord*.UnadjustedHourlyValue

    If (*CurrentStackFlowHourlyRecord*.ModcCode not in set {01, 02, 03, 04, 20, 53, 54})

*CalculationFlowSubstituted* = true

Else

*CalculationFlow* = null

*CalculationFlowSubstituted* = false

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl RE Calculation Verification
2	Process/Category:	Emissions Data Evaluation Report ----- MATS HF RE Calculation Verification
3	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg RE Calculation Verification
4	Process/Category:	Emissions Data Evaluation Report ----- MATS SO2 RE Calculation Verification

**Check Code:** MATSCHV-12

**Check Name:** Determine the Calculation Diluent Value

**Related Former Checks:**

**Applicability:**

**Description:** Determines the diluent value to use in calculations involving formula 19 equations.

**Specifications:**

*CalculationDiluent* = null

*CalculationDiluentSubstituted* = false

If *CurrentDhvRecordValid* AND (*MatsDhvRecord*.ModcCode in *MatsDhvMeasuredModcList*)

If (*MatsDhvRecord*.EquationCode in set {19-3D, 19-5D} OR *MatsDhvRecord*.ModcCode == 37)

If (*MatsDhvRecord*.EquationCode in set {19-1, 19-2, 19-3, 19-3D, 19-4, 19-5, 19-5D})

*O2MonitorDefaultMatches* = count of *MonitorDefaultRecordsByHourLocation* where:

- 1) ParameterCode = "O2X"
- 2) DefaultPurposeCode = "DC"
- 3) FuelCode = "NFS"

If (*O2MonitorDefaultMatches* > 1)  
return result A

Else if (*O2MonitorDefaultMatches* == 0)  
return result B

Else

*O2MonitorDefaultRecord* = the single matched record

If (*O2MonitorDefaultRecord*.DefaultValue is NULL OR *O2MonitorDefaultRecord*.DefaultValue <= 0)  
return result C

Else

***CalculationDiluent*** = *O2MonitorDefaultRecord*.DefaultValue

Else if (*MatsDhvRecord*.EquationCode in set {19-6, 19-7, 19-8, 19-9})

*Co2MonitorDefaultMatches* = count of *MonitorDefaultRecordsByHourLocation* where:

- 1) ParameterCode = "CO2N"
- 2) DefaultPurposeCode = "DC"
- 3) FuelCode = "NFS"

If (*Co2MonitorDefaultMatches* > 1)  
return result D

Else if (*Co2MonitorDefaultMatches* == 0)  
return result E

Else

*CO2MonitorDefaultRecord* = the single matched record

If (*Co2MonitorDefaultRecord*.DefaultValue is NULL OR *Co2MonitorDefaultRecord*.DefaultValue <= 0)  
return result F

Else

***CalculationDiluent***=*Co2MonitorDefaultRecord*.DefaultValue

Else

If (*MatsDhvRecord*.EquationCode in set { 19-1, 19-4} AND *O2DryNeededForMats* == true)

*CalculationDiluent* = *O2DryCalculatedAdjustedValue*

If (*O2DryModc* not in set {01, 02, 03, 04, 17, 20, 53, 54})

*CalculationDiluentSubstituted* = true

Else if (*MatsDhvRecord*.EquationCode in set {19-2, 19-3, 19-5} AND *O2WetNeededForMats* == true)

*CalculationDiluent* = *O2WetCalculatedAdjustedValue*

If (*O2WetModc* not in set {01, 02, 03, 04, 17, 20, 53, 54})

*CalculationDiluentSubstituted* = true

Else if (*MatsDhvRecord*.EquationCode in set { 19-6, 19-7, 19-8, 19-9} AND *Co2DiluentNeededForMats* == true)

*CalculationDiluent* = *Co2cMhvCalculatedAdjustedValue*

If (*Co2cMhvModc* not in set {01, 02, 03, 04, 17, 20, 21, 53, 54})

*CalculationDiluentSubstituted* = true

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one diluent cap default record for O2X in your monitoring plan that was active during current hour.	Critical Error Level 1
B	You did not report a default record for O2X in your monitoring plan that was active during current hour.	Critical Error Level 1
C	The DefaultValue reported in the active Default record for O2X in your monitoring plan is invalid. The value must be greater than 0.	Critical Error Level 1
D	You reported more than one diluent cap default record for CO2N in your monitoring plan that was active during the current hour.	Critical Error Level 1
E	You did not report an active CO2N diluent cap default record in your monitoring plan for the hour.	Critical Error Level 1
F	The DefaultValue reported in the active Default record for CO2N in your monitoring plan is invalid. The value must be greater than 0.	Critical Error Level 1

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl RH Calculation Verification
2	Process/Category:	Emissions Data Evaluation Report ----- MATS HF RH Calculation Verification
3	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg RH Calculation Verification
4	Process/Category:	Emissions Data Evaluation Report ----- MATS SO2 RH Calculation Verification

**Check Code:** MATSCHV-13

**Check Name:** Determine the Calculation Moisture

**Related Former Checks:**

**Applicability:**

**Description:** Determines the moisture value for equations.

**Specifications:**

*CalculationMoisture = null*

*CalculationMoistureSubstituted = false*

If *CurrentDhvRecordValid* AND (*MatsDhvRecord.ModeCode* in *MatsDhvMeasuredModcList*)

If (*MatsDhvRecord.EquationCode* in *MatsMoistureEquationList*)

If (*H2oMethodCode* is equal to "MWD") AND *H2oDerivedHourlyChecksNeeded* AND (*H2oDhvCalculatedAdjustedValue* is not null)

*CalculationMoisture = H2oDhvCalculatedAdjustedValue*

If (*H2oDhvModc* not in set {01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 12, 21, 53, 54, 55})

*CalculationMoistureSubstituted = true*

Else if (*H2oMethodCode* in set {MMS, MTB}) AND *H2oMonitorHourlyChecksNeeded* AND (*H2oMhvCalculatedAdjustedValue* is not null)

*CalculationMoisture = H2oMhvCalculatedAdjustedValue*

If (*H2oMhvModc* not in set {01, 02, 03, 04, 06, 07, 08, 09, 10, 12, 21, 53, 54, 55})

*CalculationMoistureSubstituted = true*

Else if (*H2oMethodCode* is equal to "MDF") AND *H2oDerivedHourlyChecksNeeded* AND (*H2oDhvCalculatedAdjustedValue* is not null)

*CalculationMoisture = H2oDhvCalculatedAdjustedValue*

If (*H2oDhvModc* not in set {01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 12, 21, 53, 54, 55})

*CalculationMoistureSubstituted = true*

Else if (*H2oMethodCode* is equal to "MDF") AND (*H2oDerivedHourlyChecksNeeded* is false) AND (*H2oDefaultValue* is not null)

*CalculationMoisture = H2oDefaultValue*

**Results:**

Result

Response

Severity

**Usage:**

- |   |                   |   |
|---|-------------------|---|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- MATS HCl RE Calculation Verification |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- MATS HCl RH Calculation Verification |
| 3 | Process/Category: | Emissions Data Evaluation Report ----- MATS HF RE Calculation Verification  |
| 4 | Process/Category: | Emissions Data Evaluation Report ----- MATS HF RH Calculation Verification  |
| 5 | Process/Category: | Emissions Data Evaluation Report ----- MATS Hg RE Calculation Verification  |
| 6 | Process/Category: | Emissions Data Evaluation Report ----- MATS Hg RH Calculation Verification  |
| 7 | Process/Category: | Emissions Data Evaluation Report ----- MATS SO2 RE Calculation Verification |
| 8 | Process/Category: | Emissions Data Evaluation Report ----- MATS SO2 RH Calculation Verification |

**Check Code:** MATSCHV-14

**Check Name:** Check MODC and determine the MATS Formula Calculated Unadjusted Value

**Related Former Checks:**

**Applicability:**

**Description:** Calculates the Unadjusted Value using MATS formula equations.

**Specifications:**

*CalculatedUnadjustedValue* = null

If *CurrentDhvRecordValid*

    If (*MatsDhvRecord*.ModcCode in *MatsDhvMeasuredModcList*)

        If (*MatsDhvRecord*.EquationCode is NOT null)

            If (*MatsDhvRecord*.EquationCode is in *MatsMoistureEquationList*)

                If *CalculationConcentrationSubstituted* OR *CalculationFlowSubstituted* OR  
                *CalculationMoistureSubstituted*

                    return result A

                Else if (*CalculationConcentration* is null) OR (*CalculationFlow* is null) OR (*CalculationMoisture* is  
                null)

                    return result B

                Else if (*FinalConversionFactor* is NOT null)

*CalculatedUnadjustedValue* = (*CalculationConversionFactor* \* *CalculationConcentration* \*  
                    *CalculationFlow* \* (1 - *CalculationMoisture* / 100)) \* *FinalConversionFactor*

    Else

        If *CalculationConcentrationSubstituted* OR *CalculationFlowSubstituted*

            return result C

        Else if (*CalculationConcentration* is null) OR (*CalculationFlow* is null)

            return result D

        Else if (*FinalConversionFactor* is NOT null)

*CalculatedUnadjustedValue* = (*CalculationConversionFactor* \* *CalculationConcentration* \*  
            *CalculationFlow*) \* *FinalConversionFactor*

    Else

        return result E

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an incorrect MODCCode in the MATS Derived Hourly Value record for [param], as you reported substitute data for one or more essential auxiliary parameters.	Critical Error Level 1
B	You reported a FormulaIdentifier in the MATS Derived Hourly Value record for [param], but you did not report a value for all the essential parameters needed to perform the calculation.	Critical Error Level 1
C	You reported an incorrect MODCCode in the MATS Derived Hourly Value record for [param], as you reported substitute data for one or more essential auxiliary parameters.	Critical Error Level 1
D	You reported a FormulaIdentifier in the MATS Derived Hourly Value record for [param], but you did not report a value for all the essential parameters needed to perform the calculation.	Critical Error Level 1
E	You reported an incorrect MODCCode in the MATS Derived Hourly Value record for [param], as you reported measured data for essential auxiliary parameters.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl RE Calculation Verification
2	Process/Category:	Emissions Data Evaluation Report ----- MATS HF RE Calculation Verification
3	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg RE Calculation Verification
4	Process/Category:	Emissions Data Evaluation Report ----- MATS SO2 RE Calculation Verification

**Check Code:** MATSCHV-15

**Check Name:** Check MODC and determine the Formula 19 Calculated Unadjusted Value

**Related Former Checks:**

**Applicability:**

**Description:** Calculates the Unadjusted Value using Formula 19 equations.

**Specifications:**

*CalculatedUnadjustedValue* = null

If *CurrentDhvRecordValid*

If (*MatsDhvRecord*.ModcCode in *MatsDhvMeasuredModcList*)

If (*MatsDhvRecord*.EquationCode is NOT null)

Case (*MatsDhvRecord*.EquationCode)

"19-1" :

If *CalculationConcentrationSubstituted* OR *CalculationDiluentSubstituted*  
return result A

Else if (*CalculationDiluent* is null) OR (*CalculationConcentration* is null) OR  
(*ValidFdFactorExists* is false)  
return result C

Else if (*CalculationDiluent* is equal to 20.9)  
return result D

Else if (*FinalConversionFactor* is NOT null)  
*CalculatedUnadjustedValue* = (*CalculationConversionFactor* \*  
*CalculationConcentration* \* *CurrentHourlyOpRecord*.FdFactor \* [20.9 / (20.9 -  
*CalculationDiluent*)] \* *FinalConversionFactor*

"19-2":

If *CalculationConcentrationSubstituted* OR *CalculationDiluentSubstituted*  
return result A

Else

*MoistureFraction* = null

*BwaDefaultRecordCount* = count *MonitorDefaultRecordsByHourLocation* where  
ParameterCd = 'BWA'

If (*BwaDefaultRecordCount* is equal to 0)

*MoistureFraction* = 0.027

Else If (*BwaDefaultRecordCount* is equal to 1) AND

(*MonitorDefaultRecordsByHourLocation* record's DefaultValue is greater than 0 AND is  
less than 1)

*MoistureFraction* = *MonitorDefaultRecordsByHourLocation* record's  
DefaultValue

Else

return result F

If (*CalculationDiluent* is null) OR (*CalculationConcentration* is null) OR  
(*ValidFwFactorExists* is false) OR (*MoistureFraction* is null)  
return result C



Else if (*CalculationDiluent* is equal to  $20.9 * (1 - \text{MoistureFraction})$ )  
return result D

Else if (*FinalConversionFactor* is NOT null)  
 $\text{CalculatedUnadjustedValue} = (\text{CalculationConversionFactor} * \text{CalculationConcentration} * \text{CurrentHourlyOpRecord.FwFactor} * [20.9 / (20.9 * (1 - \text{MoistureFraction}) - \text{CalculationDiluent})]) * \text{FinalConversionFactor}$

"19-3":

If *CalculationConcentrationSubstituted* OR *CalculationDiluentSubstituted* OR *CalculationMoistureSubstituted*  
return result A

Else if (*CalculationDiluent* is null) OR (*CalculationConcentration* is null) OR (*ValidFdFactorExists* is false) OR (*CalculationMoisture* is null)  
return result C

Else if (*CalculationDiluent* is equal to  $20.9 * (100 - \text{CalculationMoisture}) / 100$ )  
return result D

Else if (*FinalConversionFactor* is NOT null)  
 $h2oFactor = (100 - \text{CalculationMoisture}) / 100.0$   
 $denom = ((20.9 * h2oFactor) - \text{CalculationDiluent})$

$\text{CalculatedUnadjustedValue} = (\text{CalculationConversionFactor} * \text{CalculationConcentration} * \text{CurrentHourlyOpRecord.FdFactor} * (20.9 / denom)) * \text{FinalConversionFactor}$

"19-3D":

If *CalculationConcentrationSubstituted* OR *CalculationDiluentSubstituted* OR *CalculationMoistureSubstituted*  
return result A

Else if (*CalculationDiluent* is null) OR (*CalculationConcentration* is null) OR (*ValidFdFactorExists* is false) OR (*CalculationMoisture* is null)  
return result C

Else if (*CalculationDiluent* is equal to 20.9)  
return result D

Else if (*FinalConversionFactor* is NOT null)  
 $h2oFactor = (100 - \text{CalculationMoisture}) / 100.0$   
 $denom = (20.9 * h2oFactor) - (\text{CalculationDiluent} * h2oFactor)$

$\text{CalculatedUnadjustedValue} = (\text{CalculationConversionFactor} * \text{CalculationConcentration} * \text{CurrentHourlyOpRecord.FdFactor} * (20.9 / denom)) * \text{FinalConversionFactor}$

"19-4":

If *CalculationConcentrationSubstituted* OR *CalculationDiluentSubstituted* OR *CalculationMoistureSubstituted*  
return result A

Else if (*CalculationDiluent* is null) OR (*CalculationConcentration* is null) OR (*ValidFdFactorExists* is false) OR (*CalculationMoisture* is null)

return result C

Else if (*CalculationDiluent* is equal to 20.9) OR (*CalculationMoisture* is equal to 100)  
return result D

Else if (*FinalConversionFactor* is NOT null)  
$$\text{CalculatedUnadjustedValue} = (\text{CalculationConversionFactor} * (\text{CalculationConcentration} * \text{CurrentHourlyOpRecord.FdFactor} / ((100 - \text{CalculationMoisture}) / 100.0))) * (20.9 / (20.9 - \text{CalculationDiluent})) * \text{FinalConversionFactor}$$

"19-5":

If *CalculationConcentrationSubstituted* OR *CalculationDiluentSubstituted* OR *CalculationMoistureSubstituted*  
return result A

Else if (*CalculationDiluent* is null) OR (*CalculationConcentration* is null) OR (*ValidFdFactorExists* is false) OR (*CalculationMoisture* is null)  
return result C

Else if (*CalculationDiluent* is equal to 20.9) OR (*CalculationMoisture* is equal to 100)  
return result D

Else if (*FinalConversionFactor* is NOT null)  
$$h2oFactor = (100 - \text{CalculationMoisture}) / 100.0$$
$$denom = 20.9 - (\text{CalculationDiluent} / h2oFactor)$$
$$\text{CalculatedUnadjustedValue} = (\text{CalculationConversionFactor} * \text{CalculationConcentration} * \text{CurrentHourlyOpRecord.FdFactor} * 20.9 / denom) * \text{FinalConversionFactor}$$

"19-5D":

If *CalculationConcentrationSubstituted* OR *CalculationDiluentSubstituted*  
return result A

Else if (*CalculationDiluent* is null) OR (*CalculationConcentration* is null) OR (*ValidFdFactorExists* is false)  
return result C

Else if (*CalculationDiluent* is equal to 20.9)  
return result D

Else if (*FinalConversionFactor* is NOT null)  
$$\text{CalculatedUnadjustedValue} = (\text{CalculationConversionFactor} * \text{CalculationConcentration} * \text{CurrentHourlyOpRecord.FdFactor} * (20.9 / (20.9 - \text{CalculationDiluent}))) * \text{FinalConversionFactor}$$

"19-6" or "19-7":

If *CalculationConcentrationSubstituted* OR *CalculationDiluentSubstituted*  
return result A

Else if (*CalculationDiluent* is null) OR (*CalculationConcentration* is null) OR (*ValidFcFactorExists* is false)  
return result C

Else if (*CalculationDiluent* is equal to 0.0)

return result D

Else if (*FinalConversionFactor* is NOT null)

$$\text{CalculatedUnadjustedValue} = (\text{CalculationConversionFactor} * \text{CalculationConcentration} * \text{CurrentHourlyOpRecord.FcFactor} * (100.0 / \text{CalculationDiluent})) * \text{FinalConversionFactor}$$

"19-8":

If *CalculationConcentrationSubstituted* OR *CalculationDiluentSubstituted* OR *CalculationMoistureSubstituted*

return result A

Else if (*CalculationDiluent* is null) OR (*CalculationConcentration* is null) OR (*ValidFcFactorExists* is false) OR (*CalculationMoisture* is null)

return result C

Else if (*CalculationDiluent* is equal to 0.0) OR (*CalculationMoisture* is equal to 100)

return result D

Else if (*FinalConversionFactor* is NOT null)

$$\text{CalculatedUnadjustedValue} = (\text{CalculationConversionFactor} * ((\text{CalculationConcentration} * \text{CurrentHourlyOpRecord.FcFactor}) / ((100 - \text{CalculationMoisture}) / 100.0)) * (100.0 / \text{CalculationDiluent})) * \text{FinalConversionFactor}$$

"19-9":

If *CalculationConcentrationSubstituted* OR *CalculationDiluentSubstituted* OR *CalculationMoistureSubstituted*

return result A

Else if (*CalculationDiluent* is null) OR (*CalculationConcentration* is null) OR (*ValidFcFactorExists* is false) OR (*CalculationMoisture* is null)

return result C

Else if (*CalculationDiluent* is equal to 0.0)

return result D

Else if (*FinalConversionFactor* is NOT null)

$$h2oFactor = (100 - \text{CalculationMoisture}) / 100.0$$

$$co2Term = 100.0 / \text{CalculationDiluent}$$

$$\text{CalculatedUnadjustedValue} = (\text{CalculationConversionFactor} * \text{CalculationConcentration} * \text{CurrentHourlyOpRecord.FcFactor} * h2oFactor * co2Term) * \text{FinalConversionFactor}$$

Else

return result B

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an incorrect MODCCode in the MATS Derived Hourly Value record for [param], as you reported substitute data for one or more essential auxiliary parameters.	Critical Error Level 1
B	You reported an incorrect MODCCode in the MATS Derived Hourly Value record for [param], as you reported measured data for essential auxiliary parameters.	Critical Error Level 1
C	You reported a FormulaIdentifier in the MATS Derived Hourly Value record for [param], but you did not report a value for all the essential parameters needed to perform the calculation.	Critical Error Level 1
D	The [param] could not be recalculated, because the diluent value would result in division by zero.	Critical Error Level 1
F	You did not report a single valid MonitorDefault record for ParameterCode BWA for the hour.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl RH Calculation Verification
2	Process/Category:	Emissions Data Evaluation Report ----- MATS HF RH Calculation Verification
3	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg RH Calculation Verification
4	Process/Category:	Emissions Data Evaluation Report ----- MATS SO2 RH Calculation Verification

**Check Code:** MATSCHV-16

**Check Name:** Stash Hg Calculated Value

**Related Former Checks:**

**Applicability:**

**Description:** Stores the HGRE or HGRH Calculated Unadjusted Value in the appropriate check parameters.

**Specifications:**

*MatsCalculatedHgRateValue* = *CalculatedUnadjustedValue*, converted to Scientific Notation with the number of significant digits matching the following:

- 1) When *CurrentOperatingDate* is on or after September 9, 2020 AND *MatsDhvRecord.UnadjustedHourlyValue* is NOT null, then the significant digits in *MatsDhvRecord.UnadjustedHourlyValue*.
- 2) Otherwise 3 significant digits.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

- |   |                   |  |
|---|-------------------|--|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- MATS Hg RE Calculation Verification |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- MATS Hg RH Calculation Verification |

**Check Code:** MATSCHV-17  
**Check Name:** Stash HCl Calculated Value

**Related Former Checks:**

**Applicability:**

**Description:** Stores the HCLRE or HCLRH Calculated Unadjusted Value in the appropriate check parameters.

**Specifications:**

*MatsCalculatedHclRateValue* = *CalculatedUnadjustedValue*, converted to Scientific Notation with the number of significant digits matching the following:

- 1) When *CurrentOperatingDate* is on or after September 9, 2020 AND *MatsDhvRecord.UnadjustedHourlyValue* is NOT null, then the significant digits in *MatsDhvRecord.UnadjustedHourlyValue*.
- 2) Otherwise 3 significant digits.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl RE Calculation Verification
2	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl RH Calculation Verification

**Check Code:** MATSCHV-18

**Check Name:** Stash HF Calculated Value

**Related Former Checks:**

**Applicability:**

**Description:** Stores the HFRE or HFRH Calculated Unadjusted Value in the appropriate check parameters.

**Specifications:**

*MatsCalculatedHfRateValue* = *CalculatedUnadjustedValue*, converted to Scientific Notation with the number of significant digits matching the following:

- 1) When *CurrentOperatingDate* is on or after September 9, 2020 AND *MatsDhvRecord.UnadjustedHourlyValue* is NOT null, then the significant digits in *MatsDhvRecord.UnadjustedHourlyValue*.
- 2) Otherwise 3 significant digits.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

- |   |                   |  |
|---|-------------------|--|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- MATS HF RE Calculation Verification |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- MATS HF RH Calculation Verification |

**Check Code:** MATSCHV-19

**Check Name:** Stash SO2 Calculated Value

**Related Former Checks:**

**Applicability:**

**Description:** Stores the SO2RE or SO2RH Calculated Unadjusted Value in the appropriate check parameters.

**Specifications:**

*MatsCalculatedSo2RateValue* = *CalculatedUnadjustedValue*, converted to Scientific Notation with the number of significant digits matching the following:

- 1) When *CurrentOperatingDate* is on or after September 9, 2020 AND *MatsDhvRecord.UnadjustedHourlyValue* is NOT null, then the significant digits in *MatsDhvRecord.UnadjustedHourlyValue*.
- 2) Otherwise 3 significant digits.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

- |   |                   |   |
|---|-------------------|---|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- MATS SO2 RE Calculation Verification |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- MATS SO2 RH Calculation Verification |



**Check Code:** MATSCHV-20

**Check Name:** Check Unadjusted Hourly Value Tolerance

**Related Former Checks:**

**Applicability:**

**Description:** Ensures that the percent difference between the Unadjusted Hourly Value and Calculated Unadjusted Hourly Value is less than or equal to 5%.

**Specifications:**

If *CurrentDhvRecordValid*

If (*MatsDhvRecord.ModcCode* in *MatsDhvMeasuredModcList*) AND (*MatsDhvRecord.UnadjustedHourlyValue* is NOT null) AND (*CalculatedUnadjustedValue* is NOT null)

If (*CurrentSo2MonitorHourlyRecord.ParameterCode* is not SO2RH and *CurrentSo2MonitorHourlyRecord.ParameterCode* is not SO2RE) OR (*CurrentSo2MonitorHourlyRecord* is null or *CurrentSo2MonitorHourlyRecord.ModcCode* is not 16)

Set *roundedCalculatedValue* = *CalculatedUnadjustedValue*, rounded to the number of significant digits matching the following:

- 1) When *CurrentOperatingDate* is on or after September 9, 2020 AND *MatsDhvRecord.UnadjustedHourlyValue* is NOT null, then the significant digits in *MatsDhvRecord.UnadjustedHourlyValue*.
- 2) Otherwise 3 significant digits.

If ( (*MatsDhvRecord.UnadjustedHourlyValue* + *roundedCalculatedValue*) is NOT equal to 0)

Set *PercentDifference* =  $100 * \text{ABS}(\text{MatsDhvRecord.UnadjustedHourlyValue} - \text{roundedCalculatedValue}) / ((\text{MatsDhvRecord.UnadjustedHourlyValue} + \text{roundedCalculatedValue}) / 2)$ , **rounded to 1 decimal place.**

If (*PercentDifference* > 5)  
return result A

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The UnadjustedHourlyValue reported in the DHV record for [param] is inconsistent with the recalculated value.	Critical Error Level 1

**Usage:**

- |   |                   |   |
|---|-------------------|---|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- MATS HCl RE Calculation Verification |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- MATS HCl RH Calculation Verification |
| 3 | Process/Category: | Emissions Data Evaluation Report ----- MATS HF RE Calculation Verification  |
| 4 | Process/Category: | Emissions Data Evaluation Report ----- MATS HF RH Calculation Verification  |
| 5 | Process/Category: | Emissions Data Evaluation Report ----- MATS Hg RE Calculation Verification  |
| 6 | Process/Category: | Emissions Data Evaluation Report ----- MATS Hg RH Calculation Verification  |
| 7 | Process/Category: | Emissions Data Evaluation Report ----- MATS SO2 RE Calculation Verification |
| 8 | Process/Category: | Emissions Data Evaluation Report ----- MATS SO2 RH Calculation Verification |

## **Check Category:**

# **MATS Derived Hourly Value Checks**

**Check Code:** MATSDHV-1

**Check Name:** Initialize HGRE Derived Hourly Value Data

**Related Former Checks:**

**Applicability:**

**Description:** This check sets generic parameters and output parameters for subsequent derived hourly checks for Hg

**Specifications:**

```
CurrentDhvParameter = "HGRE"  
MatsDhvRecord = MatsHgDhvRecord  
MatsEquationCodeWithH2o = "A-3"  
MatsEquationCodeWithoutH2o = "A-2"
```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg RE Derived Hourly Evaluation
---	-------------------	---

**Check Code:** MATSDHV-2  
**Check Name:** Initialize HGRH Derived Hourly Value Data  
**Related Former Checks:**

**Applicability:**  
**Description:** This check sets generic parameters and output parameters for subsequent derived hourly checks for Hg  
**Specifications:**

*CurrentDhvParameter* = "HGRH"  
*MatsDhvRecord* = *MatsHgDhvRecord*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg RH Derived Hourly Evaluation
---	-------------------	---

**Check Code:** MATSDHV-3

**Check Name:** Initialize HCLRE Derived Hourly Value Data

**Related Former Checks:**

**Applicability:**

**Description:** This check sets generic parameters and output parameters for subsequent derived hourly checks for HCL

**Specifications:**

```
CurrentDhvParameter = "HCLRE"  
MatsDhvRecord = MatsHclDhvRecord  
MatsEquationCodeWithH2o = "HC-3"  
MatsEquationCodeWithoutH2o = "HC-2"
```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl RE Derived Hourly Evaluation
---	-------------------	--

Check Code:MATSDHV-4

Check Name:Initialize HCLRHH Derived Hourly Value Data

Related Former Checks:

Applicability:

Description:This check sets generic parameters and output parameters for subsequent derived hourly checks for HCL

Specifications:

*CurrentDhvParameter* = "HCLRHH"  
*MatsDhvRecord* = *MatsHclDhvRecord*

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCL RH Derived Hourly Evaluation
---	-------------------	--

**Check Code:** MATSDHV-5

**Check Name:** Initialize HFRE Derived Hourly Value Data

**Related Former Checks:**

**Applicability:**

**Description:** This check sets generic parameters and output parameters for subsequent derived hourly checks for HF

**Specifications:**

```
CurrentDhvParameter = "HFRE"  
MatsDhvRecord = MatsHfDhvRecord  
MatsEquationCodeWithH2o = "HF-3"  
MatsEquationCodeWithoutH2o = "HF-2"
```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HF RE Derived Hourly Evaluation
---	-------------------	---



**Check Code:** MATSDHV-6  
**Check Name:** Initialize HFRH Derived Hourly Value Data

**Related Former Checks:**

**Applicability:**

**Description:** This check sets generic parameters and output parameters for subsequent derived hourly checks for HF

**Specifications:**

*CurrentDhvParameter* = "HFRH"  
*MatsDhvRecord* = *MatsHfDhvRecord*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HF RH Derived Hourly Evaluation
---	-------------------	---

Check Code: MATSDHV-7

Check Name: Initialize SO2RE Derived Hourly Value Data

Related Former Checks:

Applicability:

Description: This check sets generic parameters and output parameters for subsequent derived hourly checks for SO2

Specifications:

*CurrentDhvParameter* = "SO2RE"  
*MatsDhvRecord* = *MatsSo2DhvRecord*  
*MatsEquationCodeWithH2o* = "S-3"  
*MatsEquationCodeWithoutH2o* = "S-2"

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- MATS SO2 RE Derived Hourly Evaluation
---	-------------------	--

**Check Code:** MATSDHV-8  
**Check Name:** Initialize SO2RH Derived Hourly Value Data

**Related Former Checks:**

**Applicability:**

**Description:** This check sets generic parameters and output parameters for subsequent derived hourly checks for SO2

**Specifications:**

*CurrentDhvParameter* = "SO2RH"  
*MatsDhvRecord* = *MatsSo2DhvRecord*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS SO2 RH Derived Hourly Evaluation
---	-------------------	--

**Check Code:** MATSDHV-9

**Check Name:** Check Mats MODC in DHV Records

**Related Former Checks:**

**Applicability:**

**Description:** Basic check to ensure that Mats MODC reported in the DHV record is valid.

**Specifications:**

*DerivedHourlyModcStatus* = false

If **MatsDhvRecord.ModcCode** is equal to 36 or 38,  
    *DerivedHourlyModcStatus* = true

Else if **MatsDhvRecord.ModcCode** is equal to 37,

    If **MatsDhvRecord.ParameterCode** is equal to "HGRH", "HCLR", "HFRH" or "SO2RH", AND  
    **CurrentHourlyOpRecord.MatsStartupShutdownFlag** is NOT null,  
        *DerivedHourlyModcStatus* = true

    Else  
        return result B

Else if **MatsDhvRecord.ModcCode** is equal to 39,

    If **MatsDhvRecord.ParameterCode** is equal to "HGRE", "HCLRE", "HFRE" or "SO2RE", AND  
    **CurrentHourlyOpRecord.MatsStartupShutdownFlag** is NOT null,  
        *DerivedHourlyModcStatus* = true

    Else  
        return result C

Else  
    return result A

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an MODC code that is not valid for the MATS DHV.	Critical Error Level 1
B	You reported MODC 37 for [PARAM], but did not report both a heat-input based MATS parameter, and a Startup/Shutdown Flag.	Informational Message
C	You reported MODC 39 for [PARAM], but did not report both an output based MATS parameter and a Startup/Shutdown Flag.	Informational Message

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl RE Derived Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl RH Derived Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- MATS HF RE Derived Hourly Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- MATS HF RH Derived Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg RE Derived Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg RH Derived Hourly Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- MATS SO2 RE Derived Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- MATS SO2 RH Derived Hourly Evaluation

**Check Code:** MATSDHV-10

**Check Name:** Check Formula in MATS DHV Record

**Related Former Checks:**

**Applicability:**

**Description:** (Copy of DHV-24 tailored to MATS)  
Checks the Formula ID in the MATS Derived Hourly Value record and ensures that it can be used for the calculation

**Specifications:**

*DerivedHourlyFormulaStatus* = false

If (*DerivedHourlyModcStatus* = true)

If (*MatsDhvRecord*.FormulaKey is null)

If *MatsDhvRecord*.ModcCode = "38"

return result G

else

return result A

else //FormulaKey not null

If (*MatsDhvRecord*.FormulaActiveInd is NOT equal to 1)

return result B

Else if (*MatsDhvRecord*.FormulaParameterCode is not equal to *CurrentDhvParameter*)

return result C

Else if (*CurrentDhvParameter* in set {"HGRE", "HCLRE", "HFRE", "SO2RE"}) and *MatsDhvRecord*.ModcCode = "37"

return result D

Else if (*CurrentDhvParameter* in set {"HGRH", "HCLRH", "HFRH", "SO2RH"}) and *MatsDhvRecord*.ModcCode = "39"

return result E

Else

*DerivedHourlyFormulaStatus* = true

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a FormulaID in the MATS DHV record for [param].	Critical Error Level 1
B	You reported FormulaID [ID] in the MATS DHV record for [param], but there is no active Formula record for this formula in your monitoring plan.	Critical Error Level 1
C	You reported FormulaID [ID] in the MATS DHV record for [param], but in your monitoring plan this formula has a different ParameterCode.	Critical Error Level 1
D	You reported a MODCCode of 37 for the MATS DHV record, but the use of a diluent cap value is not applicable to [param].	Critical Error Level 1
E	You reported a MODCCode of 39 for the MATS DHV record, but the use of a default electrical load value is not applicable to [param].	Critical Error Level 1
F	You reported a FormulaID for a MATS DHV record, that is not reported if valid concentration was not available or substitute data reported for one or more essential auxiliary parameters.	Critical Error Level 1
G	You did not report a FormulaID in the MATS DHV record for [param].	Critical Error Level 1

**Usage:**

- |   |                   |  |
|---|-------------------|--|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- MATS HCl RE Derived Hourly Evaluation |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- MATS HCl RH Derived Hourly Evaluation |
| 3 | Process/Category: | Emissions Data Evaluation Report ----- MATS HF RE Derived Hourly Evaluation  |
| 4 | Process/Category: | Emissions Data Evaluation Report ----- MATS HF RH Derived Hourly Evaluation  |
| 5 | Process/Category: | Emissions Data Evaluation Report ----- MATS Hg RE Derived Hourly Evaluation  |
| 6 | Process/Category: | Emissions Data Evaluation Report ----- MATS Hg RH Derived Hourly Evaluation  |
| 7 | Process/Category: | Emissions Data Evaluation Report ----- MATS SO2 RE Derived Hourly Evaluation |
| 8 | Process/Category: | Emissions Data Evaluation Report ----- MATS SO2 RH Derived Hourly Evaluation |

**Check Code:** MATSDHV-11

**Check Name:** Check Equation Code for MATS RE

**Related Former Checks:**

**Applicability:**

**Description:** Gets Equation Code from Mats Active Monitor Formula Record and verifies that it is an appropriate equation for calculation of HCLRE,HFRE,HGRE,SO2RE

**Specifications:**

*DerivedHourlyEquationStatus* = false

If (*DerivedHourlyFormulaStatus* == true)

If (*MatsDhvRecord*.EquationCode is not null)

If (*MatsDhvRecord*.EquationCode == *MatsEquationCodeWithoutH2o*)

*DerivedHourlyEquationStatus* = true

*FlowMonitorHourlyChecksNeeded* = true

Else If (*MatsDhvRecord*.EquationCode == *MatsEquationCodeWithH2o*)

*Derived Hourly Equation Status* = true

*Flow Monitor Hourly Checks Needed* = true

*Moisture Needed* = true

append "MIN" to *H2OMissingDataApproach*

Else

return result A

Else

*DerivedHourlyEquationStatus* = true

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported a formula code that does not match any of the MATS derived hourly value formulas.	Critical Error Level 1

#### Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl RE Derived Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- MATS HF RE Derived Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg RE Derived Hourly Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- MATS SO2 RE Derived Hourly Evaluation

**Check Code:** MATSDHV-12

**Check Name:** Check Equation Code for MATS RH

**Related Former Checks:**

**Applicability:**

**Description:** Gets Mats Equation Code from Active Mats Monitor Formula Record and verifies that it is an appropriate equation for Mats Current parameter.

**Specifications:**

*DerivedHourlyEquationStatus* = false

If (*DerivedHourlyFormulaStatus* == true)

If (*MatsDhvRecord*.EquationCode is not null)

If (*MatsDhvRecord*.EquationCode in set {19-1, 19-2, 19-3, 19-3D, 19-4, 19-5, 19-5D, 19-6, 19-7, 19-8, 19-9} )

*DerivedHourlyEquationStatus* = true

If (*MatsDhvRecord*.EquationCode in set {19-1, 19-4} )

*O2DryNeededForMats* = true

*FDFactorNeeded* = true

Else if (*MatsDhvRecord*.EquationCode in set {19-3,19-3D, 19-5, 19-5D} )

*O2WetNeededForMats* = true

*FDFactorNeeded* = true

Else if (*MatsDhvRecord*.EquationCode in set {19-2} )

*O2WetNeededForMats* = true

*FWFactorNeeded* = true

Else if (*MatsDhvRecord*.EquationCode in set {19-6, 19-7, 19-8, 19-9} )

*CO2DiluentNeededForMats* = true

*FCFactorNeeded* = true

If (*MatsDhvRecord*.EquationCode in set {19-3, 19-3D, 19-4, 19-5, 19-8, 19-9}

*MoistureNeeded* = true

Else

return result A

Else

*DerivedHourlyEquationStatus*= true

**Results:**

Result

A

Response

You reported a formula code that does not match any of the MATS derived hourly value formulas.

Severity

Critical Error Level 1



**Usage:**

- |   |                   |  |
|---|-------------------|--|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- MATS HCl RH Derived Hourly Evaluation |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- MATS HF RH Derived Hourly Evaluation  |
| 3 | Process/Category: | Emissions Data Evaluation Report ----- MATS Hg RH Derived Hourly Evaluation  |
| 4 | Process/Category: | Emissions Data Evaluation Report ----- MATS SO2 RH Derived Hourly Evaluation |

**Check Code:** MATSDHV-13

**Check Name:** Complete HGRE and HGRH Derived Hourly Value

**Related Former Checks:**

**Applicability:**

**Description:** This check assigns parameter specific check parameters used by the associated calculation checks.

**Specifications:**

*MatsHgDhvParameter = CurrentDhvParameter*

*MatsHgDhvValid = DerivedHourlyEquationStatus AND DerivedHourlyUnadjustedValueStatus*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg RE Derived Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg RH Derived Hourly Evaluation

**Check Code:** MATSDHV-14  
**Check Name:** Complete HCLRE and HCLRH Derived Houly Value

**Related Former Checks:**

**Applicability:**

**Description:** This check assigns parameter specific check parameters used by the associated calculation checks.

**Specifications:**

*MatsHclDhvParameter = CurrentDhvParameter*  
*MatsHclDhvValid = DerivedHourlyEquationStatus AND DerivedHourlyUnadjustedValueStatus*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

- |   |                   |  |
|---|-------------------|--|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- MATS HCl RE Derived Hourly Evaluation |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- MATS HCl RH Derived Hourly Evaluation |

**Check Code:** MATSDHV-15

**Check Name:** Complete HFRE and HFRH Derived Hourly Value

**Related Former Checks:**

**Applicability:**

**Description:** This check assigns parameter specific check parameters used by the associated calculation checks.

**Specifications:**

*MatsHfDhvParameter = CurrentDhvParameter*

*MatsHfDhvValid = DerivedHourlyEquationStatus AND DerivedHourlyUnadjustedValueStatus*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

- |   |                   |   |
|---|-------------------|---|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- MATS HF RE Derived Hourly Evaluation |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- MATS HF RH Derived Hourly Evaluation |

**Check Code:** MATSDHV-16  
**Check Name:** Complete SO2RE and SO2RH Derived Hourly Value

**Related Former Checks:**

**Applicability:**

**Description:** This check assigns parameter specific check parameters used by the associated calculation checks.

**Specifications:**

*MatsSo2DhvParameter = CurrentDhvParameter*  
*MatsSo2DhvValid = DerivedHourlyEquationStatus AND DerivedHourlyUnadjustedValueStatus*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

- |   |                   |  |
|---|-------------------|--|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- MATS SO2 RE Derived Hourly Evaluation |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- MATS SO2 RH Derived Hourly Evaluation |

**Check Code:** MATSDHV-17

**Check Name:** Check Unadjusted Value

**Related Former Checks:**

**Applicability:**

**Description:**

**Specifications:**

*DerivedHourlyUnadjustedValueStatus* = false

If (*DerivedHourlyModcStatus* = true)

If (*MatsDhvRecord*.ModcCode in set {36, 37, 39})

If ( *MatsDhvRecord*.UnadjustedHourlyValue is null )  
return result A

Else if ( *MatsDhvRecord*.UnadjustedHourlyValue is NOT reported in scientific notation to 3 significant digits AND NOT 2 significant digits if *CurrentOperatingDate* is on or after September 9, 2020 )  
return result B

Else if ( *MatsDhvRecord*.UnadjustedHourlyValue < 0 )  
return result C

Else  
*DerivedHourlyUnadjustedValueStatus* = true

Else // MODC 38

If ( *MatsDhvRecord*.UnadjustedHourlyValue is not null )  
return result D

Else  
*DerivedHourlyUnadjustedValueStatus* = true

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide a [fieldname], which is required, for [key].	Critical Error Level 1
B	The [fieldname] value in the [key] records is not reported in scientific notation rounded to three significant figures, with one digit to the left of the decimal point.	Critical Error Level 1
C	You reported a negative value, which is invalid, in the field [fieldname] for [key].	Critical Error Level 1
D	You reported an UnadjustedHourlyValue for a MATS DHV record, that is not reported if a valid concentration was not available or substitute data reported for one or more essential auxiliary parameters.	Critical Error Level 2

**Usage:**

- |   |                   |  |
|---|-------------------|--|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- MATS HCl RE Derived Hourly Evaluation |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- MATS HCl RH Derived Hourly Evaluation |
| 3 | Process/Category: | Emissions Data Evaluation Report ----- MATS HF RE Derived Hourly Evaluation  |
| 4 | Process/Category: | Emissions Data Evaluation Report ----- MATS HF RH Derived Hourly Evaluation  |
| 5 | Process/Category: | Emissions Data Evaluation Report ----- MATS Hg RE Derived Hourly Evaluation  |
| 6 | Process/Category: | Emissions Data Evaluation Report ----- MATS Hg RH Derived Hourly Evaluation  |
| 7 | Process/Category: | Emissions Data Evaluation Report ----- MATS SO2 RE Derived Hourly Evaluation |
| 8 | Process/Category: | Emissions Data Evaluation Report ----- MATS SO2 RH Derived Hourly Evaluation |

**Check Code:** MATSDHV-18

**Check Name:** Set Diluents Needed for Calculation

**Related Former Checks:**

**Applicability:** General Check

**Description:** Uses measured MODC list and CO2 Diluent, O2 Dry and O2 Wet Needed for MATS check parameters to set corresponding Needed for MATS Calculation check parameters.

**Specifications:**

If ( *DerivedHourlyEquationStatus* = true ) AND ( *DerivedHourlyModcStatus* = true ) AND ( *MatsDhvRecord*.ModcCode set {36, 37, 39} )

If ( *CO2DiluentNeededForMats* = true )  
     *CO2DiluentNeededForMatsCalculation* = true

If ( *O2DryNeededForMats* = true )  
     *O2DryNeededForMatsCalculation* = true

If ( *O2WetNeededForMats* = true )  
     *O2WetNeededForMatsCalculation* = true

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl RE Derived Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl RH Derived Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- MATS HF RE Derived Hourly Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- MATS HF RH Derived Hourly Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg RE Derived Hourly Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg RH Derived Hourly Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- MATS SO2 RE Derived Hourly Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- MATS SO2 RH Derived Hourly Evaluation



**Check Category:**

**MATS Hourly GFM Data**

**Check Code:** MATSGFM-1

**Check Name:** Component ID Valid

**Related Former Checks:**

**Applicability:**

**Description:** Ensure that the Component ID is associated with “STRAIN”.

**Specifications:**

Set *MatsGfmSamplingTrainRecords* to null.  
 Set *MatsHourlyGFMComponentIdValid* = false.  
 Set *MatsSamplingTrainRecord* to null.  
 Set *MatsSamplingTrainQaStatus* to null.  
 Set *MatsSorbentTrapBeginDateHour* to null.  
 Set *MatsSorbentTrapEndDateHour* to null.  
 Set *MatsSamplingTrainCount* to null.

If the *MatsHourlyGFMRecord*.ComponentID is null,

Return result A.

Else

Locate *MatsSamplingTrainRecords* where:

- 1) ComponentID is equal to *MatsHourlyGFMRecord*.ComponentID
- 2) SorbentTrapBeginDateHour is on or before *CurrentDateHour*
- 3) SorbentTrapEndDateHour is on or after *CurrentDateHour*
- 4) Records are sorted by SorbentTrapBeginDateHour and SorbentTrapEndDateHour // The earliest sampling train is the correct train.

Set *MatsSamplingTrainCount* to the number of records located in *MatsSamplingTrainsRecords*.

Set *MatsGfmSamplingTrainRecords* to the records located in *MatsSamplingTrainsRecords*.

If not found,

Return result B.

Else

Set *MatsHourlyGFMComponentIdValid* to true.  
 Set *MatsSamplingTrainRecord* to the first record located in *MatsSamplingTrainsRecords*.  
 Set *MatsSamplingTrainQaStatus* to *MatsSamplingTrainRecord*.TrainQAStatusCode.  
 Set *MatsSorbentTrapBeginDateHour* to *MatsSamplingTrainRecord*.BeginDateHour.  
 Set *MatsSorbentTrapEndDateHour* to *MatsSamplingTrainRecord*.EndDateHour.

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a [fieldname] value in the [key] records which is required if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
B	For [key], you reported a sorbent train GFM Component ID that does not match a sorbent train Component ID record.	Critical Error Level 1

## Usage:

1 Process/Category: Emissions Data Evaluation Report ----- MATS Hourly Gas Flow Meter Evaluation

**Check Code:** MATSGFM-2

**Check Name:** Begin and End Hour Flags Valid

**Related Former Checks:**

**Applicability:**

**Description:** Check that Begin and End Hour Flags are valid

**Specifications:**

If *MatsHourlyGFMComponentIdValid* is true,

If *HourlyGFMDData.BeginEndHourFlag* is "I",

If *CurrentDateHour* is not equal to the *MatsSorbentTrapBeginDateHour* and is not the hour after the *MatsSorbentTrapBeginDateHour*.

Return result A

Else if the *HourlyGFMDData.BeginEndHourFlag* is "F",

If *CurrentDateHour* is not equal to the *MatsSorbentTrapEndDateHour* and is not the hour before the *MatsSorbentTrapEndDateHour*,

Return result B.

Else if *HourlyGFMDData.BeginEndHourFlag* is null,

If *CurrentDateHour* is on the *MatsSorbentTrapBeginDateHour*,

Return result C.

Else if *CurrentDateHour* is on the *MatsSorbentTrapEndDateHour*,

Return result D.

Else if *HourlyGFMDData.BeginEndHourFlag* is "T",

If *MatsSamplingTrainCount* is less than or equal to 1,  
Return result E.

Else if *CurrentDateHour* is not equal to the *MatsSorbentTrapEndDateHour*

// Current hour is not the end hour of the current sorbent trap  
Return result F.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key], you identified a begin hour that is not the first or second hour of the sampling period.	Critical Error Level 1
B	For [key], you identified an end hour that is not the last or second to the last hour of the sampling period.	Critical Error Level 1
C	For [key], you did not identify the first hour of the sampling period as a begin or transition hour.	Critical Error Level 1
D	For [key], you did not identify the last hour of the sampling period as an end or transition hour.	Critical Error Level 1
E	For [key], you identified an hour as a transition hour, but the hour is not included in two consecutive sampling periods.	Critical Error Level 1
F	For [key], you identified a transition hour that is not the last hour of a sampling period.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Hourly Gas Flow Meter Evaluation
---	-------------------	--

**Check Code:** MATSGFM-3

**Check Name:** Hourly GFM Reading Valid

**Related Former Checks:**

**Applicability:**

**Description:** Hourly GFM Reading Null or Reported to Two Decimal Places

**Specifications:**

If *MatsHourlyGFMComponentIdValid* is true,

If the *MatsHourlyGFMRecord.HourlyGFMReading* is null,

If the *MatsSamplingTrainQaStatus* is NOT equal to "INC", "EXPIRED", or "LOST", AND  
*HourlyGFMDData.BeginEndHourFlag* is NOT equal to 'N',

Return result A.

Else,

If *HourlyGFMDData.BeginEndHourFlag* is equal to 'N',

Return result D.

Else if the *MatsSamplingTrainQaStatus* is not "PASSED", "FAILED", or "UNCERTAIN",

Return result B.

Else if the *MatsHourlyGFMRecord.HourlyGFMReading* is not reported to two decimal places ,

Return result C.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a [fieldname] value in the [key] records which is required if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
B	You reported a [fieldname] value in the [key] records which is reported only if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
C	For [key], the [fieldname] value must be reported to at least two decimal places.	Critical Error Level 1
D	You reported a [fieldname] value in the [key] records, but also reported a problem with the hourly GFM data with a "N" in the BeginEndHourFlag record.	Critical Error Level 1

#### Usage:

1      Process/Category:      Emissions Data Evaluation Report ----- MATS Hourly Gas Flow Meter Evaluation

**Check Code:** MATSGFM-4

**Check Name:** Average Hourly Sampling Rate Valid

**Related Former Checks:**

**Applicability:**

**Description:** Average Hourly Sampling Rate Null or Reported to Two Decimal Places

**Specifications:**

If *MatsHourlyGFMComponentIdValid* is true,

If the *MatsHourlyGFMRecord.AvgHourlySamplingRate* is null,

If the *MatsSamplingTrainQaStatus* is NOT equal to "INC", "EXPIRED", or "LOST", AND  
*HourlyGFMDData.BeginEndHourFlag* is NOT equal to 'N',

Return result A.

Else,

If *HourlyGFMDData.BeginEndHourFlag* is equal to 'N',

Return result D.

Else if the *MatsSamplingTrainQaStatus* is not "PASSED", "FAILED", or "UNCERTAIN",

Return result B.

Else if the *MatsHourlyGFMRecord.AvgHourlySamplingRate* is not reported to two decimal places ,

Return result C.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a [fieldname] value in the [key] records which is required if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
B	You reported a [fieldname] value in the [key] records which is reported only if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
C	For [key], the [fieldname] value must be reported to at least two decimal places.	Critical Error Level 1
D	You reported a [fieldname] value in the [key] records, but also reported a problem with the hourly GFM data with a "N" in the BeginEndHourFlag record.	Critical Error Level 1

#### Usage:

1      Process/Category:      Emissions Data Evaluation Report ----- MATS Hourly Gas Flow Meter Evaluation

**Check Code:** MATSGFM-5

**Check Name:** Sampling Rate UOM Valid

**Related Former Checks:**

**Applicability:**

**Description:** Sampling Rate UOM Null or Matches UOM Code

**Specifications:**

If *MatsHourlyGFMComponentIdValid* is true,

If the *MatsHourlyGFMRecord.SamplingRateUOM* is null,

If the *MatsSamplingTrainQaStatus* is NOT equal to "INC", "EXPIRED", or "LOST", AND  
*HourlyGFMDData.BeginEndHourFlag* is NOT equal to 'N',

Return result A.

Else,

If *HourlyGFMDData.BeginEndHourFlag* is equal to 'N',

Return result D.

Else if the *MatsSamplingTrainQaStatus* is not "PASSED", "FAILED", or "UNCERTAIN",

Return result B.

Else if the *MatsHourlyGFMRecord.SamplingRateUOM* is not "CCMIN", "DSCMMIN", "LMIN", "CCHR",  
"DSCMHR", or "LHR" ,

Return result C.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a [fieldname] value in the [key] records which is required if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
B	You reported a [fieldname] value in the [key] records which is reported only if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
C	For [key] you reported a [value] which is not valid for [fieldname].	Critical Error Level 1
D	You reported a [fieldname] value in the [key] records, but also reported a problem with the hourly GFM data with a "N" in the BeginEndHourFlag record.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- MATS Hourly Gas Flow Meter Evaluation

**Check Code:** MATSGFM-6

**Check Name:** Hourly SFSR Ratio Valid

**Related Former Checks:**

**Applicability:**

**Description:** Hourly SFSR Ratio Null or Reported in Required Range and Decimal Places

**Specifications:**

If *MatsHourlyGFMComponentIdValid* is true,

If the *MatsHourlyGFMRecord*.HourlySFSRRatio is null,

If *MatsSamplingTrainQaStatus* is not "INC", "EXPIRED", "LOST" or "FAILED", AND *CurrentStackFlowHourlyRecord* is NOT null AND *CurrentStackFlowHourlyRecord*.ModeCode in set {01, 02, 03, 04, 20, 53, 54}, AND *HourlyGFMDData*.BeginEndHourFlag is NOT equal to 'N',

Return result A.

Else,

If *HourlyGFMDData*.BeginEndHourFlag is equal to 'N',

Return result G.

Else if *MatsSamplingTrainQaStatus* is not "PASSED", "FAILED", or "UNCERTAIN",

Return result B.

Else if *CurrentStackFlowHourlyRecord* is null,

Return result F.

Else if *CurrentStackFlowHourlyRecord*.ModeCode NOT in set {01, 02, 03, 04, 20, 53, 54},

Return result E.

Else if the the *MatsHourlyGFMRecord*.HourlySFSRRatio is not reported to one decimal place ,

Return result C.

Else if the *MatsHourlyGFMRecord*.HourlySFSRRatio is not greater than or equal to 1.0 and less than or equal to 100.0,

Return result D.

Else if *MatsHourlyGFMComponentIdValid* is true AND *MatsSamplingTrainDictionary* contains a key equal to *MatsSamplingTrainRecord*.TrainID AND *MatsSamplingTrainDictionary*.ReferenceSFSRRatio where the key equals *MatsSamplingTrainRecord*.TrainID is NOT null or equal to 0,

Set *MatsHourlySfsrRatioDeviation* to absolute value of  $[1 - (\text{MatsHourlyGFMRecord.HourlySFSRRatio} / \text{MatsSamplingTrainDictionary.ReferenceSFSRRatio where the key equals MatsSamplingTrainRecord.TrainID})] \times 100$ , rounded to an integer.

Add one to *MatsSamplingTrainDictionary*.TotalSFSRRatioCount where the key equals *MatsSamplingTrainRecord*.TrainID

If the *MatsHourlySfsrRatioDeviation* is greater than 25,

Add one to *MatsSamplingTrainDictionary*.DeviatedSFSRRatioCount where the key equals



---

*MatsSamplingTrainRecord*.TrainID

---

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a [fieldname] value in the [key] records which is required if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
B	You reported a [fieldname] value in the [key] records which is reported only if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
C	The [fieldname] value for [key] should be reported to one decimal place.	Critical Error Level 1
D	The [fieldname] value for [key] must be a number between 1 and 100.	Critical Error Level 1
E	You reported a [fieldname] value in the [key] records which is not reported if the stack gas flow rate for the hour is a substitute data value.	Critical Error Level 1
F	You reported a [fieldname] value in the [key] records which you should not report when a stack gas flow rate is not reported for the hour.	Critical Error Level 1
G	You reported a [fieldname] value in the [key] records, but also reported a problem with the hourly GFM data with a "N" in the BeginEndHourFlag record.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Hourly Gas Flow Meter Evaluation
---	-------------------	--

**Check Code:** MATSGFM-7

**Check Name:** Count Begin and End Hour Flags

**Related Former Checks:**

**Applicability:**

**Description:** Updates the total hours that a GFM exists for a sampling train and the count of hours where the Begin and End Flag equals "N".

**Specifications:**

If *MatsGfmSamplingTrainRecords* is not null,

For each *SamplingTrainRecord* in *MatsGfmSamplingTrainRecords*,

If *SamplingTrainRecord*.TrainQAStatusCode is equal to "PASSED", "FAILED" or "UNCERTAIN", AND  
*SamplingTrainRecord*.RataInd is equal to 0 (zero) or null,

If *MatsSamplingTrainDictionary* contains a key equal to *SamplingTrainRecord*.TrainID,

Add one to *MatsSamplingTrainDictionary*.TotalGfmCount where the key equals  
*SamplingTrainRecord*.TrainID

If *MatsHourlyGFMDData*.BeginEndHourFlag is equal to 'N',

Add one to *MatsSamplingTrainDictionary*.NotAvailableGfmCount where the key equals  
*SamplingTrainRecord*.TrainID

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Hourly Gas Flow Meter Evaluation
---	-------------------	--

**Check Category:**

**MATS Monitor Hourly Value Checks**

**Check Code:** MATSMHV-1

**Check Name:** MATS HgC: Initialize

**Related Former Checks:**

**Applicability:**

**Description:**

**Specifications:**

Set *CurrentMhvParameter* to "HGC"

Set *MatsMhvRecord* to *MatsHgcMhvRecord*

Set *MatsMhvSorbentTraps* to null

Set *MatsMhvSupplementalSorbentTraps* to null

If (*MatsHgMethodRecord*.MethodCode is equal to "ST") OR ( (*MatsHgMethodRecord*.MethodCode is equal to "CEMST") AND (*MatsHgcMhvRecord*.SystemTypeCode is equal to "ST") )

Set *CurrentMhvSystemType* to "ST"

Set *CurrentMhvComponentType* to "STRAIN"

Set *MatsMhvMeasuredModcList* to {01, 02, 32, 33, 41, 42, 43, 44}

Locate *MatsSorbentTrapRecords* where:

- 1) SystemId is equal to *MatsMhvRecord*.SystemID
- 2) BeginDateHour is on or before *CurrentDateHour*
- 3) EndDateHour is on or after *CurrentDateHour*

Set *MatsMhvSorbentTraps* to the located records

Else

Set *CurrentMhvSystemType* to "HG"

Set *CurrentMhvComponentType* to "HG"

Set *MatsMhvMeasuredModcList* to {01, 02, 17, and 21}

Set *MatsMhvUnavailableModcList* to {34 and 35}

Set *MatsMhvNoLikeKindModcList* to {01 and 02}

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg Concentration Monitor Hourly Evaluation
---	-------------------	--

**Check Code:** MATSMHV-2

**Check Name:** MATS HCLC: Initialize

**Related Former Checks:**

**Applicability:**

**Description:**

**Specifications:**

Set *CurrentMhvParameter* to "HCLC"

Set *MatsMhvRecord* to *MatsHclcMhvRecord*

Set *CurrentMhvComponentType* to "HCL"

Set *CurrentMhvSystemType* to"HCL"

Set *MatsMhvMeasuredModcList* to {01, 02, 17, and 21}

Set *MatsMhvUnavailableModcList* to {34 and 35}

Set *MatsMhvNoLikeKindModcList* to {01 and 02}

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl Concentration Monitor Hourly Evaluation
---	-------------------	---

**Check Code:** MATSMHV-3

**Check Name:** MATS HFC: Initialize

**Related Former Checks:**

**Applicability:**

**Description:**

**Specifications:**

Set *CurrentMhvParameter* to "HFC"

Set *MatsMhvRecord* to *MatsHfcMhvRecord*

Set *CurrentMhvComponentType* to "HF"

Set *CurrentMhvSystemType* to "HF"

Set *MatsMhvMeasuredModcList* to {01, 02, 17 and 21}

Set *MatsMhvUnavailableModcList* to {34 and 35}

Set *MatsMhvNoLikeKindModcList* to {01 and 02}

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HF Concentration Monitor Hourly Evaluation
---	-------------------	--

**Check Code:** MATSMHV-4**Check Name:** MATS: Check MODC**Related Former Checks:****Applicability:****Description:** Ensure that the reported MODC is one of the valid measured or unavailable MODC for the MATS parameter.**Specifications:**Set *MonitorHourlyModcStatus* to falseIf ( *MatsMhvRecord*.ModcCode is null )  
return result AElse if ( *MatsMhvRecord*.ModcCode not in *MatsMhvMeasuredModcList* AND not in *MatsMhvUnavailableModcList* )  
return result BElse if ( *CurrentMhvSystemType* is equal to "ST" ) AND ( *MatsMhvRecord*.ModcCode is NOT equal to "41" or "42" )If ( *MatsMhvSorbentTraps* count is greater than 0 )Set *MatchingSorbentTrapsFound* to false.Set *MatchingSorbentTrapsFound* to true if a *MatsMhvSorbentTraps* record exists where:

- 1) ModcCode is equal to *MatsMhvRecord*.ModcCode
- 2) HgConcentration is equal to *MatsMhvRecord*.UnadjustedValue

If ( *MatchingSorbentTrapsFound* is false ) AND ( *MatsMhvRecord*.ModcCode is equal to "35" )Set *MatchingSorbentTrapsFound* to true if a *MatsMhvSorbentTraps* record exists where:

- 1) ModcCode is equal to "01" or "02".

If ( *MatchingSorbentTrapsFound* is true )*MonitorHourlyModcStatus* = true

Else

return result D

Else

*MonitorHourlyModcStatus* = true

Else

*MonitorHourlyModcStatus* = true**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide a [fieldname], which is required, for [key].	Critical Error Level 1
B	The MODCCode reported for MATS Monitor Hourly Value is invalid.	Critical Error Level 1
C	The MODCCode reported for MATS Monitor Hourly Value is invalid for Hg sorbent trap systems.	Critical Error Level 1
D	The MODCCode and UnadjustedValue combination reported for MATS Monitor Hourly Value do not match the values for a reported Hg sorbent trap systems.	Critical Error Level 1

**Usage:**

- |   |                   |   |
|---|-------------------|---|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- MATS HCl Concentration Monitor Hourly Evaluation |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- MATS HF Concentration Monitor Hourly Evaluation  |
| 3 | Process/Category: | Emissions Data Evaluation Report ----- MATS Hg Concentration Monitor Hourly Evaluation  |



**Check Code:** MATSMHV-5

**Check Name:** MATS: Check Percent Monitor Availability

**Related Former Checks:**

**Applicability:**

**Description:** Ensures that the Percent Monitor Availability (PMA) was reported and is inclusively between 0 and 100.

**Specifications:**

Set *MonitorHourlyPmaStatus* = false

If (*MonitorHourlyModeStatus* == true)

    If ( *MatsMhvRecord*.PercentAvailable is NULL)

        return result A

    Else if (*MatsMhvRecord*.PercentAvailable > 100.0 OR *MatsMhvRecord*.PercentAvailable < 0.0)

        return result B

    Else

        Set *MonitorHourlyPmaStatus* = true

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a PMA for the MATS Monitor Hourly Value.	Critical Error Level 1
B	The PMA must be in a range from 0 to 100.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- MATS HF Concentration Monitor Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg Concentration Monitor Hourly Evaluation

**Check Code:** MATSMHV-6

**Check Name:** MATS: Monitoring System

**Related Former Checks:**

**Applicability:**

**Description:** Ensures that a Monitor System is reported when a measured MODC is reported, and that is not reported when an unavailable MODC is reported. When Monitor System is and should have been reported, the check ensures that the system type is valid for the MATS parameter being reported.

**Specifications:**

Set *MonitorHourlySystemStatus* = false

If (*MonitorHourlyModcStatus* == true)

    If *MatsMhvRecord*.MonitoringSystemID is null

        If (*MatsMhvRecord*.ModcCode in *MatsMhvMeasuredModcList*)

            return result A

        Else

            return result F

    Else if *MatsMhvRecord*.SystemIdentifier is null

        return result B

    Else if (*MatsMhvRecord*.SystemTypeCode  $\neq$  *CurrentMhvSystemType*)

        return result C

    Else if (*MatsMhvRecord*.SystemTypeCode is equal to "ST")

        If *MatsMhvSorbentTraps* count is greater than 0,

*MonitorHourlySystemStatus* = true

        Else

            If (*MatsMhvRecord*.ModcCode in *MatsMhvMeasuredModcList*)

                return result E

    Else

*MonitorHourlySystemStatus* = true

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a MonitoringSystemID for the [param] MATS Monitor Hourly Value. MonitoringSystemID is required when you report measured data.	Critical Error Level 1
B	You reported MonitoringSystemID [ID] in the MATS MHV record for [param], but there is no Monitoring System record for this system in your monitoring plan that was active during the hour.	Critical Error Level 1
C	The system type associated with the Monitoring System ID for the [param] MATS Monitor Hourly Value is not consistent with that parameter.	Critical Error Level 1
D	You reported a MonitoringSystemID for the [param] MATS Monitor Hourly Value that is not reported based on the MODCCode.	Critical Error Level 1
E	You reported sorbent trap system [ID] in the MATS MHV record for [param], but the emissions report does not contain a sorbent trap record for the system that was active during the current hour.	Critical Error Level 1
F	You did not report a MonitoringSystemID for the [param] MATS Monitor Hourly Value. MonitoringSystemID is required when you report unavailable data.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- MATS HF Concentration Monitor Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg Concentration Monitor Hourly Evaluation

**Check Code:** MATSMHV-7

**Check Name:** MATS: System Designation

**Related Former Checks:**

**Applicability:**

**Description:** Ensure that the System Designation Code is valid for the reported MODC.

Currently, the system designation should be 'P' for MODC 01 and 17, 'B' or 'PB' for MODC 02.

**Specifications:**

If (*MonitorHourlyModcStatus* == true AND *MonitorHourlySystemStatus* == true AND *MatsMhvRecord*.SystemIdentifier is not null)

case (*MatsMhvRecord*.ModcCode)

01 OR 17: If (*MatsMhvRecord*.SystemDesignationCode <> "P")  
return result A

02: If (*MatsMhvRecord*.SystemDesignationCode NOT in set {B, RB})  
return result B

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported a MATS Hourly Value MODCCode that is only used with primary or temporary like kind monitoring systems.	Critical Error Level 1
B	You reported a MATS Monitor Hourly Value MODCCode that is only used with backup or redundant backup monitoring systems.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- MATS HF Concentration Monitor Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg Concentration Monitor Hourly Evaluation

**Check Code:** MATSMHV-8

**Check Name:** MATS: Check Like Kind Analyzer Use

**Related Former Checks:**

**Applicability:**

**Description:** Ensures that the conditions exist that allow the use of particular MODC.

Currently only checks MODC 17.

**Specifications:**

If (*MonitorHourlyModcStatus* == true AND *MonitorHourlySystemStatus* == true)

If (*MatsMhvRecord*.ModcCode == "17")

*HoursOfUseOfLikeKindAnalyzer* = Count of MonitorHourlyValueData records for the location and reporting period where:

- 1) ParameterCode = *CurrentMhvParameter*
- 2) ModcCode == "17"
- 3) BeginDateHour < *CurrentOperatingDateHour*

If *HoursOfUseOfLikeKindAnalyzer* >= 720

*FirstUseOfLikeKindAnalyzerRecord* = MonitorHourlyValueData record at earliest time for the location and reporting period where:

- 1) ParameterCode = *CurrentMhvParameter*
- 2) ModcCode == "17"
- 3) BeginDateHour < *CurrentOperatingDateHour*

Locate a *RATATestRecordsByLocationForQAStatus* for the location where:

- 1) MonitoringSystemID is equal to *MatsMhvRecord*.MonitoringSystemID
- 2) TestResultCode begins with "PASS"
- 3) EndDate/EndHour is after the *FirstUseOfLikeKindAnalyzerRecord*.Date/Hour and on or prior to the *CurrentOperatingDateHour*.

If not found,  
return result A

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an MODCCode of 17 in the MATS Monitor Hourly Value record for [param], indicating the use of a like-kind analyzer, but you have used a like-kind analyzer to monitor this parameter for more than 720 hours during this reporting period. You are not allowed to use a like-kind analyzer for more than 720 hours during a calendar year, unless the analyzer is identified as a non-redundant backup and a RATA is performed.	Critical Error Level 1

## Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- MATS HF Concentration Monitor Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg Concentration Monitor Hourly Evaluation

**Check Code:** MATSMHV-9

**Check Name:** MATS: Component

**Related Former Checks:**

**Applicability:**

**Description:** Ensures that a Component is reported when a measured MODC is reported, and that is not reported when an unavailable MODC is reported. When Component is and should have been reported, the check ensures that the system type is valid for the MATS parameter being reported.

**Specifications:**

*MonitorHourlyComponentStatus* = false

If (*CurrentMhvSystemType* <> "ST")

If ( *MonitorHourlyModcStatus* = true)

If *MatsMhvRecord.ComponentID* is null

If (*MatsMhvRecord.ModcCode* in set *MatsMhvMeasuredModcList*)

return result A

Else

return result G

Else if *MatsMhvRecord.ComponentIdentifier* is null

return result B

Else if (*MatsMhvRecord.ComponentTypeCode* <> *CurrentMhvComponentType*)

return result C

Else if *MatsMhvRecord.ModcCode* == 17 AND *MatsMhvRecord.ComponentIdentifier* does not begin with "LK"

return result D

Else if *MatsMhvRecord.ComponentIdentifier* begins with "LK" AND *MatsMhvRecord.ModcCode* in *MatsMhvNoLikeKindModcList*

return result H

Else

*MonitorHourlyComponentStatus* = true

Else

If *MatsMhvRecord.ComponentID* is NOT null

return result F

Else

*MonitorHourlyComponentStatus* = true

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a ComponentID for the [param] MATS Monitor Hourly Value.	Critical Error Level 1
B	Your reported ComponentID [ID] in the MATS MHV record for [param], but there is no Component record for this component in your monitoring plan.	Critical Error Level 1
C	The component type associated with the ComponentID for the [param] MATS Monitor Hourly Value is not consistent with the parameter.	Critical Error Level 1
D	You reported an MODCCode of 17 in the MATS MHV record for [param], which indicates that the component is a like-kind analyzer, but the ComponentID does not begin with LK.	Critical Error Level 1
E	You reported a ComponentID for the [param] MATS Monitor Hourly Value that is not reported based on the MODCCode.	Critical Error Level 1
F	You reported a ComponentID in the MATS MHV record for a [type] system, but a ComponentID is only reported for a gas CEMS.	Critical Error Level 1
G	You did not report a ComponentID for the [param] MATS Monitor Hourly Value.	Critical Error Level 1
H	You reported a ComponentID in the [param] MHV record that begins with "LK", but did not report an MODCCode of 17. You must report an MODCCode of 17 when a like-kind analyzer is used.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- MATS HF Concentration Monitor Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg Concentration Monitor Hourly Evaluation

**Check Code:** MATSMHV-10

**Check Name:** MATS: System Component

**Related Former Checks:**

**Applicability:**

**Description:** Ensure that at least one active Monitoring System Component record exists for the Monitoring System Id and Component Id in the current MATS MHV record.

**Specifications:**

If (*MonitorHourlySystemStatus* == true) AND (*MatsMhvRecord*.MonitoringSystemID is not null) AND (*MonitorHourlyComponentStatus* == true) AND (*MatsMhvRecord*.ComponentID is not null)

*CountMonSysCompRecord* = count *MonitoringSystemComponentByHourLocation* records where:

- 1) MonitoringSystemID = *MatsMhvRecord*.MonitoringSystemID
- 2) ComponentID = *MatsMhvRecord*.ComponentID

If *CountMonSysCompRecord* = 0  
return result A

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported MonitoringSystemID [sys] ComponentID [ID] in the MATS MHV record for [param], but there is no MonitorSystemComponent record for this system and component in your monitoring plan that was active during the hour.	Critical Error Level 1

**Usage:**

- |   |                   |   |
|---|-------------------|---|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- MATS HCl Concentration Monitor Hourly Evaluation |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- MATS HF Concentration Monitor Hourly Evaluation  |
| 3 | Process/Category: | Emissions Data Evaluation Report ----- MATS Hg Concentration Monitor Hourly Evaluation  |



**Check Code:** MATSMHV-11

**Check Name:** MATS: Max/Min Value

**Related Former Checks:**

**Applicability:**

**Description:** Determines the MPC for the active Monitor Span record for the hour, location and component type, returning a check result if the a single row is not found or the MPC is not greater than 0.

**Specifications:**

*CurrentMHVMaxMinValue* = null

If (*MonitorHourlyModcStatus* == true AND *MatsMhvRecord*.ModcCode in set *MatsMhvMeasuredModcList*)

If (*CurrentMhvComponentType* == "HG")

*MonitorSpanRecordCount* = Find active *MonitorSpanRecordByHourAndLocation* where:

- 1) *ComponentTypeCode* = *CurrentMhvComponentType* AND
- 2) *SpanScaleCode* = "H"

If (*MonitorSpanRecordCount* > 1)  
return result A

Else if (*MonitorSpanRecordCount* = 0)  
return result B

Else  
*CurrentMonitorSpanRecord* = the single matched record

If *CurrentMonitorSpanRecord*.MPCValue > 0)

*CurrentMhvMaxMinValue* = *CurrentMonitorSpanRecord*.MPCValue

Else  
return result C

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You have more than one active High Range SpanScaleCode at the current location for the hour.	Critical Error Level 1
B	You have no active High Range SpanScaleCode at the current location for the hour.	Critical Error Level 1
C	The value in the reported span record for [param] is invalid.	Critical Error Level 1

## Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- MATS HF Concentration Monitor Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg Concentration Monitor Hourly Evaluation

**Check Code:** MATSMHV-12

**Check Name:** MATS: Unadjusted Value

**Related Former Checks:**

**Applicability:**

**Description:** Validates the value and format of the reported unadjusted hourly value.

**Specifications:**

*MonitorHourlyUnadjustedValueStatus* = false

*MatsMhvCalculatedValue* = null

If (*MonitorHourlyModcStatus* == true)

Case (*MatsMhvRecord*.ModcCode )

= 21:

If ( *CurrentOperatingDate* is on or after September 9, 2020 ) AND ( *MatsMhvRecord*.UnadjustedHourlyValue is NOT null ) AND ( the significant digits in *MatsDhvRecord*.UnadjustedHourlyValue equal 2 )

*MatsMhvCalculatedValue* = 0.0E0

Else

*MatsMhvCalculatedValue* = 0.00E0

If ( *MatsMhvRecord*.UnadjustedHourlyValue == 0.00E0 or 0.0E0 )

*MonitorHourlyUnadjustedValueStatus* = true

Else

return result A

= All Other Codes:

If (*MatsMhvRecord*.ModcCode in set *MatsMhvMeasuredModcList*)

If (*MatsMhvRecord*.UnadjustedHourlyValue is null)

return result B

Else if ( *MatsMhvRecord*.UnadjustedHourlyValue is NOT reported in scientific notation to 3 significant digits AND NOT 2 significant digits if *CurrentOperatingDate* is on or after September 9, 2020 )

return result C

Else if (*MatsMhvRecord*.UnadjustedHourlyValue < 0.00E0)

return result D

Else

*MonitorHourlyUnadjustedValueStatus* = true

*MatsMhvCalculatedValue* = *MatsMhvRecord*.UnadjustedHourlyValue

If ( *CurrentMhvMaxMinValue* is not null AND *MatsMhvRecord*.UnadjustedHourlyValue > *CurrentMhvMaxMinValue* )

return result E

Else

If (*MatsMhvRecord*.UnadjustedHourlyValue is not null)

return result F

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an MODCCode of 21 in the MATS Monitor Hourly Value record for [param], but the UnadjustedHourlyValue does not equal 0.	Critical Error Level 1
B	You reported a measured value MODCCode in the MATS Monitor Hourly Value record for [param] but did not report an UnadjustedHourlyValue.	Critical Error Level 1
C	The [fieldname] value in the [key] records is not reported in scientific notation rounded to three significant figures, with one digit to the left of the decimal point.	Critical Error Level 1
D	You reported a negative value, which is invalid, in the field [fieldname] for [key].	Critical Error Level 1
E	Warning: The UnadjustedHourlyValue reported in the MATS MHV record for [param] is in excess of the maximum value listed in the monitoring plan. Sources are required to periodically (at least once annually) evaluate the appropriateness of these maximum values in the monitoring plan and make proper adjustments when necessary. Adjustments may include the need to update range values. You should investigate the cause of these exceedances and determine whether adjustments to your monitoring systems or monitoring plan are necessary.	Informational Message
F	You did not report a measured value MODCCode in the MATS Monitor Hourly Value record for [param], but did report an UnadjustedHourlyValue.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- MATS HF Concentration Monitor Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg Concentration Monitor Hourly Evaluation

**Check Code:** MATSMHV-13

**Check Name:** MATS: QA Status Required and QA Status Parameters

**Related Former Checks:**

**Applicability:**

**Description:** Sets QA Status value and is required parameters.

**Specifications:**

Set *QaStatusComponentBeginDate* = *MatsMhvRecord.ComponentBeginDate*  
 Set *QaStatusComponentId* = *MatsMhvRecord.ComponentId*  
 Set *QaStatusComponentIdentifier* = *MatsMhvRecord.ComponentIdentifier*  
 Set *QaStatusComponentTypeCode* = *MatsMhvRecord.ComponentTypeCode*  
 Set *QaStatusSystemDesignationCode* = *MatsMhvRecord.SystemDesignationCode*  
 Set *QaStatusSystemId* = *MatsMhvRecord.SystemId*  
 Set *QaStatusSystemIdentifier* = *MatsMhvRecord.SystemIdentifier*  
 Set *QaStatusSystemTypeCode* = *MatsMhvRecord.SystemTypeCode*

If *MatsMhvRecord.ParameterCode* is equal to "HGC", "HCLC" or "HFC",

Locate the earliest record in *EmLocationProgramRecords* based on *EmissionsRecordingBeginDate* where:

- 1) *ProgramCode* is equal to 'MATS'.
- 2) *EmissionsRecordingBeginDate* is less than or equal to the Date of *CurrentDateHour*.
- 3) *EndDate* is null or is greater than or equal to the Date of *CurrentDateHour*.

if found

Set *QaStatusMatsErbDate* to *EmissionsRecordingBeginDate* in the record located in *LocationProgramRecords*.

else

Set *QaStatusMatsErbDate* to null.

else

Set *QaStatusMatsErbDate* to null.

Set *DailyCalStatusRequired* = false.  
 Set *LinearityStatusRequired* = false.  
 Set *QuarterlyGasAuditStatus* = false.  
 Set *RataStatusRequired* = false.  
 Set *WsiStatusRequired* = false.

if (*MonitorHourlyModeStatus* == true) AND (*MatsMhvRecord.ModeCode* in *MatsMhvMeasuredModcList*) AND (*MatsMhvRecord.UnadjustedHourlyValue* is not null)

if (*MonitorHourlyComponentStatus* = true) AND (*MatsMhvRecord.ComponentID* is not null)

if (*MatsMhvRecord.ParameterCode* is equal to "HGC")

If (*MatsMhvRecord.ComponentTypeCode* is equal to "HG")

Set *DailyCalStatusRequired* = true.  
 Set *LinearityStatusRequired* = true.  
 Set *WsiStatusRequired* = true.

else if (*MatsMhvRecord.ParameterCode* is in set {"HCLC", "HFC"})

Set *QuarterlyGasAuditStatus* = true.

if (*MonitorHourlySystemStatus* = true) AND (*MatsMhvRecord.MonitoringSystemID* is not null)

Set ***RataStatusRequired*** = true.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- MATS HF Concentration Monitor Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg Concentration Monitor Hourly Evaluation

**Check Code:** MATSMHV-14  
**Check Name:** MATS HgC: Complete  
**Related Former Checks:**

**Applicability:**  
**Description:** Assigns the calculated values for MATS Hg Concentration Monitor Hourly.  
**Specifications:**

*MatsMhvCalculatedHgCValue = MatsMhvCalculatedValue*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg Concentration Monitor Hourly Evaluation
---	-------------------	--

**Check Code:** MATSMHV-15

**Check Name:** MATS HCIC: Complete

**Related Former Checks:**

**Applicability:**

**Description:** Assigns the calculated values for MATS HCl Concentration Monitor Hourly.

**Specifications:**

*MatsMhvCalculatedHclcValue = MatsMhvCalculatedValue*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl Concentration Monitor Hourly Evaluation
---	-------------------	---

**Check Code:** MATSMHV-16  
**Check Name:** MATS HFC: Complete

**Related Former Checks:**

**Applicability:**

**Description:** Assigns the calculated values for MATS HF Concentration Monitor Hourly.

**Specifications:**

*MatsMhvCalculatedHfcValue = MatsMhvCalculatedValue*

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HF Concentration Monitor Hourly Evaluation
---	-------------------	--



**Check Code:** MATSMHV-17

**Check Name:** MATS: QA Status Analyzer Range Parameters

**Related Former Checks:**

**Applicability:**

**Description:** Sets analyzer range parameters for Linearity and Daily Calibration QA status checking.

**Specifications:**

If (*LinearityStatusRequired* == true) OR (*DailyCalStatusRequired* == true)

Set *DualRangeStatus* = false.

Set *ApplicableComponentID* = null.

Set *ApplicableSystemIDs* = null.

Set *CurrentAnalyzerRangeUsed* = null.

Set *HighRangeComponentID* = null.

Set *LowRangeComponentID* = null.

Locate a record in *AnalyzerRangeRecordsByHourLocation* for the hour and location where the ComponentID is equal to the *QaStatusComponentId*.

If (*AnalyzerRangeRecordsByHourLocation* is not found OR if more than one *AnalyzerRangeRecordsByHourLocation* is found)

Set *LinearityStatusRequired* = false

Set *DailyCalStatusRequired* = false

return result A

Else if (*AnalyzerRangeRecordsByHourLocation*.DualRangeIndicator = 1)

Set *LinearityStatusRequired* = false

Set *DailyCalStatusRequired* = false

return result B

Else if (*AnalyzerRangeRecordsByHourLocation*.AnalyzerRangeCode <> "H")

Set *LinearityStatusRequired* = false

Set *DailyCalStatusRequired* = false

return result C

Else

Set *CurrentAnalyzerRangeUsed* = *AnalyzerRangeRecordsByHourLocation*.AnalyzerRangeCode.

Set *ApplicableComponentID* = *QaStatusComponentId*.

Set *HighRangeComponentID* = *QaStatusComponentId*.

For each record in *MonitorSystemComponentRecordsByHourLocation* where the ComponentID is equal to the *ApplicableComponentID*

Append *MonitorSystemComponentRecordsByHourLocation*.SystemID to *ApplicableSystemIDs*.

if (*MonitorSystemComponentRecordsByHourLocation* is not found)

set *LinearityStatusRequired* = false

set *DailyCalStatusRequired* = false

return result D

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report one (and only one) valid Analyzer Range record in your monitoring plan for ComponentID [COMPID] for this hour. The QA Status of the linearity and/or daily calibration tests for this component will not be evaluated.	Critical Error Level 1
B	You reported that ComponentID [COMPID] is a dual range analyzer, but dual range analyzers are not allowed for MATS. The QA Status of the linearity and/or daily calibration tests for this component will not be evaluated.	Critical Error Level 1
C	You reported that ComponentID [COMPID] is not a high range analyzer, but only a high range analyzer is allowed for MATS. The QA Status of the linearity and/or daily calibration tests for this component will not be evaluated.	Critical Error Level 1
D	You did not report any System Component records for ComponentID [compid] in your monitoring plan for the hour. The QA Status of the linearity and/or daily calibration tests for this component will not be evaluated.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS HCl Concentration Monitor Hourly Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- MATS HF Concentration Monitor Hourly Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg Concentration Monitor Hourly Evaluation

**Check Code:** MATSMHV-19

**Check Name:** MATS HgC: 3-Level System Integrity Status Check

**Related Former Checks:**

**Applicability:**

**Description:** Ensures that a 3-Level system integrity was performed for a non-like-kind analyzer component. If a 120 or 125 certification event occurred, this check ensures that either 168 hours or 90/180 has not elapsed since the event, or that a 3-Level system integrity was performed after the event.

**Specifications:**

Set *MatsHg3LevelSiTesttRecord* to null.

Set *MatsHg3LevelSiEventRecord* to null.

Set *MatsHg3LevelSiMissingOpSuppData* to null.

If *WsiStatusRequired* is equal to true, AND *QaStatusComponentIdentifier* does not begin with "LK"

Set *CertEventRecord* to null.

Locate the most recent *Mats3LevelSystemIntegrityRecordsForQaStatus* record where:

- 1) ComponentID is equal to *QaStatusComponentId*.
- 2) EndDateHour is prior to *CurrentDateHour*, OR EndDateHour is *CurrentDateHour*, EndMinute is less than 45.
- 3) TestResult is equal to "PASSED" or "PASSAPS".

If found,

Set *MatsHg3LevelSiTesttRecord* to the located record in *Mats3LevelSystemIntegrityRecordsForQaStatus*.

If *MatsHg3LevelSiTesttRecord* is NOT null,

Locate the most recent record in *QACertificationEventRecords* where:

- 1a) QaCertEventDateHour is equal to *CurrentDateHour* and ConditionalBeginDateHour, OR
- 1b) QaCertEventDateHour is prior to *CurrentDateHour*.
- 2) ComponentID is equal to *QaStatusComponentId*.
- 3) QaCertEventCode is equal to "100", "101", "120" or "125".
- 4) QaCertEventDateHour is after *MatsHg3LevelSiTesttRecord*.EndDateHour.

If found,

Set *CertEventRecord* to the located record in *QACertificationEventRecords*

Else

Locate the most recent record in *QACertificationEventRecords* where:

- 1a) QaCertEventDateHour is equal to *CurrentDateHour* and ConditionalBeginDateHour, OR
- 1b) QaCertEventDateHour is prior to *CurrentDateHour*.
- 2) ComponentID is equal to *QaStatusComponentId*.
- 3) QaCertEventCode is equal to "100", "101", "120" or "125".

If found,

Set *CertEventRecord* to the located record in *QACertificationEventRecords*

If *CertEventRecord* is NOT null,

Set *MatsHg3LevelSiEventRecord* to *CertEventRecord*.

If *CertEventRecord*.ConditionalBeginDateHour is NOT null, AND is on or prior to *CurrentDateHour*,

Determine *ConditionalDataStatus*:

When *CertEventRecord.QaCertEventCode* is equal to "125":

- 1) If *QaStatusComponentBeginDate* is null, set *ConditionalDataStatus* to **EXPIRED**.
- 2) Locate a record in *LocationProgramRecordsByHourLocation* with the latest *UnitMonitorCertBeginDate* where *ProgramCode* equals "MATS" and *UnitMonitorCertBeginDate* is on or before *QaStatusComponentBeginDate*.
- 3) If not found, locate a record in *LocationProgramRecordsByHourLocation* with the latest *UnitMonitorCertBeginDate* where *ProgramCode* equals "MATS" and *EmissionsRecordingBeginDate* on or before *QaStatusComponentBeginDate*.
- 4) If a *LocationProgramRecordsByHourLocation* was not located, set *ConditionalDataStatus* to **MISSINGPROGRAM**.
- 5) Else if *UnitMonitorCertDeadline* of the located record is NOT null, AND is on or prior to the date of *CurrentDateHour*, set *ConditionalDataStatus* to **EXPIRED**.
- 6) Else if *UnitMonitorCertDeadline* of the located record is null, AND *UnitMonitorCertBeginDate* + 180 is on or prior to the date of *CurrentDateHour*, set *ConditionalDataStatus* to **EXPIRED**.
- 7) Otherwise set *ConditionalDataStatus* to **VALID**.

When *CertEventRecord.QaCertEventCode* is equal to "100", "101" or "120":

- 1) If *CertEventRecord.ConditionalBeginDateHour* is null, set *ConditionalDataStatus* to **EXPIRED**.
- 2) Else if the number of clock hours on or after *CertEventRecord.ConditionalBeginDateHour* and on or before *CurrentDateHour* is less than or equal to 168, set *ConditionalDataStatus* to **VALID**.
- 3) Else if *CertEventRecord.ConditionalBeginDateHour* and *CurrentDateHour* are in the same quarter,
  - a) Count the *HourlyOperatingDataRecordsForLocation* where:
    - *OpTime* is greater than 0.
    - *DateHour* is on or after *CertEventRecord.ConditionalBeginDateHour*.
    - *DateHour* is on or before *CurrentDateHour*.
  - b) If count is greater than 168, set *ConditionalDataStatus* to **EXPIRED**.
  - c) Otherwise set *ConditionalDataStatus* to **VALID**.
- 4) Else
  - /\* Grab the operating hours for the current quarter on or before the current hour \*/
  - a) Set *OperatingHoursCurrentQuarter* to:
    - The value of *RptPeriodOpHoursAccumulator.Array* for the location when it is not -1.
    - Otherwise, 0.
  - b) If *OperatingHoursCurrentQuarter* is greater than 168, set *ConditionalDataStatus* to **EXPIRED**.
  - /\* Find sum of Op Hours for supplemental record between the quarter of the event quarter and the current quarter \*/
  - c) Else set *OperatingHoursBetweenQuarters* to the sum of *OpValue* for *OperatingSuppDataRecordsByLocation* where:
    - *OpTypeCode* equals "OPHOURS".
    - *FuelCode* is null.
    - *ReportingPeriod* is for a quarter after the quarter of *CertEventRecord.ConditionalBeginDateHour* and before the quarter of *CurrentDateHour*.
  - /\* Determine whether the operating hours for the current and 'between' quarters exceed the allowed \*/
  - d) If *OperatingHoursCurrentQuarter* + *OperatingHoursBetweenQuarters* is greater than 168, set *ConditionalDataStatus* to **EXPIRED**.
  - /\* Stop checking if subsequent checks are affected by missing data \*/
  - e) Else if value of *RptPeriodOpHoursAccumulator.Array* for the location is -1, set *ConditionalDataStatus* to **MISSINGACCUM**.

f) Else if an **OperatingSuppDataRecordsByLocation** was missing for any quarter, set *ConditionalDataStatus* to **MISSINGOPSUPP** and append the quarter description to **MatsHg3LevelSiMissingOpSuppData**.  
 /\* Use QA Cert Event Supplemental Data for Conditional Begin Date if it exists \*/  
 g) Else if *CertEventRecord.ConditionalBeginHourSuppDataExists* is true.  
   i) If *OperatingHoursCurrentQuarter + OperatingHoursBetweenQuarters + CertEventRecord.ConditionalBeginOpHoursCount* is less than or equal to 168, set *ConditionalDataStatus* to **VALID**.  
   ii) Otherwise set *ConditionalDataStatus* to **EXPIRED**.  
 /\* Find Op Hours supplemental record for the quarter of the event \*/  
 h) Else set *OperatingHoursEventQuarter* to OpValue of the **OperatingSuppDataRecordsByLocation** where:  
   • OpTypeCode equals "OPHOURS".  
   • FuelCode is null.  
   • ReportingPeriod is the quarter of *CertEventRecord.ConditionalBeginDateHour*.  
 i) If a record was not found, set *ConditionalDataStatus* to **MISSINGOPSUPP** and append the quarter description to **MatsHg3LevelSiMissingOpSuppData**.  
 /\* Check whether assuming that every hour in the event quarter is operating would not exceed allowed \*/  
 j) Else if *OperatingHoursCurrentQuarter + OperatingHoursBetweenQuarters + OperatingHoursEventQuarter* is less than or equal to 168, set *ConditionalDataStatus* to **VALID**.  
 /\* Check whether assuming the minimum number of operating hours in the event quarter would exceeding allowed \*/  
 k) Else if *OperatingHoursEventQuarter* is greater than the number of clock hours in the quarter prior to *CertEventRecord.ConditionalBeginDateHour*,  
 l) And if *OperatingHoursCurrentQuarter + OperatingHoursBetweenQuarters + (OperatingHoursEventQuarter minus the number of prior clock hours)* is greater than 168,  
 m) Then set *ConditionalDataStatus* to **EXPIRED**  
 /\* Check that treating every calendar hour on or after the conditional data begin hour as an operating hour does not exceed allowed \*/  
 n) Else if *OperatingHoursEventQuarter* is greater than the number of clock hours in the quarter on or after *CertEventRecord.ConditionalBeginDateHour*,  
 o) And if *OperatingHoursCurrentQuarter + OperatingHoursBetweenQuarters + the number of on or after clock hours* is less than or equal to 168  
 p) Then set *ConditionalDataStatus* to **VALID**,  
 /\* Cannot determine whether allowed operating hours were exceeded because of uncertainty about operating hours in event quarter \*/  
 q) Else set *ConditionalDataStatus* to **UNDETERMINED**

If *ConditionalDataStatus* is equal to **EXPIRED**,

  If *SystemIntegrityRecord* is null,

    return result A.

  Else

    return result B.

Else if *ConditionalDataStatus* is equal to **UNDETERMINED**,

  If *SystemIntegrityRecord* is null,

    return result D.

  Else

    return result E.

Else if *ConditionalDataStatus* is equal to **MISSINGPROGRAM**,

return result F.

Else if *ConditionalDataStatus* is equal to **MISSINGACCUM**,

return result G.

Else if *ConditionalDataStatus* is equal to **MISSINGOPSUPP**,

return result H.

Else if *ConditionalDataStatus* is equal to **MISSINGVALUE**,

return result I.

Else

return result J.

Else if ***MatsHg3LevelSiTesttRecord*** is null

return result C.

Else if ***MatsHg3LevelSiTesttRecord.QaNeedsEvaluationFlag*** is equal to "Y",

return result K.

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The conditional data period for QACertEventCode [code] QACertEventDate [eventdate] for [key] has expired.	Critical Error Level 1
B	The conditional data period for QACertEventCode [code] QACertEventDate [eventdate] for [key] has expired. A prior test was ignored.	Critical Error Level 1
C	You did not report a prior [testtype] or certification event for [key].	Critical Error Level 1
D	The software could not determine if the current hour was within the conditional data period for QACertEventCode [code] QACertEventDate [eventdate] for [key]	Informational Message
E	The software could not determine if the current hour was within the conditional data period for QACertEventCode [code] QACertEventDate [eventdate] for [key]	Informational Message
F	The [testtype] status for [key] could not be determined, because a Unit Program record associated with the initial certification event for QACertEventCode [code] QACertEventDate [eventdate] either does not exist or has a UnitMonitorCertificationBeginDate inconsistent with the BeginDate of the associated Monitor System record.	Critical Error Level 1
G	The [testtype] status for [key] could not be determined, because the OperatingTime in at least one Hourly Operating Data records was missing or invalid.	Critical Error Level 1
H	The [testtype] status for [key] could not be determined, because the Op Supp Data record for OPHOURS, OSHOURS, or OPDAYS is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
I	A prior required parameter for check execution has failed to load. Please contact technical support.	Critical Error Level 1
J	You reported a QA Certification Event record for Component [key], QACertEventCode [code] and QACertEventDate [eventdate], but the conditional data period has not started.	Critical Error Level 1
K	The [testtype] status for [key] could not be determined, because the applicable prior [testtype] with TestNumber [testnum] has not yet been evaluated.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg Concentration Monitor Hourly Evaluation
---	-------------------	--

**Check Code:** MATSMHV-20

**Check Name:** MATS HgC: Linearity Status Check

**Related Former Checks:**

**Applicability:**

**Description:** Ensures that a Hg Linearity was performed for a non-like-kind analyzer component. If a 120 or 125 certification event occurred, this check ensures that either 168 hours or 90/180 has not elapsed since the event, or that an Hg Linearity was performed after the event.

**Specifications:**

Set *MatsHgLinearityTestRecord* to null.

Set *MatsHgLinearityEventRecord* to null.

Set *MatsHgLinearityMissingOpSuppData* to null.

If *WsiStatusRequired* is equal to true, AND *QaStatusComponentIdentifier* does not begin with "LK"

Set *CertEventRecord* to null.

Locate the most recent *Mats3LevelSystemIntegrityRecordsForQaStatus* record where:

- 1) ComponentID is equal to *QaStatusComponentId*.
- 2) EndDateHour is prior to *CurrentDateHour*, OR EndDateHour is *CurrentDateHour*, EndMinute is less than 45,
- 3) TestResult is equal to "PASSED" or "PASSAPS".

If found,

Set *MatsHgLinearityTestRecord* to the located record in *Mats3LevelSystemIntegrityRecordsForQaStatus*.

If *MatsHgLinearityTestRecord* is NOT null,

Locate the most recent record in *QACertificationEventRecords* where:

- 1a) QaCertEventDateHour is equal to *CurrentDateHour* and ConditionalBeginDateHour, OR
- 1b) QaCertEventDateHour is prior to *CurrentDateHour*.
- 2) ComponentID is equal to *QaStatusComponentId*.
- 3) QaCertEventCode is equal to "100", "101", "120" or "125".
- 4) QaCertEventDateHour is after *MatsHgLinearityTestRecord*.EndDateHour.

If found,

Set *CertEventRecord* to the located record in *QACertificationEventRecords*

Else

Locate the most recent record in *QACertificationEventRecords* where:

- 1a) QaCertEventDateHour is equal to *CurrentDateHour* and ConditionalBeginDateHour, OR
- 1b) QaCertEventDateHour is prior to *CurrentDateHour*.
- 2) ComponentID is equal to *QaStatusComponentId*.
- 3) QaCertEventCode is equal to "100", "101", "120" or "125".

If found,

Set *CertEventRecord* to the located record in *QACertificationEventRecords*

If *CertEventRecord* is NOT null

Set *MatsHgLinearityEventRecord* to *CertEventRecord*.

If *CertEventRecord*.ConditionalBeginDateHour is NOT null, AND is on or prior to *CurrentDateHour*,



Determine *ConditionalDataStatus*:

When *CertEventRecord.QaCertEventCode* is equal to "125":

- 1) If *QaStatusComponentBeginDate* is null, set *ConditionalDataStatus* to **EXPIRED**.
- 2) Locate a record in *LocationProgramRecordsByHourLocation* with the latest *UnitMonitorCertBeginDate* where *ProgramCode* equals "MATS" and *UnitMonitorCertBeginDate* is on or before *QaStatusComponentBeginDate*.
- 3) If not found, locate a record in *LocationProgramRecordsByHourLocation* with the latest *UnitMonitorCertBeginDate* where *ProgramCode* equals "MATS" and *EmissionsRecordingBeginDate* on or before *QaStatusComponentBeginDate*.
- 4) If a *LocationProgramRecordsByHourLocation* was not located, set *ConditionalDataStatus* to **MISSINGPROGRAM**.
- 5) Else if *UnitMonitorCertDeadline* of the located record is NOT null, AND is on or prior to the date of *CurrentDateHour*, set *ConditionalDataStatus* to **EXPIRED**.
- 6) Else if *UnitMonitorCertDeadline* of the located record is null, AND *UnitMonitorCertBeginDate* + 180 is on or prior to the date of *CurrentDateHour*, set *ConditionalDataStatus* to **EXPIRED**.
- 7) Otherwise set *ConditionalDataStatus* to **VALID**.

When *CertEventRecord.QaCertEventCode* is equal to "100", "101" or "120":

- 1) If *CertEventRecord.ConditionalBeginDateHour* is null, set *ConditionalDataStatus* to **EXPIRED**.
- 2) Else if the number of clock hours on or after *CertEventRecord.ConditionalBeginDateHour* and on or before *CurrentDateHour* is less than or equal to 168, set *ConditionalDataStatus* to **VALID**.
- 3) Else if *CertEventRecord.ConditionalBeginDateHour* and *CurrentDateHour* are in the same quarter,
  - a) Count the *HourlyOperatingDataRecordsForLocation* where:
    - OpTime is greater than 0.
    - DateHour is on or after *CertEventRecord.ConditionalBeginDateHour*.
    - DateHour is on or before *CurrentDateHour*.
  - b) If count is greater than 168, set *ConditionalDataStatus* to **EXPIRED**.
  - c) Otherwise set *ConditionalDataStatus* to **VALID**.
- 4) Else
  - /\* Grab the operating hours for the current quarter on or before the current hour \*/
  - a) Set *OperatingHoursCurrentQuarter* to:
    - The value of *RptPeriodOpHoursAccumulatorArray* for the location when it is not -1.
    - Otherwise, 0.
  - b) If *OperatingHoursCurrentQuarter* is greater than 168, set *ConditionalDataStatus* to **EXPIRED**.
  - /\* Find sum of Op Hours for supplemental record between the quarter of the event quarter and the current quarter \*/
  - c) Else set *OperatingHoursBetweenQuarters* to the sum of OpValue for *OperatingSuppDataRecordsByLocation* where:
    - OpTypeCode equals "OPHOURS".
    - FuelCode is null.
    - ReportingPeriod is for a quarter after the quarter of *CertEventRecord.ConditionalBeginDateHour* and before the quarter of *CurrentDateHour*.
  - /\* Determine whether the operating hours for the current and 'between' quarters exceed the allowed \*/
  - d) If *OperatingHoursCurrentQuarter* + *OperatingHoursBetweenQuarters* is greater than 168, set *ConditionalDataStatus* to **EXPIRED**.
  - /\* Stop checking if subsequent checks are affected by missing data \*/
  - e) Else if value of *RptPeriodOpHoursAccumulatorArray* for the location is -1, set

*ConditionalDataStatus* to **MISSINGACCUM**.

f) Else if an **OperatingSuppDataRecordsByLocation** was missing for any quarter, set *ConditionalDataStatus* to **MISSINGOPSUPP** and append the quarter description to **MatsHgLinearityMissingOpSuppData**.

/\* Use QA Cert Event Supplemental Data for Conditional Begin Date if it exists \*/

g) Else if *CertEventRecord.ConditionalBeginHourSuppDataExists* is true.

i) If *OperatingHoursCurrentQuarter + OperatingHoursBetweenQuarters + CertEventRecord.ConditionalBeginOpHoursCount* is less than or equal to 168, set *ConditionalDataStatus* to **VALID**.

ii) Otherwise set *ConditionalDataStatus* to **EXPIRED**.

/\* Find Op Hours supplemental record for the quarter of the event \*/

h) Else set *OperatingHoursEventQuarter* to OpValue of the

**OperatingSuppDataRecordsByLocation** where:

- OpTypeCode equals "OPHOURS".

- FuelCode is null.

- ReportingPeriod is the quarter of *CertEventRecord.ConditionalBeginDateHour*.

i) If a record was not found, set *ConditionalDataStatus* to **MISSINGOPSUPP** and append the quarter description to **MatsHgLinearityMissingOpSuppData**.

/\* Check whether assuming that every hour in the event quarter is operating would not exceed allowed \*/

j) Else if *OperatingHoursCurrentQuarter + OperatingHoursBetweenQuarters + OperatingHoursEventQuarter* is less than or equal to 168, set *ConditionalDataStatus* to **VALID**.

/\* Check whether assuming the minimum number of operating hours in the event quarter would exceeding allowed \*/

k) Else if *OperatingHoursEventQuarter* is greater than the number of clock hours in the quarter prior to *CertEventRecord.ConditionalBeginDateHour*,

l) And if *OperatingHoursCurrentQuarter + OperatingHoursBetweenQuarters + (OperatingHoursEventQuarter minus the number of prior clock hours)* is greater than 168,

m) Then set *ConditionalDataStatus* to **EXPIRED**

/\* Check that treating every calendar hour on or after the conditional data begin hour as an operating hour does not exceed allowed \*/

n) Else if *OperatingHoursEventQuarter* is greater than the number of clock hours in the quarter on or after *CertEventRecord.ConditionalBeginDateHour*,

o) And if *OperatingHoursCurrentQuarter + OperatingHoursBetweenQuarters + the number of on or after clock hours* is less than or equal to 168

p) Then set *ConditionalDataStatus* to **VALID**,

/\* Cannot determine whether allowed operating hours were exceeded because of uncertainty about operating hours in event quarter \*/

q) Else set *ConditionalDataStatus* to **UNDETERMINED**

If *ConditionalDataStatus* is equal to **EXPIRED**,

    If *HgLinearityRecord* is null,

        return result A.

    Else

        return result B.

Else if *ConditionalDataStatus* is equal to **UNDETERMINED**,

    If *HgLinearityRecord* is null,

        return result D.

    Else

return result E.

Else if *ConditionalDataStatus* is equal to **MISSINGPROGRAM**,

return result F.

Else if *ConditionalDataStatus* is equal to **MISSINGACCUM**,

return result G.

Else if *ConditionalDataStatus* is equal to **MISSINGOPSUPP**,

return result H.

Else if *ConditionalDataStatus* is equal to **MISSINGVALUE**,

return result I.

Else

return result J.

Else if ***MatsHgLinearityTestRecord*** is null

return result C.

Else if ***MatsHgLinearityTestRecord.QaNeedsEvaluationFlag*** is equal to "Y",

return result K.

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	The conditional data period for QACertEventCode [code] QACertEventDate [eventdate] for [key] has expired.	Critical Error Level 1
B	The conditional data period for QACertEventCode [code] QACertEventDate [eventdate] for [key] has expired. A prior test was ignored.	Critical Error Level 1
C	You did not report a prior [testtype] or certification event for [key].	Critical Error Level 1
D	The software could not determine if the current hour was within the conditional data period for QACertEventCode [code] QACertEventDate [eventdate] for [key]	Informational Message
E	The software could not determine if the current hour was within the conditional data period for QACertEventCode [code] QACertEventDate [eventdate] for [key]	Informational Message
F	The [testtype] status for [key] could not be determined, because a Unit Program record associated with the initial certification event for QACertEventCode [code] QACertEventDate [eventdate] either does not exist or has a UnitMonitorCertificationBeginDate inconsistent with the BeginDate of the associated Monitor System record.	Critical Error Level 1
G	The [testtype] status for [key] could not be determined, because the OperatingTime in at least one Hourly Operating Data records was missing or invalid.	Critical Error Level 1
H	The [testtype] status for [key] could not be determined, because the Op Supp Data record for OPHOURS, OSHOURS, or OPDAYS is missing for one or more previous reporting periods. If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
I	A prior required parameter for check execution has failed to load. Please contact technical support.	Critical Error Level 1
J	You reported a QA Certification Event record for Component [key], QACertEventCode [code] and QACertEventDate [eventdate], but the conditional data period has not started.	Critical Error Level 1
K	The [testtype] status for [key] could not be determined, because the applicable prior [testtype] with TestNumber [testnum] has not yet been evaluated.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Hg Concentration Monitor Hourly Evaluation
---	-------------------	--

**Check Category:**

**MATS Operating Hour Checks**

**Check Code:** MATSHOD-1

**Check Name:** MATS Hg: Locate Active Monitor Method

**Related Former Checks:**

**Applicability:**

**Description:** Locates the active Monitor Method record with Parameter Code equal to 'HGRE' or 'HGRH' and for the current hour and location. Returns a negative result if more than one active record is found. Returns the record and the Parameter Code in the record as output parameters if one record is found.

**Specifications:**

Set *MatsHgMethodRecord* to null.

Set *MatsHgParameterCode* to null.

Set *MatsHgMethodCode* to null.

If *DerivedHourlyChecksNeeded* is equal to true,

Locate *MonitorMethodRecordsByHourLocation* records where ParameterCode is equal to "HGRE" or "HGRH".

If more than one record was located,

return result A

Else if one record was located,

Set *MatsHgMethodRecord* to the located record.

Set *MatsHgParameterCode* to *MatsHgMethodRecord*.ParameterCode.

Set *MatsHgMethodCode* to *MatsHgMethodRecord*.MethodCode.

If *MatsHgMethodCode* is equal to "ST" or "CEMST",,

Set *FlowMhvOptionallyAllowed* to true.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one monitoring method record for [param] for the hour and location.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** MATSHOD-2

**Check Name:** MATS HCl: Locate Active Monitor Method

**Related Former Checks:**

**Applicability:**

**Description:** Locates the active Monitor Method record with Parameter Code equal to 'HCLRE' or 'HCLRH' and for the current hour and location. Returns a negative result if more than one active record is found. Returns the record and the Parameter Code in the record as output parameters if one record is found.

**Specifications:**

Set *MatsHclMethodRecord* to null.

Set *MatsHclParameterCode* to null.

Set *MatsHclMethodCode* to null.

If *DerivedHourlyChecksNeeded* is equal to true,

Locate *MonitorMethodRecordsByHourLocation* records where ParameterCode is equal to "HCLRE" or "HCLRH".

If more than one record was located,

return result A

Else if one record was located,

Set *MatsHclMethodRecord* to the located record.

Set *MatsHclParameterCode* to *MatsHclMethodRecord*.ParameterCode.

Set *MatsHclMethodCode* to *MatsHclMethodRecord*.MethodCode.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one monitoring method record for [param] for the hour and location.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Operating Hour Evaluation
---	-------------------	--

**Check Code:** MATSHOD-3

**Check Name:** MATS HF: Locate Active Monitor Method

**Related Former Checks:**

**Applicability:**

**Description:** Locates the active Monitor Method record with Parameter Code equal to 'HFRE' or 'HFRH' and for the current hour and location. Returns a negative result if more than one active record is found. Returns the record and the Parameter Code in the record as output parameters if one record is found.

**Specifications:**

Set *MatsHfMethodRecord* to null.

Set *MatsHfParameterCode* to null.

Set *MatsHfMethodCode* to null.

If *DerivedHourlyChecksNeeded* is equal to true,

Locate *MonitorMethodRecordsByHourLocation* records where ParameterCode is equal to "HFRE" or "HFRH".

If more than one record was located,

return result A

Else if one record was located,

Set *MatsHfMethodRecord* to the located record.

Set *MatsHfParameterCode* to *MatsHfMethodRecord*.ParameterCode.

Set *MatsHfMethodCode* to *MatsHfMethodRecord*.MethodCode.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one monitoring method record for [param] for the hour and location.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Operating Hour Evaluation



**Check Code:** MATSHOD-4

**Check Name:** MATS SO2: Locate Active Monitor Method

**Related Former Checks:**

**Applicability:**

**Description:** Locates the active Monitor Method record with Parameter Code equal to 'SO2RE' or 'SO2RH' and for the current hour and location. Returns a negative result if more than one active record is found. Returns the record and the Parameter Code in the record as output parameters if one record is found.

**Specifications:**

Set *MatsSo2MethodRecord* to null.

Set *MatsSo2ParameterCode* to null.

Set *MatsSo2MethodCode* to null.

If *DerivedHourlyChecksNeeded* is equal to true,

Locate *MonitorMethodRecordsByHourLocation* records where ParameterCode is equal to "SO2RE" or "SO2RH".

If more than one record was located,

return result A

Else if one record was located,

Set *MatsSo2MethodRecord* to the located record.

Set *MatsSo2ParameterCode* to *MatsSo2MethodRecord*.ParameterCode.

Set *MatsSo2MethodCode* to *MatsSo2MethodRecord*.MethodCode.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported more than one monitoring method record for [param] for the hour and location.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Operating Hour Evaluation

Check Code:MATSHOD-5

Check Name:MATS: Set MATS Expected Flag

Related Former Checks:

Applicability:

Description:Uses whether MATS Hg Method Code, MATS HCl Method Code, MATS HF Method Code or MATS SO2 Method Code is not null to determine whether MATS is expected.

Specifications:

If *MatsHgParameterCode*, *MatsHclParameterCode*, *MatsHfParameterCode* or *MatsSo2ParameterCode* is not null,  
Set *MatsExpected* to true.

Else  
Set *MatsExpected* to false.

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Operating Hour Evaluation
---	-------------------	--

**Check Code:** MATSHOD-6

**Check Name:** MATS Hg: Locate Derived Hourly Record

**Related Former Checks:**

**Applicability:**

**Description:** Locates the MATS Derived Hourly record with Parameter Code equal to 'HGRE' or 'HGRH' and for the current hour and location. Returns a negative result if more than one active record is found. Returns the record, flags indicating whether 'HGRE' or 'HGRH' checks are needed, and a flag indicating that Hg Concentration is needed, if one record is found.

**Specifications:**

Set *MatsHgreDhvChecksNeeded* to false.

Set *MatsHgrhDhvChecksNeeded* to false.

Set *MatsHgcNeeded* to false.

Set *MatsHgDhvRecord* to null.

Set *MatsHgDhvParameterDescription* to "MATS Hg Rate".

If *DerivedHourlyChecksNeeded* is equal to true,

Set *RecordCount* equal to the number of records in *MatsDhvRecordsByHourLocation* where ParameterCode is equal to "HGRE" or "HGRH".

If *CurrentHourlyOpRecord*.OperatingTime is greater than 0

If *MatsHgParameterCode* is null,

If *RecordCount* is greater than 0,

return result A.

Else /\* Method Exists for Hg \*/

If *RecordCount* is equal to 0,

return result E

Else if *RecordCount* is greater than 1,

return result B.

Else /\* *RecordCount* is equal to 1 \*/

Set *MatsHgDhvRecord* to the located *MatsDhvRecordsByHourLocation* record  
Append *MatsHgDhvRecord*.UnadjustedHourlyValue to *ApportionmentHgRateArray*  
Append *MatsHgDhvRecord*.ModcCode to *MatsMS1HgModcCodeArray*

If *MatsHgDhvRecord*.ParameterCode is equal to *MatsHgParameterCode*

If *MatsHgMethodCode* is equal to "CALC",

If *MatsHgDhvRecord*.EquationCode is null,

If *MatsHgDhvRecord*.ModcCode is NOT equal to "38",  
return result F.

Else  
return result H.

Else

If *MatsHgDhvRecord*.EquationCode is NOT equal to "MS-1",  
 return result F.  
 Else if *MatsHgDhvRecord*.ModeCode is NOT equal to "38",  
 Set *MatsMslHgDhvId* to *MatsHgDhvRecord*.MatsDhvId  
 Set *MatsMslHgUnadjustedHrlyValue* to  
*MatsHgDhvRecord*.UnadjustedHrlyValue  
 Set *MatsParameterPluginHg* to *MatsHgDhvRecord*.ParameterCode

Else

If *MatsHgDhvRecord*.EquationCode is equal to "MS-1",  
 return result G.

Else

Set *MatsHgcNeeded* to true.

If *MatsHgDhvRecord*.ParameterCode is equal to 'HGRE',

Set *MatsHgreDhvChecksNeeded* to true.

Else if *MatsHgDhvRecord*.ParameterCode is equal to 'HGRH',

Set *MatsHgrhDhvChecksNeeded* to true.

Else /\* DHV and Method parameter code mismatch \*/

return result C.

Else /\* Non Operating Hour \*/

If *RecordCount* is greater than 0,

return result D.

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	MATS Derived Hourly Value records were reported for [param], but no supporting method exists.	Critical Error Level 1
B	You reported more than one MATS Derived Hourly Value records for [param] for the hour.	Critical Error Level 1
C	MATS Derived Hourly Value records were reported for [param], but no supporting method exists.	Critical Error Level 1
D	You reported MATS Derived Hourly Value records for [param] that are not reported if the unit did not operate in the hour.	Critical Error Level 1
E	No required MATS Derived Hourly Value records were reported for [param].	Critical Error Level 1
F	The reported MATS method code is equal to "CALC." However, the appropriate Formula Code "MS-1" has not been reported.	Critical Error Level 1
G	The reported Formula Code of "MS-1" is inconsistent with the reported MATS Method Code.	Critical Error Level 1
H	The reported MATS method code is equal to "CALC." However, the appropriate Formula Code "MS-1" has not been reported.	Critical Error Level 1

## Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** MATSHOD-7

**Check Name:** MATS HCl: Locate Derived Hourly Record

**Related Former Checks:**

**Applicability:**

**Description:** Locates the MATS Derived Hourly record with Parameter Code equal to 'HCLRE' or 'HCLRH' and for the current hour and location. Returns a negative result if more than one active record is found. Returns the record, flags indicating whether 'HCLRE' or 'HCLRH' checks are needed, and a flag indicating that Hg Concentration is needed, if one record is found.

**Specifications:**

Set *MatsHclreDhvChecksNeeded* to false.

Set *MatsHclrhDhvChecksNeeded* to false.

Set *MatsHclcNeeded* to false.

Set *MatsHclDhvRecord* to null.

Set *MatsHclDhvParameterDescription* to "MATS HCl Rate".

If *DerivedHourlyChecksNeeded* is equal to true,

Set *RecordCount* equal to the number of records in *MatsDhvRecordsByHourLocation* where *ParameterCode* is equal to "HCLRE" or "HCLRH".

If *CurrentHourlyOpRecord*.*OperatingTime* is greater than 0

If *MatsHclParameterCode* is null,

If *RecordCount* is greater than 0,

return result A.

Else /\* Method Exists for HCl \*/

If *RecordCount* is equal to 0,

return result E

Else if *RecordCount* is greater than 1,

return result B.

Else /\* *RecordCount* is equal to 1 \*/

Set *MatsHclDhvRecord* to the located *MatsDhvRecordsByHourLocation* record.

Append *MatsHclDhvRecord*.*UnadjustedHourlyValue* to *ApportionmentHclRateArray*

Append *MatsHclDhvRecord*.*ModcCode* to *MatsMS1HclModcCodeArray*

If *MatsHclDhvRecord*.*ParameterCode* is equal to *MatsHclParameterCode*

If *MatsHclMethodCode* is equal to "CALC",

If *MatsHclDhvRecord*.*EquationCode* is null,

If *MatsHgDhvRecord*.*ModcCode* is NOT equal to "38",  
return result F.

Else  
return result H.

Else

```

    If MatsHclDhvRecord.EquationCode is NOT equal to "MS-1",
        return result F.
    Else if MatsHclDhvRecord.ModeCode is NOT equal to "38",
        Set MatsMslHclDhvId to MatsHclDhvRecord.MatsDhvId
        Set MatsMslHclUnadjustedHrlyValue to
            MatsHclDhvRecord.UnadjustedHrlyValue
        Set MatsParameterPluginHcl to MatsHclDhvRecord.ParameterCode
    Else

        If MatsHclDhvRecord.EquationCode is equal to "MS-1",

            return result G.

        Else

            Set MatsHclcNeeded to true.

            If MatsHclDhvRecord.ParameterCode is equal to 'HCLRE',

                Set MatsHclreDhvChecksNeeded to true.

            Else if MatsHclDhvRecord.ParameterCode is equal to 'HCLRH',

                Set MatsHclrhDhvChecksNeeded to true.

        Else /* DHV and Method parameter code mismatch */

            return result C.

    Else /* Non Operating Hour */

        If RecordCount is greater than 0,

            return result D.

```

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	MATS Derived Hourly Value records were reported for [param], but no supporting method exists.	Critical Error Level 1
B	You reported more than one MATS Derived Hourly Value records for [param] for the hour.	Critical Error Level 1
C	MATS Derived Hourly Value records were reported for [param], but no supporting method exists.	Critical Error Level 1
D	You reported MATS Derived Hourly Value records for [param] that are not reported if the unit did not operate in the hour.	Critical Error Level 1
E	No required MATS Derived Hourly Value records were reported for [param].	Critical Error Level 1
F	The reported MATS method code is equal to "CALC." However, the appropriate Formula Code "MS-1" has not been reported.	Critical Error Level 1
G	The reported Formula Code of "MS-1" is inconsistent with the reported MATS Method Code.	Critical Error Level 1
H	The reported MATS method code is equal to "CALC." However, the appropriate Formula Code "MS-1" has not been reported.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** MATSHOD-8

**Check Name:** MATS HF: Locate Derived Hourly Record

**Related Former Checks:**

**Applicability:**

**Description:** Locates the MATS Derived Hourly record with Parameter Code equal to 'HFRE' or 'HFRH' and for the current hour and location. Returns a negative result if more than one active record is found. Returns the record, flags indicating whether 'HFRE' or 'HFRH' checks are needed, and a flag indicating that Hg Concentration is needed, if one record is found.

**Specifications:**

Set *MatsHfreDhvChecksNeeded* to false.

Set *MatsHfrhDhvChecksNeeded* to false.

Set *MatsHfcNeeded* to false.

Set *MatsHfDhvRecord* to null.

Set *MatsHfDhvParameterDescription* to "MATS HF Rate".

If *DerivedHourlyChecksNeeded* is equal to true,

Set *RecordCount* equal to the number of records in *MatsDhvRecordsByHourLocation* where *ParameterCode* is equal to "HFRE" or "HFRH".

If *CurrentHourlyOpRecord*.*OperatingTime* is greater than 0

If *MatsHfParameterCode* is null,

If *RecordCount* is greater than 0,

return result A.

Else /\* Method Exists for HF \*/

If *RecordCount* is equal to 0,

return result E

Else if *RecordCount* is greater than 1,

return result B.

Else /\* *RecordCount* is equal to 1 \*/

Set *MatsHfDhvRecord* to the located *MatsDhvRecordsByHourLocation* record.

Append *MatsHfDhvRecord*.*UnadjustedHourlyValue* to *ApportionmentHfRateArray*

Append *MatsHfDhvRecord*.*ModcCode* to *MatsMS1HfModcCodeArray*

If *MatsHfDhvRecord*.*ParameterCode* is equal to *MatsHfParameterCode*

If *MatsHfMethodCode* is equal to "CALC",

If *MatsHfDhvRecord*.*EquationCode* is null,

If *MatsHfDhvRecord*.*ModcCode* is NOT equal to "38",  
return result F.

Else  
return result H.

Else

If *MatsHfDhvRecord*.EquationCode is NOT equal to "MS-1",  
 return result F.  
 Else if *MatsHfDhvRecord*.ModcCode is NOT equal to "38",  
 Set *MatsMslHfDhvId* to *MatsHfDhvRecord*.MatsDhvId  
 Set *MatsMslHfUnadjustedHrlyValue* to  
*MatsHfDhvRecord*.UnadjustedHrlyValue  
 Set *MatsParameterPluginHf* to *MatsHfDhvRecord*.ParameterCode

Else

If *MatsHfDhvRecord*.EquationCode is equal to "MS-1",  
 return result G.

Else

Set *MatsHfcNeeded* to true.

If *MatsHfDhvRecord*.ParameterCode is equal to 'HFRE',

Set *MatsHfreDhvChecksNeeded* to true.

Else if *MatsHfDhvRecord*.ParameterCode is equal to 'HFRH',

Set *MatsHfrhDhvChecksNeeded* to true.

Else /\* DHV and Method parameter code mismatch \*/

return result C.

Else /\* Non Operating Hour \*/

If *RecordCount* is greater than 0,

return result D.

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	MATS Derived Hourly Value records were reported for [param], but no supporting method exists.	Critical Error Level 1
B	You reported more than one MATS Derived Hourly Value records for [param] for the hour.	Critical Error Level 1
C	MATS Derived Hourly Value records were reported for [param], but no supporting method exists.	Critical Error Level 1
D	You reported MATS Derived Hourly Value records for [param] that are not reported if the unit did not operate in the hour.	Critical Error Level 1
E	No required MATS Derived Hourly Value records were reported for [param].	Critical Error Level 1
F	The reported MATS method code is equal to "CALC." However, the appropriate Formula Code "MS-1" has not been reported.	Critical Error Level 1
G	The reported Formula Code of "MS-1" is inconsistent with the reported MATS Method Code.	Critical Error Level 1
H	The reported MATS method code is equal to "CALC." However, the appropriate Formula Code "MS-1" has not been reported.	Critical Error Level 1

## Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Operating Hour Evaluation



**Check Code:** MATSHOD-9

**Check Name:** MATS SO2: Locate Derived Hourly Record

**Related Former Checks:**

**Applicability:**

**Description:** Locates the MATS Derived Hourly record with Parameter Code equal to 'SO2RE' or 'SO2RH' and for the current hour and location. Returns a negative result if more than one active record is found. Returns the record, flags indicating whether 'SO2RE' or 'SO2RH' checks are needed, and a flag indicating that Hg Concentration is needed, if one record is found.

**Specifications:**

Set *MatsSo2reDhvChecksNeeded* to false.

Set *MatsSo2rhDhvChecksNeeded* to false.

Set *MatsSo2cNeeded* to false.

Set *MatsSo2DhvRecord* to null.

Set *MatsSo2DhvParameterDescription* to "MATS SO2 Rate".

If *DerivedHourlyChecksNeeded* is equal to true,

Set *RecordCount* equal to the number of records in *MatsDhvRecordsByHourLocation* where *ParameterCode* is equal to "SO2RE" or "SO2RH".

If *CurrentHourlyOpRecord*.*OperatingTime* is greater than 0

If *MatsSo2ParameterCode* is null,

If *RecordCount* is greater than 0,

return result A.

Else /\* Method Exists for SO2 Surrogate \*/

If *RecordCount* is equal to 0,

return result E

Else if *RecordCount* is greater than 1,

return result B.

Else /\* *RecordCount* is equal to 1 \*/

Set *MatsSo2DhvRecord* to the located *MatsDhvRecordsByHourLocation* record.

Append *MatsSo2DhvRecord*.*UnadjustedHourlyValue* to *ApportionmentSo2RateArray*

Append *MatsSo2DhvRecord*.*ModcCode* to *MatsMS1So2ModcCodeArray*

If *MatsSo2DhvRecord*.*ParameterCode* is equal to *MatsSo2ParameterCode*

If *MatsSo2MethodCode* is equal to "CALC",

If *MatsSo2DhvRecord*.*EquationCode* is null,

If *MatsHgDhvRecord*.*ModcCode* is NOT equal to "38",  
return result F.

Else  
return result H.

Else

If *MatsSo2DhvRecord*.EquationCode is NOT equal to "MS-1",  
 return result F.  
 Else if *MatsSo2DhvRecord*.ModeCode is NOT equal to "38",  
 Set *MatsMs1So2DhvId* to *MatsSo2DhvRecord*.MatsDhvId  
 Set *MatsMs1So2UnadjustedHrlyValue* to  
*MatsSo2DhvRecord*.UnadjustedHrlyValue  
 Set *MatsParameterPluginSo2* to *MatsSo2DhvRecord*.ParameterCode

Else

If *MatsSo2DhvRecord*.EquationCode is equal to "MS-1",  
 return result G.

Else

Set *MatsSo2cNeeded* to true.

If *MatsSo2DhvRecord*.ParameterCode is equal to 'SO2RE',

Set *MatsSo2reDhvChecksNeeded* to true.

Else if *MatsSo2DhvRecord*.ParameterCode is equal to 'SO2RH',

Set *MatsSo2rhDhvChecksNeeded* to true.

Else /\* DHV and Method parameter code mismatch \*/

return result C.

Else /\* Non Operating Hour \*/

If *RecordCount* is greater than 0,

return result D.

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	MATS Derived Hourly Value records were reported for [param], but no supporting method exists.	Critical Error Level 1
B	You reported more than one MATS Derived Hourly Value records for [param] for the hour.	Critical Error Level 1
C	MATS Derived Hourly Value records were reported for [param], but no supporting method exists.	Critical Error Level 1
D	You reported MATS Derived Hourly Value records for [param] that are not reported if the unit did not operate in the hour.	Critical Error Level 1
E	No required MATS Derived Hourly Value records were reported for [param].	Critical Error Level 1
F	The reported MATS method code is equal to "CALC." However, the appropriate Formula Code "MS-1" has not been reported.	Critical Error Level 1
G	The reported Formula Code of "MS-1" is inconsistent with the reported MATS Method Code.	Critical Error Level 1
H	The reported MATS method code is equal to "CALC." However, the appropriate Formula Code "MS-1" has not been reported.	Critical Error Level 1

## Usage:

1 Process/Category: Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** MATSHOD-10

**Check Name:** MATS Hg: Locate Monitor Hourly Record

**Related Former Checks:**

**Applicability:**

**Description:** Locates the MATS Monitor Hourly record with Parameter Code equal to 'HGC' and for the current hour and location. Returns a negative result if more than one active record is found. Returns the record and a flag indicating whether 'HGC' checks are needed, if one record is found.

Additionally, if the system type of the HGC MHV record is "ST", the check sets FlowMonitorHourlyChecksNeeded to true.

**Specifications:**

Set *MatsHgcMhvChecksNeeded* to false.

Set *MatsHgcMhvRecord* to null.

If *DerivedHourlyChecksNeeded* is equal to true,

Set *RecordCount* equal to the number of records in *MatsMhvHgcRecordsByHourLocation*.

If *CurrentHourlyOpRecord*.OperatingTime is greater than 0,

If *MatsHgcNeeded* is equal to false,

If *RecordCount* is greater than 0,

return result A.

Else if *RecordCount* is equal to 0,

return result B.

Else if *RecordCount* is greater than 1,

return result C.

Else /\* *RecordCount* is equal to 1 \*/

Set *MatsHgcMhvRecord* to the located *MatsMhvHgcRecordsByHourLocation* record.

Set *MatsHgcMhvChecksNeeded* to true.

If *MatsHgcMhvRecord*.SystemTypeCode is equal to "ST",

*FlowMonitorHourlyChecksNeeded* = true

Else /\* Non Operating Hour \*/

If *RecordCount* is greater than 0,

return result D.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported a MATS Monitor Hourly Value for [param], but did not report either a MATS Derived Hourly Value or monitoring method for that pollutant.	Critical Error Level 1
B	You did not report a MATS Hourly Monitor Value record for [param], though reporting a MATS Derived Hourly Value for the hour.	Critical Error Level 1
C	You reported more than one [param] MATS Monitor Hourly Value for the hour.	Critical Error Level 1
D	You reported a MATS Hourly Monitor Value record for [param] for a non-operating hour.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** MATSHOD-11

**Check Name:** MATS HCl: Locate Monitor Hourly Record

**Related Former Checks:**

**Applicability:**

**Description:** Locates the MATS Monitor Hourly record with Parameter Code equal to 'HCLC' and for the current hour and location. Returns a negative result if more than one active record is found. Returns the record and a flag indicating whether 'HCLC' checks are needed, if one record is found.

**Specifications:**

Set *MatsHclcMhvChecksNeeded* to false.

Set *MatsHclcMhvRecord* to null.

If *DerivedHourlyChecksNeeded* is equal to true,

Set *RecordCount* equal to the number of records in *MatsMhvHclcRecordsByHourLocation*.

If *CurrentHourlyOpRecord*.OperatingTime is greater than 0

If *MatsHclcNeeded* is equal to false,

If *RecordCount* is greater than 0,

return result A.

Else if *RecordCount* is equal to 0,

return result B.

Else if *RecordCount* is greater than 1,

return result C.

Else /\* *RecordCount* is equal to 1 \*/

Set *MatsHclcMhvRecord* to the located *MatsMhvHclcRecordsByHourLocation* record.

Set *MatsHclcMhvChecksNeeded* to true.

Else /\* Non Operating Hour \*/

If *RecordCount* is greater than 0,

return result D.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported a MATS Monitor Hourly Value for [param], but did not report either a MATS Derived Hourly Value or monitoring method for that pollutant.	Critical Error Level 1
B	You did not report a MATS Hourly Monitor Value record for [param], though reporting a MATS Derived Hourly Value for the hour.	Critical Error Level 1
C	You reported more than one [param] MATS Monitor Hourly Value for the hour.	Critical Error Level 1
D	You reported a MATS Hourly Monitor Value record for [param] for a non-operating hour.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Operating Hour Evaluation

**Check Code:** MATSHOD-12

**Check Name:** MATS HF: Locate Monitor Hourly Record

**Related Former Checks:**

**Applicability:**

**Description:** Locates the MATS Monitor Hourly record with Parameter Code equal to 'HFC' and for the current hour and location. Returns a negative result if more than one active record is found. Returns the record and a flag indicating whether 'HFC' checks are needed, if one record is found.

**Specifications:**

Set *MatsHfcMhvChecksNeeded* to false.

Set *MatsHfcMhvRecord* to null.

If *DerivedHourlyChecksNeeded* is equal to true,

Set *RecordCount* equal to the number of records in *MatsMhvHfcRecordsByHourLocation* where ParameterCode is equal to "HFC".

If *CurrentHourlyOpRecord*.OperatingTime is greater than 0

If *MatsHfcNeeded* is equal to false,

If *RecordCount* is greater than 0,

return result A.

Else if *RecordCount* is equal to 0,

return result B.

Else if *RecordCount* is greater than 1,

return result C.

Else /\* *RecordCount* is equal to 1 \*/

Set *MatsHfcMhvRecord* to the located *MatsMhvHfcRecordsByHourLocation* record.

Set *MatsHfcMhvChecksNeeded* to true.

Else /\* Non Operating Hour \*/

If *RecordCount* is greater than 0,

return result D.

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported a MATS Monitor Hourly Value for [param], but did not report either a MATS Derived Hourly Value or monitoring method for that pollutant.	Critical Error Level 1
B	You did not report a MATS Hourly Monitor Value record for [param], though reporting a MATS Derived Hourly Value for the hour.	Critical Error Level 1
C	You reported more than one [param] MATS Monitor Hourly Value for the hour.	Critical Error Level 1
D	You reported a MATS Hourly Monitor Value record for [param] for a non-operating hour.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Operating Hour Evaluation
---	-------------------	--

**Check Code:** MATSHOD-13

**Check Name:** MATS: Check MATS Load

**Related Former Checks:**

**Applicability:**

**Description:** Enures that the MATS Load is reported when the current hour is operating and an active HGRE, HCLRE, HFRE or SO2RE method exists.

**Specifications:**

Set *ApportionmentMatsLoadArray* for this Location to null

If *CurrentHourlyOpRecord* is not null

If *CurrentHourlyOpRecord*.OperatingTime is greater than 0,

/\* Count the number of RE methods active during the hour and associates with a location in the monitoring plan \*/  
Count the record in *MonitorMethodRecordsByHour* where ParameterCode is equal to "HGRE", "HCLRE", "HFRE", or "SO2RE",

If the count is greater than 0,

Set *ApportionmentMatsLoadArray* for this Location to *CurrentHourlyOpRecord*.MatsHourLoad.

If *CurrentHourlyOpRecord*.MatsHourLoad is null,

return result A

Else if *CurrentHourlyOpRecord*.LoadUnitsOfMeasureCode = "MW" AND  
*CurrentHourlyOpRecord*.MatsHourLoad is less than *CurrentHourlyOpRecord*.HourLoad

If *MpStackConfigForHourlyChecks* is NOT equal to "MS",

return result D

Else

If *CurrentHourlyOpRecord*.MatsHourLoad is not null,

return result B.

Else

If *CurrentHourlyOpRecord*.MatsHourLoad is not null,

return result C.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide a MATSHourLoad record, which is required when you report an output based emission rate.	Critical Error Level 1
B	You provided a MATSHourLoad record which is not required when you report a heat input based emission rate.	Informational Message
C	You reported a MATSHourLoad record, but this is not appropriate for a non-operating hour.	Critical Error Level 1
D	The reported MATSHourLoad is less than the reported HourLoad value.	Critical Error Level 1



**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Operating Hour Evaluation
---	-------------------	--

**Check Code:** MATSHOD-14

**Check Name:** Update Sorbent Trap Operating Date List

**Related Former Checks:**

**Applicability:**

**Description:** For operating hours, this check inserts the current date into `OperatingDateList` for the current location's sorbent traps that are active for the current hour.

**Specifications:**

If *CurrentHourlyOpRecord* is NOT null,

For each entry in *MatsSorbentTrapListByLocationArray* where the array index is *CurrentMonitorPlanLocationPosition*,

When:

- 1) *CurrentHourlyOpRecord*.OperatingTime is greater than 0.
- 2) *CurrentOperatingDate* is on or after the date of the entry's `SorbentTrapBeginDatehour`.
- 3) *CurrentOperatingDate* is on or before the date of the entry's `SorbentTrapEndDatehour`.
- 4) *CurrentOperatingDate* is not in the entry's `OperatingDateList`.

Then:

Append *CurrentOperatingDate* to the entry's `OperatingDateList`.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Operating Hour Evaluation
---	-------------------	--

**Check Code:** MATSHOD-15

**Check Name:** Initialize Message Plug-ins

**Related Former Checks:**

**Applicability:**

**Description:** Initializes the plugin parameters.

**Specifications:**

Set *MatsHclDhvParameterDescription* to "HCLRE or HCLRH".  
Set *MatsHclMhvParameterDescription* to "HCLC".  
Set *MatsHfDhvParameterDescription* to "HFRE or HFRH".  
Set *MatsHfMhvParameterDescription* to "HFC".  
Set *MatsHgDhvParameterDescription* to "HGRE or HGRH".  
Set *MatsHgMhvParameterDescription* to "HGC".  
Set *MatsSo2DhvParameterDescription* to "SO2RE or SO2RH".

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report Summary Value Initialization
---	-------------------	---

**Check Code:** MATSHOD-16

**Check Name:** Verify Hourly GFM for Active Sampling Trains

**Related Former Checks:**

**Applicability:**

**Description:** Verifies that a GFM exists for each passed, failed or uncertain sampling trains active for a particular operating hour. Allows GFM records for any operating hour as long as an associated sampling trains exists, but does not allow GFM for non operating hours.

**Specifications:**

Set *MatsMissingGfmList* to "".

Set *MatsMultipleGfmList* to "".

If *DerivedHourlyChecksNeeded* is equal to true,

If *CurrentHourlyOpRecord*.OperatingTime is greater than 0

If *MatsHgcMhvRecord* is null, OR *MatsHgcMhvRecord*.ModeCode is NOT equal to "41" or "42",

Set *LocatedMatsSamplingTrainRecords* to the records in *MatsSamplingTrainRecords* where:

- 1) LocationId is equal to *CurrentHourlyOpRecord*.LocationId
- 2) SorbentTrapBeginDateHour is on or before *CurrentDateHour*
- 3) SorbentTrapEndDateHour is on or after *CurrentDateHour*

For each *MatsSamplingTrainRecord* in *LocatedMatsSamplingTrainRecords*,

Count the number of *MatsHourlyGfmRecordsForHourAndLocation* where ComponentId is equal to *MatsSamplingTrainRecord*.ComponentId.

If the count is equal to 0,

If *MatsSamplingTrainRecord*.TrainQAStatus is equal to "PASSED" or "UNCERTAIN", AND *MatsHgcMhvRecord* is null OR *MatsHgcMhvRecord*.ModeCode is NOT equal to "34",

If *MatsHgcMhvRecord* is NOT null, AND *MatsHgcMhvRecord*.ModeCode is equal to "32",

Count the number of *LocatedMatsSamplingTrainRecords* where:

- 1) ComponentId is equal to *MatsSamplingTrainRecord*.ComponentId.
- 2) TrapModeCode is equal to "32".
- 3) TrainQAStatus is NOT equal to "PASSED" or "UNCERTAIN".

If the count is equal to 0,

Append *MatsSamplingTrainRecord*.Description to *MatsMissingGfmList*.

Else

Append *MatsSamplingTrainRecord*.Description to *MatsMissingGfmList*.

Else if the count is greater than 1,

Append *MatsSamplingTrainRecord*.Description to *MatsMultipleGfmList*.

If both *MatsMissingGfmList* and *MatsMultipleGfmList* are NOT empty,

return result A.

Else if *MatsMissingGfmList* is NOT empty,  
  
return result B.  
  
Else if *MatsMultipleGfmList* is NOT empty,  
  
return result C.

Else

Count the number of *MatsHourlyGfmRecordsForHourAndLocation*.  
  
If the count is greater than 0,  
  
return result D.

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For the current hour, GFM records are missing for "PASSED" or "UNCERTAIN" sampling train(s) [Missing], and multiple GFM records exist for sampling train(s) [Multiple].	Informational Message
B	For the current hour, GFM records are missing for "PASSED" or "UNCERTAIN" sampling train(s) [Missing].	Informational Message
C	For the current hour, multiple GFM records exist for sampling train(s) [Multiple].	Informational Message
D	You reported a GFM record for a non-operating hour, which is not appropriate.	Informational Message

Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- Operating Hour Evaluation
---	-------------------	--

## **Check Category:**

# **MATS Sampling Train Checks**

**Check Code:** MATSTRN-1

**Check Name:** Component ID Valid

**Related Former Checks:**

**Applicability:**

**Description:** Ensure that sampling train component id exists and that the associated component type is "STRAIN".

**Specifications:**

Set *MatsSamplingTrainComponentIdValid* equal to false.

If *MatsSamplingTrainRecord.ComponentID* is null,

Set *MatsSamplingTrainProblemComponentExists* equal to true.  
Return result A.

Else if *MatsSamplingTrainRecord.ComponentTypeCode* is not equal to "STRAIN",

Set *MatsSamplingTrainProblemComponentExists* equal to true.  
Return result B.

Else

Set *MatsSamplingTrainComponentIdValid* equal to true.

Add an entry to *MatsSamplingTrainDictionary* with a key equal to *MatsSamplingTrainRecord.TrainID* and the value record initialized with the following values:

- 1) Set HgConcentration equal to null
- 2) Set TrainQAStatusCode equal to null
- 3) Set ReferenceSFSRRatio equal to null
- 4) Set TotalSFSRRatioCount equal to *MatsSamplingTrainRecord.SfsrTotalCount* with a default of 0 when *MatsSamplingTrainRecord.SupplementalDataInd* is equal to 1. Otherwise set to 0.
- 5) Set DeviatedSFSRRationCount equal to *MatsSamplingTrainRecord.SfsrDeviatedCount* with a default of 0 when *MatsSamplingTrainRecord.SupplementalDataInd* is equal to 1. Otherwise set to 0.
- 6) Set TotalGfmCount equal to *MatsSamplingTrainRecord.GfmTotalCount* with a default of 0 when *MatsSamplingTrainRecord.SupplementalDataInd* is equal to 1. Otherwise set to 0.
- 7) Set NotAvailableGfmCount equal to *MatsSamplingTrainRecord.GfmNotAvailableCount* with a default of 0 when *MatsSamplingTrainRecord.SupplementalDataInd* is equal to 1. Otherwise set to 0.
- 8) Set SamplingTrainValid equal to true
- 9) Set IsBorderTrap to (*MatsSamplingTrainRecord.BorderTrapIndicator* is equal to 1).
- 10) Set IsSupplementalData to (*MatsSamplingTrainRecord.SupplementalDataIndicator* is equal to 1).

Add the same entry to *MatsSorbentTrapSamplingTrainList*.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key], you have not reported a value for [fieldname], which is required.	Critical Error Level 1
B	The [fieldname] in the monitoring plan is [component type]. A [component type] [fieldname] is not associated with sorbent trap data.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- MATS Sampling Train Initialization

**Check Code:** MATSTRN-2

**Check Name:** Sorbent Trap Serial Number

**Related Former Checks:**

**Applicability:**

**Description:** Check that a sorbent trap serial number is provided.

**Specifications:**

If the *MatsSamplingTrainRecord*.SorbentTrapSn is null,

Return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not provide a [fieldname], which is required, for [key].	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Sampling Train Evaluation
---	-------------------	---



**Check Code:** MATSTRN-3

**Check Name:** Train Quality Assurance Status Valid

**Related Former Checks:**

**Applicability:**

**Description:** Check Sampling Train Quality Assurance Status Matches Lookup Table

**Validation Tables:**

Train Qa Status Code (Lookup Table)

**Specifications:**

Set *MatsSamplingTrainQaStatusCodeValid* to false.

If *MatsSamplingTrainRecord*.TrainQaStatusCode is null,

If *MatsSamplingTrainComponentIdValid* is true,

Set *MatsSamplingTrainDictionary*.SamplingTrainValid to false where the key equals *MatsSamplingTrainRecord*.TrainID.

Return result A,

Else if *MatsSamplingTrainRecord*.TrainQaStatusCode does not match a value in *MatsSamplingTrainQaStatusLookupTable*,

If *MatsSamplingTrainComponentIdValid* is true,

Set *MatsSamplingTrainDictionary*.SamplingTrainValid to false where the key equals *MatsSamplingTrainRecord*.TrainID.

Return result B.

Else

Set *MatsSamplingTrainQaStatusCodeValid* to true.

If *MatsSamplingTrainComponentIdValid* is true,

Set *MatsSamplingTrainDictionary*.TrainQaStatusCode to *MatsSamplingTrainRecord*.TrainQaStatusCode where the key equals *MatsSamplingTrainRecord*.TrainID.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key], you have not reported a value for [fieldname], which is required.	Critical Error Level 1
B	For [key] you reported a [value] which is not valid for [fieldname].	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- MATS Sampling Train Evaluation

**Check Code:** MATSTRN-4

**Check Name:** Main Trap Hg Valid

**Related Former Checks:**

**Applicability:**

**Description:** Main Trap Hg Null or Reported to Two Decimal Places

**Specifications:**

Set *MatsMainTrapHgValid* to false.

If *MatsSamplingTrainQaStatusCodeValid* is true,

If the *MatsSamplingTrainRecord*.MainTrapHg is null,

If the *MatsSamplingTrainRecord*.QAStatusCode is not "INC", "EXPIRED", or "LOST",

Return result A.

Otherwise

Set *MatsMainTrapHgValid* to true.

Else,

If the *MatsSamplingTrainRecord*.QAStatus Code is not "PASSED", "FAILED", or "UNCERTAIN",

Return result B.

Else, if the *MatsSamplingTrainRecord*.MainTrapHg is NOT reported in scientific notation to 3 significant digits, OR to 2 significant digits when *MatsSamplingTrainRecord*.EndDateHour is on or after September 9, 2020,

Return result C.

Otherwise

Set *MatsMainTrapHgValid* to true.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a [fieldname] value in the [key] records which is required if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
B	You reported a [fieldname] value in the [key] records which is reported only if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
C	The [fieldname] value in the [key] records is not reported in scientific notation rounded to three significant figures, with one digit to the left of the decimal point.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- MATS Sampling Train Evaluation

**Check Code:** MATSTRN-5

**Check Name:** BT Trap Hg Valid

**Related Former Checks:**

**Applicability:**

**Description:** BT Trap Hg Null or Reported to Two Decimal Places

**Specifications:**

Set *MatsBtTrapHgValid* to false.

If *MatsSamplingTrainQaStatusCodeValid* is true,

If the *MatsSamplingTrainRecord.BTTrapHg* is null,

If the *MatsSamplingTrainRecord.QAStatusCode* is not "INC", "EXPIRED", or "LOST",

Return result A.

Otherwise

Set *MatsBtTrapHgValid* to true.

Else,

If the *MatsSamplingTrainRecord.QAStatus Code* is not "PASSED", "FAILED", or "UNCERTAIN",

Return result B.

Else if the *MatsSamplingTrainRecord.BTTrapHg* is not reported in scientific notation rounded to 3 significant digits, OR to 2 significant digits when *MatsSamplingTrainRecord.EndDateHour* is on or after September 9, 2020,

Return result C.

Otherwise

Set *MatsBtTrapHgValid* to true.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a [fieldname] value in the [key] records which is required if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
B	You reported a [fieldname] value in the [key] records which is reported only if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
C	The [fieldname] value in the [key] records is not reported in scientific notation rounded to three significant figures, with one digit to the left of the decimal point.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- MATS Sampling Train Evaluation

**Check Code:** MATSTRN-6

**Check Name:** Spike Trap Hg Valid

**Related Former Checks:**

**Applicability:**

**Description:** Spike Trap Hg Null or Reported to Two Decimal Places

**Specifications:**

Set *MatsSpikeTrapHgValid* to false.

If *MatsSamplingTrainQaStatusCodeValid* is true,

If the *MatsSamplingTrainRecord.SpikeTrapHg* is null,

If the *MatsSamplingTrainRecord.QAStatusCode* is not "INC", "EXPIRED", or "LOST",

Return result A.

Otherwise

Set *MatsSpikeTrapHgValid* to true.

Else,

If the *MatsSamplingTrainRecord.QAStatus Code* is not "PASSED", "FAILED", or "UNCERTAIN",

Return result B.

Else if the *MatsSamplingTrainRecord.SpikeTrapHg* is not reported in scientific notation rounded to 3 significant digits, OR to 2 significant digits when *MatsSamplingTrainRecord.EndDateHour* is on or after September 9, 2020,

Return result C.

Otherwise

Set *MatsSpikeTrapHgValid* to true.

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a [fieldname] value in the [key] records which is required if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
B	You reported a [fieldname] value in the [key] records which is reported only if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
C	The [fieldname] value in the [key] records is not reported in scientific notation rounded to three significant figures, with one digit to the left of the decimal point.	Critical Error Level 1

## Usage:

1 Process/Category: Emissions Data Evaluation Report ----- MATS Sampling Train Evaluation

**Check Code:** MATSTRN-7

**Check Name:** Spike Reference Value Valid

**Related Former Checks:**

**Applicability:**

**Description:** Spike Reference Value Null or Reported to Two Decimal Places

**Specifications:**

Set *MatsSpikeReferenceValueValid* to false.

If *MatsSamplingTrainQaStatusCodeValid* is true,

If the *MatsSamplingTrainRecord*.SpikeReferenceValue is null,

If the *SamplingTrainData*.QaStatusCode is not "INC", "EXPIRED", or "LOST",

Return result A.

Otherwise

Set *MatsSpikeReferenceValueValid* to true.

Else,

If the *MatsSamplingTrainRecord*.QaStatus Code is not "PASSED", "FAILED", or "UNCERTAIN",

Return result B.

Else if the *MatsSamplingTrainRecord*.SpikeReferenceValue is not reported in scientific notation rounded to 3 significant digits, OR to 2 significant digits when *MatsSamplingTrainRecord*.EndDateHour is on or after September 9, 2020,

Return result C.

Otherwise

Set *MatsSpikeReferenceValueValid* to true.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a [fieldname] value in the [key] records which is required if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
B	You reported a [fieldname] value in the [key] records which is reported only if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
C	The [fieldname] value in the [key] records is not reported in scientific notation rounded to three significant figures, with one digit to the left of the decimal point.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- MATS Sampling Train Evaluation

**Check Code:** MATSTRN-8

**Check Name:** Total Sample Volume DSCM Valid

**Related Former Checks:**

**Applicability:**

**Description:** Total Sample Volume DSCM Null or Reported to Two Decimal Places

**Specifications:**

Set *MatsTotalSampleVolumeDSCMValid* to false.

If *MatsSamplingTrainQaStatusCodeValid* is true,

If the *MatsSamplingTrainRecord.TotalSampleVolumeDSCM* is null,

If the *SamplingTrainData.QAStatusCode* is not "INC", "EXPIRED", or "LOST",

Return result A.

Otherwise

Set *MatsTotalSampleVolumeDSCMValid* to true.

Else,

If the *MatsSamplingTrainRecord.QAStatus Code* is not "PASSED", "FAILED", or "UNCERTAIN",

Return result B.

Else if the *MatsSamplingTrainRecord.TotalSampleVolumeDSCM* is less than than two decimal places ,

Return result C.

Otherwise

Set *MatsTotalSampleVolumeDSCMValid* to true.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a [fieldname] value in the [key] records which is required if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
B	You reported a [fieldname] value in the [key] records which is reported only if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
C	For [key], the [fieldname] value must be reported to at least two decimal places.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- MATS Sampling Train Evaluation

**Check Code:** MATSTRN-9

**Check Name:** Reference SFSR Ratio Valid

**Related Former Checks:**

**Applicability:**

**Description:** Reference SFSR Ratio Null or Reported to Two Decimal Places

**Specifications:**

If *MatsSamplingTrainQaStatusCodeValid* is true,

If the *MatsSamplingTrainRecord.ReferenceSFSRRatio* is null,

If the *MatsSamplingTrainRecord.QAStatusCode* is not "INC", "EXPIRED", or "LOST", AND the *MatsSamplingTrainRecord.RATAIndicator* is NOT equal to 1,

If *MatsSamplingTrainDictionary* contains a lookup key equal to *MatsSamplingTrainRecord.TrainID*,  
Set *MatsSamplingTrainDictionary.SamplingTrainValid* to false where the key equals  
*MatsSamplingTrainRecord.TrainID*.

Return result A.

Else,

If the *MatsSamplingTrainRecord.QAStatusCode* is not "PASSED", "FAILED", or "UNCERTAIN",

If *MatsSamplingTrainDictionary* contains a lookup key equal to *MatsSamplingTrainRecord.TrainID*,  
Set *MatsSamplingTrainDictionary.SamplingTrainValid* to false where the key equals  
*MatsSamplingTrainRecord.TrainID*.

Return result B.

Else if the *MatsSamplingTrainRecord.ReferenceSFSRRatio* is not reported to one decimal place,

If *MatsSamplingTrainDictionary* contains a lookup key equal to *MatsSamplingTrainRecord.TrainID*,  
Set *MatsSamplingTrainDictionary.SamplingTrainValid* to false where the key equals  
*MatsSamplingTrainRecord.TrainID*.

Return result C.

Else if the *MatsHourlyGFMRecord.HourlySFSRRatio* is not greater than or equal to 1.0 and less than or equal to 100.0,

If *MatsSamplingTrainDictionary* contains a lookup key equal to *MatsSamplingTrainRecord.TrainID*,  
Set *MatsSamplingTrainDictionary.SamplingTrainValid* to false where the key equals  
*MatsSamplingTrainRecord.TrainID*.

Return result D.

Else

If *MatsSamplingTrainDictionary* contains a lookup key equal to *MatsSamplingTrainRecord.TrainID*,  
Set *MatsSamplingTrainDictionary.ReferenceSFSRRatio* to  
*MatsSamplingTrainRecord.ReferenceSFSRRatio* where the key equals  
*MatsSamplingTrainRecord.TrainID*.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a [fieldname] value in the [key] records which is required if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
B	You reported a [fieldname] value in the [key] records which is reported only if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
C	The [fieldname] value for [key] should be reported to one decimal place.	Critical Error Level 1
D	The [fieldname] value for [key] must be a number between 1 and 100.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- MATS Sampling Train Evaluation



**Check Code:** MATSTRN-10

**Check Name:** Sampling Ratio Check Result Code Valid

**Related Former Checks:**

**Applicability:**

**Description:** Sampling Ratio Check Result Code Valid

**Specifications:**

If *MatsSamplingTrainQaStatusCodeValid* is true,

    If *MatsSamplingTrainRecord.SamplingRatioCheckResultCode* is null,

        If the *MatsSamplingTrainRecord.QAStatusCode* is not "INC", "EXPIRED", or "LOST",

            If *MatsSamplingTrainComponentIdValid* is true,  
                Set *MatsSamplingTrainDictionary.SamplingTrainValid* to false where the key equals  
                *MatsSamplingTrainRecord.TrainID*.

            Return result A.

Else,

    If *MatsSamplingTrainRecord.SamplingRatioCheckResultCode* is equal to "PASSED",

        If *MatsSamplingTrainRecord.QAStatus Code* is not equal "PASSED", "FAILED", or "UNCERTAIN",

            If *MatsSamplingTrainComponentIdValid* is true,  
                Set *MatsSamplingTrainDictionary.SamplingTrainValid* to false where the key equals  
                *MatsSamplingTrainRecord.TrainID*.

            Return result B.

Else if *MatsSamplingTrainRecord.SamplingRatioCheckResultCode* is equal to "FAILED",

    If *MatsSamplingTrainRecord.QAStatus Code* is not equal "FAILED",

        If *MatsSamplingTrainComponentIdValid* is true,  
            Set *MatsSamplingTrainDictionary.SamplingTrainValid* to false where the key equals  
            *MatsSamplingTrainRecord.TrainID*.

        Return result C.

Otherwise

    If *MatsSamplingTrainComponentIdValid* is true,  
        Set *MatsSamplingTrainDictionary.SamplingTrainValid* to false where the key equals  
        *MatsSamplingTrainRecord.TrainID*.

    Return result D.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a [fieldname] value in the [key] records which is required if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
B	You reported a [fieldname] value in the [key] records which is reported only if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
C	For [key], you reported that the sampling train SFSR Ratio check FAILED, but did not also report the train QA Status Code as FAILED.	Critical Error Level 1
D	For [key], the [fieldname] is not reported as PASSED or FAILED..	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Sampling Train Evaluation
---	-------------------	---

**Check Code:** MATSTRN-11

**Check Name:** Post Leak Check Result Code Valid

**Related Former Checks:**

**Applicability:**

**Description:** Post Leak Check Result Code Valid

**Specifications:**

If *MatsSamplingTrainQaStatusCodeValid* is true,

If the *MatsSamplingTrainRecord.PostLeakCheckResultCode* is null,

If the *MatsSamplingTrainRecord.QAStatusCode* is not "INC", "EXPIRED" or "LOST",

Return result A.

Else

If *MatsSamplingTrainRecord.PostLeakCheckResultCode* is equal to "PASSED",

If *MatsSamplingTrainRecord.QAStatus Code* is not equal to "PASSED", "FAILED", OR "UNCERTAIN",

Return result B.

Else if *MatsSamplingTrainRecord.PostLeakCheckResultCode* is equal to "FAILED",

If *MatsSamplingTrainRecord.QAStatus Code* is not equal to "FAILED",

Return result C.

Otherwise

Return result D.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a [fieldname] value in the [key] records which is required if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
B	You reported a [fieldname] value in the [key] records which is reported only if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
C	The [fieldname] value of [value] from the [key] records exceeds the PS-12B breakthrough criteria, but you did not report the train QA Status Code as FAILED.	Critical Error Level 1
D	The [fieldname] is not reported as PASSED or FAILED.	Critical Error Level 1

#### Usage:

1      Process/Category:      Emissions Data Evaluation Report ----- MATS Sampling Train Evaluation

**Check Code:** MATSTRN-12

**Check Name:** Sample Damage Explanation

**Related Former Checks:**

**Applicability:**

**Description:** Sample Damage Explanation is provided if QA Status Code equals LOST.

**Specifications:**

If *MatsSamplingTrainQaStatusCodeValid* is true,

    If the *MatsSamplingTrainRecord.SampleDamageExplanation* is null,

        If the *MatsSamplingTrainRecord.QAStatus* Code is equal to "LOST",

            Return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key], you did not report a SampleDamageExplanation which is required if the sorbent train QA Status Code is LOST.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Sampling Train Evaluation
---	-------------------	---

**Check Code:** MATSTRN-13

**Check Name:** Hg Concentration reported properly

**Related Former Checks:**

**Applicability:**

**Description:** Hg Concentration is reported properly

**Specifications:**

Set *MatsCalcTrainHgConcentration* = null.

If *MatsSamplingTrainQaStatusCodeValid* is true,

If *MatsSamplingTrainRecord*.HgConcentration is null,

If *MatsSamplingTrainRecord*.TrainQaStatusCode is not "INC", "EXPIRED", or "LOST",

If *MatsSamplingTrainComponentIdValid* is true,

Set *MatsSamplingTrainDictionary*.SamplingTrainValid to false where the key equals  
*MatsSamplingTrainRecord*.TrainID.

Return result A.

Else,

If *MatsSamplingTrainRecord*.TrainQaStatusCode is not "PASSED", "FAILED", or "UNCERTAIN",

If *MatsSamplingTrainComponentIdValid* is true,

Set *MatsSamplingTrainDictionary*.SamplingTrainValid to false where the key equals  
*MatsSamplingTrainRecord*.TrainID.

Return result B.

Else if *MatsSamplingTrainRecord*.HgConcentration is not reported in scientific notation rounded to 3 significant digits,  
OR to 2 significant digits when *MatsSamplingTrainRecord*.EndDateHour is on or after September 9, 2020.

If *MatsSamplingTrainComponentIdValid* is true,

Set *MatsSamplingTrainDictionary*.SamplingTrainValid to false where the key equals  
*MatsSamplingTrainRecord*.TrainID.

Return result C.

Else if *MatsSamplingTrainRecord*.ModeCode is 43 or 44,

Set *MatsCalcTrainHgConcentration* = *MatsSamplingTrainRecord*.HgConcentration.

If *MatsSamplingTrainComponentIdValid* is true,

Set *MatsSamplingTrainDictionary*.HgConcentration to *MatsSamplingTrainRecord*.HgConcentration  
where the key equals *MatsSamplingTrainRecord*.TrainID.

Else if *MatsMainTrapHgValid* is true AND *MatsBTTrapHgValid* is true AND *MatsTotalSampleVolumeDSCMValid* is true,

Set *MatsCalcTrainHgConcentration* = (*MatsSamplingTrainRecord*.MainTrapHg +  
*MatsSamplingTrainRecord*.BTTrapHg) / *MatsSamplingTrainRecord*.TotalSampleVolumeDSCM, rounded to  
significant digits matching the following:

1) When *MatsSamplingTrainRecord*.EndDateHour is on or after September 9, 2020 AND  
*MatsSamplingTrainRecord*.HgConcentration is NOT null, then the significant digits in

*MatsSamplingTrainRecord*.HgConcentration.

2) Otherwise 3 significant digits.

If *MatsSamplingTrainComponentIdValid* is true,

Set *MatsSamplingTrainDictionary*.HgConcentration to *MatsCalcTrainHgConcentration* where the key equals *MatsSamplingTrainRecord*.TrainID.

If *MatsSamplingTrainRecord*.HgConcentration is not equal to *MatsCalcTrainHgConcentration*,

If *MatsSamplingTrainComponentIdValid* is true,

Set *MatsSamplingTrainDictionary*.SamplingTrainValid to false where the key equals *MatsSamplingTrainRecord*.TrainID.

Return result D

Else // A calculation input is not valid

If *MatsSamplingTrainComponentIdValid* is true,

Set *MatsSamplingTrainDictionary*.SamplingTrainValid to false where the key equals *MatsSamplingTrainRecord*.TrainID.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a [fieldname] value in the [key] records which is required if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
B	You reported a [fieldname] value in the [key] records which is reported only if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
C	The [fieldname] value in the [key] records is not reported in scientific notation rounded to three significant figures, with one digit to the left of the decimal point.	Critical Error Level 1
D	The [fieldname] is inconsistent with the value [value] calculated from the reported [key] records used in the calculation.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report ----- MATS Sampling Train Evaluation

**Check Code:** MATSTRN-14

**Check Name:** Percent Breakthrough reported properly.

**Related Former Checks:**

**Applicability:**

**Description:** Percent Breakthrough is reported properly. Includes alternate criteria for RATAs

**Specifications:**

If *MatsSamplingTrainQaStatusCodeValid* is true,

If the *MatsSamplingTrainRecord.PercentBreakthrough* is null,

If the *MatsSamplingTrainRecord.QAStatus* Code is "PASSED", "FAILED", or "UNCERTAIN", AND the *MatsSamplingTrainRecord.HgConcentration* is greater than or equal to 0.2,

Return result A.

Else,

If the *MatsSamplingTrainRecord.QAStatusCode* is "LOST", "EXPIRED", or "INC",

Return result B

Else if the *MatsSamplingTrainRecord.PercentBreakthrough* is NOT reported to one decimal place.

Return result C

Else if *MatsMainTrapHgValid* is equal to true, and *MatsBtTrapHgValid* is equal to true,

Set *MatsCalcTrainPercentBreakthrough* = (*MatsSamplingTrainRecord.BTTrapHg* / *MatsSamplingTrainRecord.MainTrapHg*) x 100, rounded to one decimal place.

If *MatsSamplingTrainRecord.PercentBreakthrough* is NOT equal to *MatsCalcTrainPercentBreakthrough*,

Return result D,

Else,

If the *MatsSamplingTrainRecord.SorbentTrapApsCode* is equal to 'RATA',

If *MatsSamplingTrainRecord.HgConcentration* is greater than 1 AND  
*MatsSamplingTrainRecord.PercentBreakthrough* rounded to an integer is greater than 10%, OR  
*MatsSamplingTrainRecord.HgConcentration* is greater than 0.5 AND  
*MatsSamplingTrainRecord.PercentBreakthrough* rounded to an integer is greater than 20%, OR  
*MatsSamplingTrainRecord.HgConcentration* is greater than 0.1 AND  
*MatsSamplingTrainRecord.PercentBreakthrough* rounded to an integer is greater than 50%,

If *MatsSamplingTrainRecord.TrainQAStatusCode* is NOT equal to "FAILED",

Return result F.

Else

If the *MatsSamplingTrainRecord.HgConcentration* is NOT less than 0.2,

If The *MatsSamplingTrainRecord.PercentBreakthrough* rounded to an integer is greater than 10%, OR  
the *MatsSamplingTrainRecord.PercentBreakthrough* rounded to an integer is greater than 5%, AND the *MatsSamplingTrainRecord.HgConcentration* is greater than 0.5,

If *MatsSamplingTrainRecord*.TrainQAStatusCode is NOT equal to "FAILED",  
Return result E

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key], you did not report a [fieldname] value which is required if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the train Hg Concentration is not less than 10% of the Hg limit equivalent concentration or less than or equal to 0.1 ug/dscm if performing a RATA.	Critical Error Level 1
B	For [key], you reported a [fieldname] value which is not reported if the sorbent train QA Status Code is LOST, EXPIRED, or INC.	Critical Error Level 1
C	The [fieldname] value for [key] should be reported to one decimal place.	Critical Error Level 1
D	The [fieldname] is inconsistent with the value [value] calculated from the reported [key] records used in the calculation.	Critical Error Level 1
E	The [fieldname] value of [value] from the [key] records exceeds the PS-12B breakthrough criteria, but you did not report the train QA Status Code as FAILED.	Critical Error Level 1
F	You reported a Sampling Train Data QA Status of PASSED or UNCERTAIN, but at least one of the alternative performance specifications listed in Section 4.1.2.2 in Appendix A CFR Part 63 to PS12B was not met.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- MATS Sampling Train Evaluation



**Check Code:** MATSTRN-15

**Check Name:** Percent Spike Recovery reported properly

**Related Former Checks:**

**Applicability:**

**Description:** Percent Spike Recovery reported properly

**Specifications:**

If *MatsSamplingTrainQaStatusCodeValid* is true,

If the *MatsSamplingTrainRecord.PercentSpikeRecovery* is null,

If the *MatsSamplingTrainRecord.QAStatus* Code is not "INC", "EXPIRED", or "LOST",

Return result A.

Else

If the *MatsSamplingTrainRecord.QAStatus* Code is not "PASSED", "FAILED", or "UNCERTAIN",

Return result B.

Else if the *MatsSamplingTrainRecord.PercentSpikeRecovery* is not reported to one decimal place,

Return result C.

Else if *MatsSpikeTrapHgValid* is equal to true, AND *MatsSpikeReferenceValueValid*, is equal to true,

Set *MatsCalcTrainPercentSpikeRecovery* = *MatsSamplingTrainRecord.SpikeTrapHg* /  
*MatsSamplingTrainRecord.SpikeReferenceValue*) x 100, rounded to one decimal place.

If *MatsSamplingTrainRecord.PercentSpikeRecovery* is not equal to *MatsCalcTrainPercentSpikeRecovery*,

Return result D.

Else if the *MatsSamplingTrainRecord.PercentSpikeRecovery* is less than 75% or greater than 125%

If *MatsSamplingTrainRecord.TrainQAStatusCode* is not equal to "FAILED",

Return result E

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You did not report a [fieldname] value in the [key] records which is required if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
B	You reported a [fieldname] value in the [key] records which is reported only if the sorbent train QA Status Code is PASSED, FAILED, or UNCERTAIN, and the stack flow rate for the hour is a measured data value.	Critical Error Level 1
C	The [fieldname] value for [key] should be reported to one decimal place.	Critical Error Level 1
D	The [fieldname] is inconsistent with the value [value] calculated from the reported [key] records used in the calculation.	Critical Error Level 1
E	The [fieldname] value of [value] from the [key] records exceeds the PS-12B breakthrough criteria, but you did not report the train QA Status Code as FAILED.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- MATS Sampling Train Evaluation

**Check Code:** MATSTRN-16

**Check Name:** Check Hourly Sampling Ratios

**Related Former Checks:**

**Applicability:**

**Description:** Compare Hourly Sampling Ratio with PS12B Requirement

**Specifications:**

If *MatsSamplingTrainDictionary* contains the key *MatsSamplingTrainRecord.TrainID*,  
Set *SamplingTrainValid* to *MatsSamplingTrainDictionary.SamplingTrainValid* where the key equals  
*MatsSamplingTrainRecord.TrainID*.

Else  
Set *SamplingTrainValid* to false.

If *SamplingTrainValid* is true,

Set *TotalSFSRRatioCount* to *MatsSamplingTrainDictionary.TotalSFSRRatioCount* where the key equals  
*MatsSamplingTrainRecord.TrainID*.  
Set *DeviatedSFSRRatioCount* to *MatsSamplingTrainDictionary.DeviatedSFSRRatioCount* where the key equals  
*MatsSamplingTrainRecord.TrainID*.  
Set *SamplingTrainCountsAreComplete* to (*MatsSamplingTrainDictionary.IsBorderTrain* is false OR  
*MatsSamplingTrainDictionary.IsSupplementalData* is true ).

If *TotalSFSRRatioCount* is greater than or equal to 100,

Set *MatsCalcPercentSFSRRatioDev* to *DeviatedSFSRRatioCount / TotalSFSRRatioCount* x 100, rounded to an integer.

If the *MatsSamplingTrainRecord.SamplingRatioCheckResultCode* is equal to "PASSED"

If the *MatsCalcPercentSFSRRatioDev* is greater than 5,

Return result A.

Else // *TotalSFSRRatioCount* is less than 100

If the *MatsSamplingTrainRecord.SamplingRatioCheckResultCode* is equal to "PASSED"

If the *DeviatedSFSRRatioCount* is greater than 5,

Return result C.

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key], you reported that the SFSR Ratio Check PASSED, but more than five percent of hourly SFSR Ratios deviated from the reference ratio by more than 25 percent.	Critical Error Level 1
B	For [key], you reported that SFSR Ratio Check FAILED, but not more than five percent of hourly SFSR Ratios deviated from the reference ratio by more than 25 percent.	Critical Error Level 1
C	For [key], you reported that the SFSR Ratio Check PASSED, but more than five hourly SFSR Ratios deviated from the reference ratio by more than 25 percent.	Critical Error Level 1
D	For [key], you reported that the SFSR Ratio Check FAILED, but not more than five hourly SFSR Ratios deviated from the reference ratio by more than 25 percent.	Critical Error Level 1

## Usage:

1 Process/Category: Emissions Data Evaluation Report ----- MATS Sampling Train Last Hour Evaluation

**Check Code:** MATSTRN-17

**Check Name:** Check the Not Available GFM count compared to the Total GFM Count

**Related Former Checks:**

**Applicability:**

**Description:** Checks the percentage of GFM with an "N" (Not Allowed) Begin End Flag.

**Specifications:**

If *MatsSamplingTrainRecord*.TrainQAStatusCode is equal to "PASSED", "FAILED" or "UNCERTAIN",  
AND *MatsSamplingTrainRecord*.RataInd is equal to 0 (zero) or null,

If *MatsSamplingTrainDictionary* contains the key *MatsSamplingTrainRecord*.TrainID,

Set *DictionaryEntry* to *MatsSamplingTrainDictionary* where the key equals *MatsSamplingTrainRecord*.TrainID.

If *DictionaryEntry*.SamplingTrainValid is true,

If *DictionaryEntry*.TotalGfmCount is greater than 0, AND *DictionaryEntry*.NotAvailableGfmCount is greater than  
or equal to 0,

Set *NotAvailableGfmPercent* to  $100 * \text{DictionaryEntry}.\text{NotAvailableGfmCount} / \text{DictionaryEntry}.\text{TotalGfmCount}$ .

If *NotAvailableGfmPercent* is greater than or equal to 20%,

Return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For sampling train [key], at least 20 percent of the gas flow meter hours reported a Begin-End Flag of "N".	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Sampling Train Last Hour Evaluation
---	-------------------	---

**Check Category:**

**MATS Sorbent Trap Data**

**Check Code:** MATSTRP-1

**Check Name:** Begin Date Valid

**Related Former Checks:**

**Applicability:**

**Description:** This check determines if the sorbent trap data begin date is valid.

**Specifications:**

Set *MatsSorbentTrapBeginDateValid* equal to false.

If the *MatsSorbentTrapRecord.BeginDate* is null,

Set *MatsSorbentTrapEvaluationNeeded* to false.  
Return Result A.

Else

Set *MatsSorbentTrapBeginDateValid* equal to true.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key], a value for [fieldname] is required.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report --- MATS Sorbent Trap Hour and Range Evaluation
---	-------------------	--

**Check Code:** MATSTRP-2

**Check Name:** Begin Hour Valid

**Related Former Checks:**

**Applicability:**

**Description:** This check determines if the sorbent trap data begin hour is valid

**Specifications:**

Set *MatsSorbentTrapBeginDateHourValid* equal to false.

If *MatsSorbentTrapBeginDateValid*,

If the *MatsSorbentTrapRecord*.BeginHour is null,

Set *MatsSorbentTrapEvaluationNeeded* to false.  
Return Result A.

Else, if the *MatsSorbentTrapRecord*.BeginHour is less than 0 or greater than 23,

Set *MatsSorbentTrapEvaluationNeeded* to false.  
Return Result B.

Else

*MatsSorbentTrapBeginDateHourValid* equal to true.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key], a value for [fieldname] is required.	Critical Error Level 1
B	For [key], you have reported a Begin Hour not between 0 and 23.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report --- MATS Sorbent Trap Hour and Range Evaluation

**Check Code:** MATSTRP-3

**Check Name:** End Date Valid

**Related Former Checks:**

**Applicability:**

**Description:** This check determines if the sorbent trap data end date and hour is valid

**Specifications:**

Set *MatsSorbentTrapEndDateValid* equal to false.

If the *MatsSorbentTrapRecord*.EndDate is null,

Set *MatsSorbentTrapEvaluationNeeded* to false.  
Return Result A.

Else

Set *MatsSorbentTrapEndDateValid* equal to true.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key], a value for [fieldname] is required.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report --- MATS Sorbent Trap Hour and Range Evaluation
---	-------------------	--



**Check Code:** MATSTRP-4

**Check Name:** End Hour Valid

**Related Former Checks:**

**Applicability:**

**Description:** This check determines if the sorbent trap data end hour is valid

**Specifications:**

Set *MatsSorbentTrapEndDateHourValid* equal to false.

If the *MatsSorbentTrapRecord*.EndHour is null,

Set *MatsSorbentTrapEvaluationNeeded* to false.  
Return Result A.

Else, if the *MatsSorbentTrapRecord*.EndHour is less than 0 or greater than 23,

Set *MatsSorbentTrapEvaluationNeeded* to false.  
Return Result B.

Else

Set *MatsSorbentTrapEndDateHourValid* equal to true.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key], a value for [fieldname] is required.	Critical Error Level 1
B	For [key], you have reported an End Hour that is not between 0 and 23.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report --- MATS Sorbent Trap Hour and Range Evaluation
---	-------------------	--

**Check Code:** MATSTRP-5

**Check Name:** Begin and End Times Consistent

**Related Former Checks:**

**Applicability:**

**Description:** Check that the Sorbent Trap end date and time occurs after the begin date and time.

**Specifications:**

Set *MatsSorbentTrapDatesAndHoursConsistent* to false.

If *MatsSorbentTrapBeginDateHourValid* is true AND *MatsSorbentTrapEndDateHourValid* is true,

    If the the *MatsSorbentTrapRecord*.BeginDateHour is after the *MatsSorbentTrapRecord*.EndDateHour,

        Set *MatsSorbentTrapEvaluationNeeded* to false.  
        Return result A.

    Else

        Set *MatsSorbentTrapDatesAndHoursConsistent* to true.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key], the BeginDate/Hour is inconsistent with the EndDate/Hour.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report --- MATS Sorbent Trap Hour and Range Evaluation
---	-------------------	--

**Check Code:**

MATSTRP-6

**Check Name:**

Check For Overlap With Another Sorbent Trap

**Related Former Checks:**

**Applicability:**

**Description:**

Check for overlap with the last Sorbent Trap from the previous emission report or with another Sorbent Trap reported in the current emission report.

**Specifications:**

Locate *MatsSorbentTrapRecords* where:

- 1) SystemId equals *MatsSorbentTrapRecord*.SystemId
- 2) TrapId does not equal *MatsSorbentTrapRecord*.TrapId
- 3) BeginDateHour is before *MatsSorbentTrapRecord*.EndDateHour
- 4) EndDateHour is after *MatsSorbentTrapRecord*.BeginDateHour

If found,

Set *MatsSorbentTrapEvaluationNeeded* to false.

Return result A.

Results:		
<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key], you reported sorbent traps with overlapping sampling periods.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Sorbent Trap Overlap Evaluation
---	-------------------	---

**Check Code:** MATSTRP-7

**Check Name:** Initialize MATS Sorbent Trap Parameters

**Related Former Checks:**

**Applicability:**

**Description:** Initialize MATS Sampling Train Data

**Specifications:**

Set *MatsSorbentTrapValidExists* to false.

Set *MatsSorbentTrapSamplingTrainList* to null.

Set *MatsSamplingTrainProblemComponentExists* to false.

For *MatsSorbentTrapRecord*:

Set *SorbentTrapInformation* record with:

- 1) *SorbentTrapValidExists* set to true.
- 2) *IsBorderTrap* set to (*MatsSorbentTrapRecord.BorderTrapInd* is equal to 1).
- 3) *IsSupplementalData* set to (*MatsSorbentTrapRecord.SupplementalDataInd* is equal to 1).
- 4) *SorbentTrapId* set to *MatsSorbentTrapRecord.TrapId*
- 5) *SorbentTrapBeginDateHour* set to *MatsSorbentTrapRecord.BeginDateHour*
- 6) *SorbentTrapEndDateHour* set to *MatsSorbentTrapRecord.EndDateHour*
- 7) *SorbentTrapModcCd* set to *MatsSorbentTrapRecord.ModcCd*
- 8) *SamplingTrainProblemComponentExists* set to false.
- 9) *SamplingTrainList* with a record containing the following fields:
  - a) *HgConcentration* as a decimal
  - b) *TrainQAStatusCode* as a string
  - c) *ReferenceSFSRRatio* as an integer
  - d) *TotalSFSRRatioCount* as an integer
  - e) *DeviatedSFSRRatioCount* as an integer
  - f) *SamplingTrainValid* as a boolean
- 10) *OperatingDateList* set to an empty list of dates.

Set *MatsSorbentTrapDictionary* to *SorbentTrapInformation*, where the *TrapId* key is equal *MatsSorbentTrapRecord.TrapId*.

Append *SorbentTrapInformation* to *MatsSorbentTrapListByLocationArray* element for *CurrentMonitorPlanLocationPosition*.

Set *MatsSorbentTrapValidExists* to *MatsSorbentTrapDictionary.SorbentTrapValidExists* where *MatsSorbentTrapDictionary* key is equal to *MatsSorbentTrapRecord.TrapId*.

Set *MatsSorbentTrapSamplingTrainList* to *MatsSorbentTrapDictionary.SamplingTrainList* where *MatsSorbentTrapDictionary* key is equal to *MatsSorbentTrapRecord.TrapId*.

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

## Usage:

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Sorbent Trap First Hour Initialization
---	-------------------	--

**Check Code:** MATSTRP-8

**Check Name:** Monitoring System Check

**Related Former Checks:**

**Applicability:**

**Description:** Ensure that Monitoring System exists for Monitoring System ID, and that the Monitoring System type is "ST".

**Specifications:**

If the *MatsSorbentTrapRecord*.MonitoringSystemID is null,

Set *MatsSorbentTrapValidExists* to false.  
Return result A.

Else if the *MatsSorbentTrapRecord*.SystemTypeCode of the associated system is not equal to "ST",

Set *MatsSorbentTrapValidExists* to false.  
Return result B.

Else if *MatsSorbentTrapRecord*.SystemBeginDateHour is after *MatsSorbentTrapRecord*.BeginDateHour, OR  
*MatsSorbentTrapRecord*.SystemEndDateHour is NOT null and is before *MatsSorbentTrapRecord*.EndDateHour,

Set *MatsSorbentTrapValidExists* to false.  
Return result C.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key], you have not reported a value for [fieldname], which is required.	Critical Error Level 1
B	The SystemTypeCode in the monitoring plan is [system type]. This type of system does not report sorbent trap data.	Critical Error Level 1
C	The system reported for the sorbent trap does not span the period of the sorbent trap.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- MATS Sorbent Trap Evaluation

**Check Code:** MATSTRP-9

**Check Name:** Number and Validity of Sampling Trains

**Related Former Checks:**

**Applicability:**

**Description:** Check that two Sorbent Train Data Records are provided for each Sorbent Trap Data Record.

**Specifications:**

Set *MatsSamplingTrainsValid* to false,

If *MatsSamplingTrainProblemComponentExists* is false,

If number of entries in *MatsSorbentTrapSamplingTrainList* is not equal to 2,

Set *MatsSorbentTrapValidExists* to false.  
Return result A.

Else if *MatsSorbentTrapSamplingTrainList* .SamplingTrainValid for one or both sampling train components is false,

Set *MatsSorbentTrapValidExists* to false.

Else

Set *MatsSamplingTrainsValid* to true

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key], you did not report two sets of sorbent train records for the sorbent trap.	Critical Error Level 1

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Sorbent Trap Evaluation
---	-------------------	---

**Check Code:** MATSTRP-10

**Check Name:** Sorbent Trap MODC Code is Valid

**Related Former Checks:**

**Applicability:**

**Description:** Check Sorbent Trap MODC Code Valid

**Specifications:**

Set *MatsSorbentTrapMODCCodeValid* to false

If *MatsSorbentTrapRecord*.MODCCode is not equal to "01", "02", "32", "33", "34", "35", "43" or "44",

Set *MatsSorbentTrapValidExists* to false.  
Return result A.

Else if *MatsSamplingTrainsValid*,

If *MatsSorbentTrapRecord*.MODCCode is equal to "01" or "02" or "43",

If *MatsSorbentTrapSamplingTrainList*.TrainQAStatusCode for both sampling train components are equal to "PASSED",

Set *MatsSorbentTrapMODCCodeValid* equal to true.

Else

Set *MatsSorbentTrapValidExists* to false.  
Return result B

Else if *MatsSorbentTrapRecord*.MODCCode is equal to "32" or "44",

If *MatsSorbentTrapSamplingTrainList*.TrainQAStatusCode are equal to "PASSED" for one sampling train component,  
AND "FAILED" or "LOST" for the other,

Set *MatsSorbentTrapMODCCodeValid* equal to true.

Else

Set *MatsSorbentTrapValidExists* to false.  
Return result C

Else if the *MatsSorbentTrapRecord*.MODCCode is equal to "33",

If *MatsSorbentTrapSamplingTrainList*.TrainQAStatusCode for both sampling train components are equal to  
"UNCERTAIN",

Set *MatsSorbentTrapMODCCodeValid* equal to true.

Else

Set *MatsSorbentTrapValidExists* to false.  
Return result D

Else if the *MatsSorbentTrapRecord*.MODCCode is equal to "34",

If *MatsSorbentTrapSamplingTrainList*.TrainQAStatusCode for both sampling train components are equal to "FAILED",

Set *MatsSorbentTrapMODCCodeValid* equal to true.

Else If *MatsSorbentTrapSamplingTrainList*.TrainQAStatusCode for both sampling train components are equal to  
"UNCERTAIN",

Set *MatsSorbentTrapMODCCodeValid* equal to true.

Else if *MatsSorbentTrapSamplingTrainList.TrainQAStatusCode* for one or both sampling train components is equal to "LOST", "EXPIRED" or "INC",

Set *MatsSorbentTrapMODCCodeValid* equal to true.

Else

Set *MatsSorbentTrapValidExists* to false.

Return result E

Else if the *MatsSorbentTrapRecord.MODCCode* is equal to "35",

Set *MatsSorbentTrapMODCCodeValid* equal to true.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key] you reported a [value] which is not valid for [fieldname].	Critical Error Level 1
B	For [key], you reported a [fieldname] of [value] which is valid if the QA Status Codes of both trains is PASSED.	Critical Error Level 1
C	For [key], you reported a [fieldname] of [value] which is valid if the QA Status Code of one train is PASSED and the other FAILED.	Critical Error Level 1
D	For [key] you reported a [fieldname] of [value] which is valid if the QA Status Code of both trains is UNCERTAIN.	Critical Error Level 1
E	For [key], you reported a [fieldname] of [value] which is valid if the QA Status Code of both trains is FAILED or UNCERTAIN, or one or both trains is LOST, EXPIRED, or INC.	Critical Error Level 1

#### Usage:

1      Process/Category:      Emissions Data Evaluation Report ----- MATS Sorbent Trap Evaluation



**Check Code:** MATSTRP-11

**Check Name:** Paired Trap Agreement Validation and Re-calculation

**Related Former Checks:**

**Applicability:**

**Description:** Determine if the Paired Trap Agreement is Valid.

**Specifications:**

Set *MatsSorbentTrapPairedTrapAgreementValid* to false.

Set *MatsCalcTrapAbsoluteDifference* = null.

Set *MatsCalcTrapPercentDifference* = null.

If the *MatsSorbentTrapMODCCodeValid* is equal to true,

    If *MatsSorbentTrapRecord*.PairedTrapAgreement is null,

        If *MatsSorbentTrapRecord*.MODCCode is not "32", "34", "35", or "44",

            Set *MatsSorbentTrapValidExists* to false.

            Return result A.

        Else if *MatsSorbentTrapRecord*.AbsoluteDifferenceIndicator is not null,

            Set *MatsSorbentTrapValidExists* to false.

            Return result B.

        Else

            Set *MatsSorbentTrapPairedTrapAgreementValid* to true

    Else

        If *MatsSorbentTrapRecord*.MODCCode is not "01", "02", "33", or "43",

            Set *MatsSorbentTrapValidExists* to false.

            Return result C.

        Else if *MatsSorbentTrapRecord*.PairedTrapAgreement is not rounded to two decimal places

            Set *MatsSorbentTrapValidExists* to false.

            Return result D.

        Else if *MatsSorbentTrapRecord*.AbsoluteDifferenceIndicator is equal to 0, OR

*MatsSorbentTrapRecord*.AbsoluteDifferenceIndicator is equal to 1,

            Set *MatsCalcTrapAbsoluteDifference* = the absolute value of the difference between the  
            *MatsSorbentTrapSamplingTrainList*.HgConcentration for each train.

        If the sum of the *MatsSorbentTrapSamplingTrainList*.HgConcentration from each train is NOT equal to 0,

            Set *MatsCalcTrapPercentDifference* = 100 \* *MatsCalcTrapAbsoluteDifference* divided by the sum of the  
            *MatsSorbentTrapSamplingTrainList*.HgConcentration from each train.

        Else

            Set *MatsCalcTrapPercentDifference* = 0

        Round *MatsCalcTrapAbsoluteDifference* to 2 decimal places.

        Round *MatsCalcTrapPercentDifference* to 2 decimal place.

        If *MatsSorbentTrapRecord*.AbsoluteDifferenceIndicator is equal to 0,

If *MatsSorbentTrapRecord*.PairedTrapAgreement does not equal *MatsCalcTrapPercentDifference*,

Set *MatsSorbentTrapValidExists* to false.  
Return result G.

Else if *MatsSorbentTrapRecord*.PairedTrapAgreement is less than or equal to 10,

If *MatsSorbentTrapRecord*.MODCCode is not equal to "01", "02" OR "43",

Set *MatsSorbentTrapValidExists* to false.  
Return result H.

Else

Set *MatsSorbentTrapPairedTrapAgreementValid* to true.

Else if *MatsSorbentTrapRecord*.PairedTrapAgreement is less than or equal to 20, and the  
*MatsSorbentTrapRecord*.HgSystemConcentration is less than or equal to 1.0,

If *MatsSorbentTrapRecord*.MODCCode is not equal to "01", "02" OR "43",  
Set *MatsSorbentTrapValidExists* to false.  
Return result I.

Else

Set *MatsSorbentTrapPairedTrapAgreementValid* to true.

Else

If *MatsSorbentTrapRecord*.MODCCode is not equal to "33",

Set *MatsSorbentTrapValidExists* to false.  
Return result J.

Else

Set *MatsSorbentTrapPairedTrapAgreementValid* to true.

Else // AbsoluteDifferenceIndicator is equal to 1

If *MatsSorbentTrapRecord*.PairedTrapAgreement is less than or equal to 0.03,

If *MatsSorbentTrapRecord*.PairedTrapAgreement does not equal  
*MatsCalcTrapAbsoluteDifference*,

Set *MatsSorbentTrapValidExists* to false.  
Return result E.

Else

Set *MatsSorbentTrapPairedTrapAgreementValid* to true.

Else

Set *MatsSorbentTrapValidExists* to false.  
Return result F.

Else // AbsoluteDifferenceIndicator is null (not 0 or 1)

Set *MatsSorbentTrapValidExists* to false.  
Return result K.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key], you did not report a [fieldname] value which is required if the sorbent trap system MODC Code is [value].	Critical Error Level 1
B	For [key], you reported a [fieldname2], but did not report a [fieldname].	Critical Error Level 1
C	For [key], you reported a [fieldname] value which is not reported if the sorbent trap system MODC Code is [value].	Critical Error Level 1
D	The [fieldname] value for [key] should be reported to two decimal places.	Critical Error Level 1
E	The [fieldname] is inconsistent with the value [value1] calculated from the reported [key] records used in the calculation.	Critical Error Level 1
F	For [key], you reported an Absolute Difference Indicator of 1 that can only be used if the absolute difference between the Hg concentrations of the paired traps is less than or equal to 0.03 ug/m3.	Critical Error Level 1
G	The [fieldname] is inconsistent with the value [value2] calculated from the reported [key] records used in the calculation.	Critical Error Level 1
H	For [key], you reported a passing Paired Trap Agreement that is not consistent with an MODC Code other than 01, 02 or 43.	Critical Error Level 1
I	For [key], you reported a passing Paired Trap Agreement that is not consistent with an MODC Code other than 01, 02 or 43.	Critical Error Level 1
J	For [key], you reported a failed Paired Trap Agreement that is not consistent with an MODC Code other than 33.	Critical Error Level 1
K	For [key], you did not report a [fieldname2] value which is required if the sorbent trap system MODC Code is [value].	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- MATS Sorbent Trap Evaluation

**Check Code:** MATSTRP-12

**Check Name:** Hg System Concentration Validation and Re-calculation

**Related Former Checks:**

**Applicability:**

**Description:** Determine if the Hg System Concentration is Valid.

**Specifications:**

Set *MatsCalcHgSystemConcentration* equal to null.

If the *MatsSorbentTrapPairedTrapAgreementValid* is equal to true,

    If the *MatsSorbentTrapRecord*.HgSystemConcentration is null,

        If the *MatsSorbentTrapRecord*.MODCCode is not "34" or "35",

            Set *MatsSorbentTrapValidExists* to false.  
            Return result A.

    Else

        If the *MatsSorbentTrapRecord*.MODCCode is not "01", "02", "32", "33", "43" or "44",

            Set *MatsSorbentTrapValidExists* to false.  
            Return result B.

    Else if the *MatsSorbentTrapRecord*.HgSystemConcentration is not reported in scientific notation rounded to 3 significant digits, OR to 2 significant digits when *MatsSorbentTrapRecord*.EndDateHour is on or after September 9, 2020.

        Set *MatsSorbentTrapValidExists* to false.  
        Return result C.

    Else if the *MatsSorbentTrapRecord*.HgSystemConcentration is 0,

        Set *MatsSorbentTrapValidExists* to false.  
        Return result E

    Else if any of the *MatsSorbentTrapSamplingTrainList*.HgConcentration entries are 0,

        Set *MatsSorbentTrapValidExists* to false.  
        Return result F

    Else

        If *MatsSorbentTrapRecord*.MODCCode is equal to "32" or "44",  
            Set *HgConcentrationCalculation* = multiply 1.111 times the  
            *MatsSorbentTrapSamplingTrainList*.HgConcentration entry where  
            *MatsSorbentTrapSamplingTrainList*.TrainQAStatusCode is equal to "PASSED".

        Else if *MatsSorbentTrapDataRecord*.MODCCode is equal to "33",  
            Set *HgConcentrationCalculation* = the higher of the  
            *MatsSorbentTrapSamplingTrainList*.HgConcentration entries for the sampling train components.

        Else //MODC "01", "02" or "43"  
            Set *HgConcentrationCalculation* = the sum of the *MatsSorbentTrapSamplingTrainList*.HgConcentration  
            for each train divided by two.

        Set *MatsCalcHgSystemConcentration* to *HgConcentrationCalculation*, converted to Scientific Notation with the  
        number of significant digits matching the following:

- 1) When **CurrentOperatingDate** is on or after September 9, 2020 AND **MatsSorbentTrapRecord.HgSystemConcentration** is NOT null, then the significant digits in **MatsSorbentTrapRecord.HgSystemConcentration**.
- 2) Otherwise 3 significant digits.

If **MatsSorbentTrapRecord.HgSystemConcentration** does not equal **MatsCalcHgSystemConcentration**,

Set **MatsSorbentTrapValidExists** to false.  
Return result D.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	For [key], you did not report a [fieldname] value which is required if the sorbent trap system MODC Code is [value].	Critical Error Level 1
B	For [key], you reported a [fieldname] value which is not reported if the sorbent trap system MODC Code is [value].	Critical Error Level 1
C	The [fieldname] value in the [key] records is not reported in scientific notation rounded to three significant figures, with one digit to the left of the decimal point.	Critical Error Level 1
D	The [fieldname] is inconsistent with the value [value1] calculated from the reported [key] records used in the calculation.	Critical Error Level 1
E	For [key], you reported a 0 for the Hg Concentration at the Sorbent Trap. When the measured Hg concentration is less than the detection limit, the Method Detection Limit should be reported at the Sorbent Trap and one or both Sampling Trains, as per 63.10007(e)(1).	Critical Error Level 1
F	For [key], you reported a 0 for the Hg Concentration at one or both Sampling Trains. When the measured Hg concentration is less than the detection limit, the Method Detection Limit should be reported instead of zero, as per 63.10007(e)(1).	Critical Error Level 1

#### Usage:

1      Process/Category:      Emissions Data Evaluation Report ----- MATS Sorbent Trap Evaluation

**Check Code:** MATSTRP-13

**Check Name:** Update Sorbent Trap Parameters

**Related Former Checks:**

**Applicability:**

**Description:**

**Specifications:**

For *SorbentTrapDictionary* entry where the key is equal to *MatsSorbentTrapRecord*.TrapId, set:

- 1) SorbentTrapValidExists set to *MatsSorbentTrapValidExists* .
- 2) SamplingTrainProblemComponentExists set to *MatsSamplingTrainProblemComponentExists*.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- MATS Sorbent Trap Evaluation
---	-------------------	---

Check Code:MATSTRP-14

Check Name:Number of Unit Operating Days

Related Former Checks:

Applicability:

Description:Check the Number of Unit Operating Days During Sampling Period.

Specifications:

If *MatsSorbentTrapRecord*.ModeCode is NOT equal to "34",

If *MatsSorbentTrapDictionary*.OperatingDateList where *MatsSorbentTrapDictionary* key is equal to *MatsSorbentTrapRecord*.TrapId contains more than 15 dates,

Return result A.

Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported a sorbent trap sampling period longer than the maximum 15 operating days.	Critical Error Level 1

Usage:

1

Process/Category:

Emissions Data Evaluation Report ----- MATS Sorbent Trap Last Hour Evaluation

**Check Code:** MATSTRP-15

**Check Name:** Ensure that Active Methods Span the Sorbent Trap Period.

**Related Former Checks:**

**Applicability:** General Check

**Description:** This check ensures that active ST or CEMST methods exists and span the period of the sorbent trap.

**Specifications:**

Locate *MethodRecords* for the location where:

- 1) MethodCode is equal to "ST" or "CEMST".
- 2) BeginDateHour is less than or equal to *MatsSorbentTrapRecord*.EndDateHour.
- 3) EndDateHour is null OR greater than or equal to *MatsSorbentTrapRecord*.BeginDateHour.

If not found,  
return result A.

Else if BeginDateHour and EndDateHour of the retrieved *MethodRecords* records do not span the entire period of the *MatsSorbentTrapRecord* BeginDateHour and EndDateHour,  
return result B.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported sorbent trap [KEY], but no sorbent trap methods are active during the period the trap is active.	Critical Error Level 1
B	You reported sorbent trap [KEY], but the sorbent trap methods are not active for the entire period the trap is active.	Critical Error Level 1

**Usage:**

1      Process/Category:      Emissions Data Evaluation Report ----- MATS Sorbent Trap Evaluation



## **Check Category:**

# **NSPS4T Summary, Compliance Period and Annual Checks**

**Check Code:** NSPS4T-1

**Check Name:** NSPS4T Summary: Validate Record Count

**Related Former Checks:**

**Applicability:**

**Description:** Ensures that the correct number of NSPS4T Summary rows exists, based on whether NSPS4T is an active program.

**Specifications:**

Set *Nsps4tCurrentSummaryRecord* to null.

Locate *CurrentSummaryRecords* in *Nsps4tSummaryRecords* where MonitorLocationKey is equal to *CurrentMonitorPlanLocationRecord*.MonitorLocationKey.

If the first two characters of *CurrentMonitorPlanLocationRecord*.LocationName do not equal to "CS", "MS", "CP" or "MP",

Locate *CurrentLocationProgramRecord* in *EmLocationProgramRecords* where:

- 1) ProgramCode is equal to "NSPS4T".
- 2) ClassCode is equal to "A".
- 3) UnitMonitorCertBeginDate is on or before the *CurrentReportingPeriodEndDate*.
- 4) EndDate is null, OR is on or after *CurrentReportingPeriodBeginDate*.

If *CurrentLocationProgramRecord* does not exist,

If the count of *CurrentSummaryRecords* is greater than 0,

Return result A.

Else

If the count of *CurrentSummaryRecords* is greater than 1,

Return result B.

Else

Set *Nsps4tCurrentSummaryRecord* to the single record in *CurrentSummaryRecords*.

Else

If the count of *CurrentSummaryRecords* is greater than 0,

Return result C.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You have reported data for the NSPS4T program, but based on information in the monitoring plan, this unit is not NSPS4T affected.	Critical Error Level 1
B	You have reported more than one set of NSPS4TSummary data for this location.	Critical Error Level 1
C	You have reported NSPS4T summary data for a stack or pipe, but the data is only allowed for a unit.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report NSPS4T Summary Data Evaluation

**Check Code:** NSPS4T-2

**Check Name:** NSPS4T Compliance Period: Validate Record Count

**Related Former Checks:**

**Applicability:**

**Description:** Ensures that an allowed number of NSPS4T Compliance Period rows exists.

**Specifications:**

Set *Nsps4tCurrentCompliancePeriod1Record* to null.

Set *Nsps4tCurrentCompliancePeriod2Record* to null.

Set *Nsps4tCurrentCompliancePeriod3Record* to null.

If *Nsps4tCurrentSummaryRecord* is NOT null,

Locate *CurrentCompliancePeriodRecords* in *Nsps4tCompliancePeriodRecords* where *Nsps4tSummaryKey* is equal to *Nsps4tCurrentSummaryRecord.Nsps4tSummaryKey*.

If *Nsps4tCurrentSummaryRecord.NoCompliancePeriodEndedIndicator* is equal to 1,

If the count of *CurrentCompliancePeriodRecords* is greater than 0,

Return result A.

Else

If the count of *CurrentCompliancePeriodRecords* is greater than 3,

Return result B.

Else if the count of *CurrentCompliancePeriodRecords* is equal to 0,

Return result C.

Else

Set *Nsps4tCurrentCompliancePeriod1Record* to the first record in *CurrentCompliancePeriodRecords*.

Set *Nsps4tCurrentCompliancePeriod2Record* to the second record in *CurrentCompliancePeriodRecords*, if it exists

Set *Nsps4tCurrentCompliancePeriod3Record* to the third record in *CurrentCompliancePeriodRecords*, if it exists.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You have reported <i>NoCompliancePeriodEndedIndicator</i> of 1, but have also reported compliance period data. This is incorrect.	Critical Error Level 1
B	You have reported compliance period data for more than 3 periods. This is incorrect.	Critical Error Level 1
C	You have reported <i>NoCompliancePeriodEndedIndicator</i> of 0 but have not reported compliance period data.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report NSPS4T Summary Data Evaluation

**Check Code:** NSPS4T-3

**Check Name:** NSPS4T Annual (4th Quarter): Validate Record Count

**Related Former Checks:**

**Applicability:**

**Description:** Ensures that the correct number of NSPS4T Annual rows exists.

**Specifications:**

Set *Nsps4tCurrentAnnualRecord* to null.

If *Nsps4tCurrentSummaryRecord* is not null,

Locate *CurrentAnnualRecords* in *Nsps4tAnnualRecords* where *Nsps4tSummaryKey* is equal to *Nsps4tCurrentSummaryRecord.Nsps4tSummaryKey*.

If *CurrentReportingPeriodQuarter* is not equal to 4,

If the count of *CurrentAnnualRecords* is greater than 0,

Return result A.

Else

If the count of *CurrentAnnualRecords* is greater than 1,

Return result B.

Else if the count of *CurrentAnnualRecords* is equal to 0,

Return result C.

Else

Set *Nsps4tCurrentAnnualRecord* to the single record in *CurrentAnnualRecords*.

#### Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You have reported NSPS4T Fourth Quarter data. This data should only be reported in fourth quarter files.	Critical Error Level 1
B	You have reported more than one NSPS4T Fourth Quarter record. You should only report one record per location.	Critical Error Level 1
C	You have not reported NSPS4T Fourth Quarter data. A fourth quarter file should contain this data.	Critical Error Level 1

#### Usage:

1 Process/Category: Emissions Data Evaluation Report NSPS4T Summary Data Evaluation

**Check Code:** NSPS4T-4

**Check Name:** NSPS4T Summary CO2 Emissions Standard vs. Electrical Load Code

**Related Former Checks:**

**Applicability:**

**Description:** Ensures that the NSPS4T Summary's CO2 Emissions Standard and Electrical Load are consistent with each other.

**Specifications:**

If *Nsps4tCurrentSummaryRecord* is not null,

    If *Nsps4tCurrentSummaryRecord*.Co2EmissionStandardElectricalLoadCode is not null, AND does not equal *Nsps4tCurrentSummaryRecord*.ElectricalLoadCode,

        Return result A.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You reported an Electrical Load that is not consistent with the reported CO2 Emission Standard.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report NSPS4T Summary Data Evaluation
---	-------------------	---

**Check Code:** NSPS4T-5

**Check Name:** NSPS4T Summary CO2 Emissions Standard vs. Compliance Period CO2 Emission Rate UOM

**Related Former Checks:**

**Applicability:**

**Description:** Ensures that the NSPS4T Summary's CO2 Emissions Standard and each reported Compliance Period CO2 Emission Rate UOM are consistent with each other.

**Specifications:**

Set *Nsps4tInvalidCo2EmissionRateUomList* to "".

If *Nsps4tCurrentSummaryRecord* is not null,

    If *Nsps4tCurrentSummaryRecord*.Co2EmissionStandardRateUomCode is not null,

        If *Nsps4tCurrentCompliancePeriod1Record* is not null,

            If *Nsps4tCurrentCompliancePeriod1Record*.Co2EmissionRateUOMCode is not null, AND is not equal to *Nsps4tCurrentSummaryRecord*.Co2EmissionStandardRateUomCode,

                Append *Nsps4tCurrentCompliancePeriod1Record*.Co2EmissionRateUOMLabel to *Nsps4tInvalidCo2EmissionRateUomList*.

        If *Nsps4tCurrentCompliancePeriod2Record* is not null,

            If *Nsps4tCurrentCompliancePeriod2Record*.Co2EmissionRateUOMCode is not null, AND is not equal to *Nsps4tCurrentSummaryRecord*.Co2EmissionStandardRateUomCode,

                Append *Nsps4tCurrentCompliancePeriod2Record*.Co2EmissionRateUOMLabel to *Nsps4tInvalidCo2EmissionRateUomList*.

        If *Nsps4tCurrentCompliancePeriod3Record* is not null,

            If *Nsps4tCurrentCompliancePeriod3Record*.Co2EmissionRateUOMCode is not null, AND is not equal to *Nsps4tCurrentSummaryRecord*.Co2EmissionStandardRateUomCode,

                Append *Nsps4tCurrentCompliancePeriod3Record*.Co2EmissionRateUOMLabel to *Nsps4tInvalidCo2EmissionRateUomList*.

    If *Nsps4tInvalidCo2EmissionRateUomList* does not equal "",

        Return result A.

Else if *Nsps4tCurrentSummaryRecord*.Co2EmissionStandardCode is equal to "MODUS",

    If *Nsps4tCurrentCompliancePeriod1Record* is not null,

        If *Nsps4tCurrentCompliancePeriod2Record* is not null, AND  
        *Nsps4tCurrentCompliancePeriod2Record*.Co2EmissionRateUOMCode is not equal to  
        *Nsps4tCurrentCompliancePeriod1Record*.Co2EmissionRateUOMCode,  
        OR  
        *Nsps4tCurrentCompliancePeriod3Record* is not null, AND  
        *Nsps4tCurrentCompliancePeriod3Record*.Co2EmissionRateUOMCode is not equal to  
        *Nsps4tCurrentCompliancePeriod1Record*.Co2EmissionRateUOMCode,

        Return result B.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
A	You have used different units of measure in your reporting of CO2 emission rate codes. You should use the same CO2EmissionRateUOMCode in all instances.	Informational Message
B	The reported NSPS4T CO2 emission rate UOM values in your reported compliance period records do not match.	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report NSPS4T Summary Data Evaluation
---	-------------------	---

**Check Category:**

**RATA Status**



**Check Code:** RATSTAT-1

**Check Name:** Check Low Sulfur and FLOW Exemptions

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** This check determines if an SO2 system is exempt for RATA Status purposes or determines the maximum number of levels applicable to a FLOW system for determination of RATA Status.

**Specifications:**

Set *CurrentRATAStatus* = null.

Set *OverrideRATABAF* = null.

Set *MaxLevelCount* = null.

Set *FlowRATAExemption* = false.

if (*QaStatusSystemTypeCode* begins with "SO2")

Locate a record in *TestExtensionExemptionRecords* for the location where the SystemID is equal to the *QaStatusSystemId*, the reporting period is the Current Reporting Period, AND the ExtensionExemptionCode is equal to "LOWSYTD"

if (*TestExtensionExemptionRecords* is found)

Set *CurrentRATAStatus* = "IC-Exempt"

else

Locate a record in *MonitorQualificationRecordsByHour* for the hour and where MonitoringLocationId = *CurrentMonitorLocationId* and the QualificationTypeCode is equal to "LOWSULF".

if (*MonitorQualificationRecordsByHour* is found)

Set *CurrentRATAStatus* = "IC-Exempt".

else if (*QaStatusSystemTypeCode* = "FLOW")

Set *PeakingBypass* = false.

if (*CurrentEntityType* is equal to "CS" or "MS")

Locate the record in *LocationAttributeRecordsByHourLocation* for the hour and location.

if (*LocationAttributeRecords*.BypassInd == 1)

Set *PeakingBypass* = true.

else

Set *PeakingBypass* = true.

For each record in *UnitStackConfigurationRecordsByHourLocation* for the hour and stack location

Locate a record in *MonitorQualificationRecordsByHour* for the hour where MonitoringLocationId = the unit location in the *UnitStackConfigurationRecordsByHourLocation* record and QualificationTypeCode is equal to "PK" or "SK".

if (*MonitorQualificationRecordsByHour* is NOT found)

Set *PeakingBypass* = false.

Exit for.

else if (*CurrentUnitisPeaking*)

Set *PeakingBypass* = true.

if (*PeakingBypass*)

Set *MaxLevelCount* = 1.

else

Locate a record in *MonitorQualificationRecordsByHour* for the hour where the MonitoringLocationId = *CurrentMonitorLocationId* and QualificationTypeCode is equal to "PRATA1"

if (*MonitorQualificationRecordsByHour* is found)

Set *MaxLevelCount* = 1.

else

Locate a record in *MonitorQualificationRecordsByHour* for the hour where MonitoringLocationId = *CurrentMonitorLocationId* and the QualificationTypeCode is equal to "PRATA2"

if (*MonitorQualificationRecordsByHour* is found)

Set *MaxLevelCount* = 2.

else

Set *MaxLevelCount* = 3.

Append *QaStatusSystemId* to *FLOWSystemIDArray* for the location.

Locate a record in *TestExtensionExemptionRecords* for the location where the SystemID is equal to the *QaStatusSystemId*, the ComponentID is equal to the the *QaStatusComponentId* the reporting period is the Current Reporting Period, AND the ExtensionExemptionCode is equal to "FLOWEXP"

if (*TestExtensionExemptionRecords* is found)

Set *FlowRATAExemption* = true.

## Results:

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

- |   |                   |  |
|---|-------------------|--|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- CO2/O2 RATA Status Evaluation               |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- H2O RATA Status Evaluation                  |
| 3 | Process/Category: | Emissions Data Evaluation Report ----- H2OM RATA Status Evaluation                 |
| 4 | Process/Category: | Emissions Data Evaluation Report ----- Hg RATA Status Evaluation                   |
| 5 | Process/Category: | Emissions Data Evaluation Report ----- NOX RATA Status Evaluation                  |
| 6 | Process/Category: | Emissions Data Evaluation Report ----- NOXC RATA Status Evaluation                 |
| 7 | Process/Category: | Emissions Data Evaluation Report ----- NOXR Unused P-PB NOX RATA Status Evaluation |
| 8 | Process/Category: | Emissions Data Evaluation Report ----- SO2 RATA Status Evaluation                  |
| 9 | Process/Category: | Emissions Data Evaluation Report ----- Stack Flow RATA Status Evaluation           |

**Check Code:** RATSTAT-2

**Check Name:** Locate Most Recent Prior RATA Test

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Determines if there is an applicable prior RATA test.

**Specifications:**

Set *PriorRATAREcord* = null.  
Set *InvalidRATAREcord* = null.  
Set *ApplicableSystemIDList* = null.

If *Flow RATA Exemption* is true,

Locate all *MonitorSystemComponentRecordsforHourandLocation* for the location and hour where the ComponentID is equal to *QaStatusComponentId*.

For each record found,  
Append *MonitorSystemComponentRecordsforHourandLocation.SystemID* to the *ApplicableSystemIDList*.

else

Append *QaStatusSystemId* to the *ApplicableSystemIDList*.

Locate the most recent record in *RATATestRecordsByLocationForQaStatus* for the location where the SystemID is in the *ApplicableSystemIDList* and the TestResultCode is not equal to "INVALID" and the EndDate/Hour is prior to the *CurrentDateHour*

if (*RATATestRecordsByLocationForQaStatus* is found)

Set *PriorRATAREcord* = the found record in *RATATestRecordsByLocationForQaStatus*.

if (*CurrentRATAStatus* is null)

Locate the most recent record in *RATATestRecordsByLocationForQaStatus* for the location where the SystemID is in the *ApplicableSystemIDList* and the EndDate/Hour is prior to the *CurrentDateHour* and the EndDate/Hour is greater than the *PriorRATAREcord.EndDate/Hour* and the TestResultCode is equal to "INVALID".

if (*RATATestRecordsByLocationForQaStatus* is found)

Set *InvalidRATAREcord* = the found record in *RATATestRecordsByLocationForQaStatus*.

else

Locate the most recent record in *RATATestRecordsByLocationForQaStatus* for the location where the SystemID is in the *ApplicableSystemIDList* and the TestResultCode is equal to "INVALID" and the EndDate/Hour is prior to the *CurrentDateHour*

if (*RATATestRecordsByLocationForQaStatus* is found)

Set *InvalidRATAREcord* = the found record in *RATATestRecordsByLocationForQaStatus*.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

- |   |                   |  |
|---|-------------------|--|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- CO2/O2 RATA Status Evaluation               |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- H2O RATA Status Evaluation                  |
| 3 | Process/Category: | Emissions Data Evaluation Report ----- H2OM RATA Status Evaluation                 |
| 4 | Process/Category: | Emissions Data Evaluation Report ----- Hg RATA Status Evaluation                   |
| 5 | Process/Category: | Emissions Data Evaluation Report ----- NOX RATA Status Evaluation                  |
| 6 | Process/Category: | Emissions Data Evaluation Report ----- NOXC RATA Status Evaluation                 |
| 7 | Process/Category: | Emissions Data Evaluation Report ----- NOXR Unused P-PB NOX RATA Status Evaluation |
| 8 | Process/Category: | Emissions Data Evaluation Report ----- SO2 RATA Status Evaluation                  |
| 9 | Process/Category: | Emissions Data Evaluation Report ----- Stack Flow RATA Status Evaluation           |

**Check Code:** RATSTAT-3

**Check Name:** Locate Most Recent Prior Event

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Determines if there is an applicable prior event.

**Specifications:**

Set *PriorRATAEventRecord* = null.

If (*CurrentRATAStatus* is null)

Locate the most recent record in *QACertificationEventRecords* where the SystemID is in the *ApplicableSystemIDList* and RATARequired is equal to "Y" and the QACertEventDate is either:

- a) prior to the *CurrentDateHour* OR
- b) equal to both the *CurrentDateHour* and the ConditionalBeginDate/Hour;

AND either:

- a) *PriorRATARecord* is null OR
- b) QACertEventDate/Hour is after the *PriorRATARecord*.EndDate/Hour OR
- c) QACertEventDate/Hour is equal to the *PriorRATARecord*.EndDate/Hour AND (TestCompletionDate is null or the TestCompletionDate/Hour is after the *PriorRATARecord*.EndDate/Hour)

AND either:

- a) *Annual Reporting Requirement* is equal to true OR
- b) QACertEventDate/Hour is on or after April 1 of the year of *CurrentDateHour*

AND either:

- a) *QaStatusSystemTypeCode* NOT is set (HCL, HF, HG, ST) OR
- b) QACertEventCode is in set (101, 110, 125, 130)

if (*QACertificationEventRecords* is found)

Set *PriorRATAEventRecord* = the found record in *QACertificationEventRecords*.

if (*PriorRATAEventRecord* is null)

if (*PriorRATARecord* is null)

Set *CurrentRATAStatus* = "OOC-No Prior Test or Event"

if (*CurrentMhvParameter* == "FLOW")

Set *OverrideRATABAF* = 1.0

else if (*InvalidRATARecord* is not null AND *PriorRATAEventRecord*.QACertEventDate/Hour is after *InvalidRATARecord*.EndDate/Hour)

Locate the earliest record in *RATATestRecordsByLocationForQaStatus* for the location where the SystemID is equal to the *QaStatusSystemId* and the EndDate/Hour is after the *PriorRATAEventRecord*.QACertEventDate/Hour and the EndDate/Hour is prior to *CurrentDateHour* and the TestResult is equal to "INVALID"

if (*RATATestRecordsByLocationForQaStatus* is found)

Set *InvalidRATARecord* = the found record in *RATATestRecordsByLocationForQaStatus*.

else

Set *InvalidRATAREcord* = null.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2/O2 RATA Status Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- H2O RATA Status Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- H2OM RATA Status Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- Hg RATA Status Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOX RATA Status Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- NOXC RATA Status Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- NOXR Unused P-PB NOX RATA Status Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- SO2 RATA Status Evaluation
9	Process/Category:	Emissions Data Evaluation Report ----- Stack Flow RATA Status Evaluation

**Check Code:** RATSTAT-4  
**Check Name:** Check RATA Result  
**Related Former Checks:**  
**Applicability:** CEM Check  
**Description:** Checks the result of the prior Rata test.  
**Specifications:**

if (*CurrentRATAStatus* is null and *PriorRATARecord* is not null and *PriorRATAEventRecord* is null)

Set *EvaluateMultiLevelRATA* = true.

if (*PriorRATARecord.QANeedsEvaluationFlag* = "Y")

Set *CurrentRATAStatus* = "Prior Test Not Yet Evaluated".

else if (*PriorRATARecord.TestResultCode* = null or *PriorRATARecord.TestResultCode* = "FAILED" or  
*PriorRATARecord.TestResultCode* = "ABORTED")

Locate the most recent record in *QACertificationEventRecords* where the SystemID is in the *ApplicableSystemIDList* and RATARequired is equal to "Y" and the ConditionalBeginDate/Hour is:

- a) on or prior to the *CurrentDateHour* AND
- b) on or after the *PriorRATARecord.EndDate/Hour*; AND
- c) *Annual Reporting Requirement* is equal to true OR QACertEventDate/Hour is on or after April 1 of the year of the *CurrentDateHour*.

if (*QACertificationEventRecords* is found)

Set *PriorRATAEventRecord* = found record in *QACertificationEventRecords*.

elseif (*PriorRATARecord.TestResultCode* = null)

Set *CurrentRATAStatus* = "OOC-Prior Test Has Critical Errors".

if (*CurrentMhvParameter* == "FLOW")

Set *OverrideRATABAF* = *PriorRATARecord.OverallBiasAdjustmentFactor*.

else if (*PriorRATARecord.TestResultCode* = "FAILED")

Set *CurrentRATAStatus* = "OOC-Prior Test Failed".

if (*CurrentMhvParameter* == "FLOW")

Set *OverrideRATABAF* = *PriorRATARecord.OverallBiasAdjustmentFactor*.

else if (*PriorRATARecord.TestResultCode* = "ABORTED")

Set *CurrentRATAStatus* = "OOC-Prior Test Aborted".

if (*CurrentMhvParameter* == "FLOW")

Set *OverrideRATABAF* = *PriorRATARecord.OverallBiasAdjustmentFactor*.



**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2/O2 RATA Status Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- H2O RATA Status Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- H2OM RATA Status Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- Hg RATA Status Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOX RATA Status Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- NOXC RATA Status Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- NOXR Unused P-PB NOX RATA Status Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- SO2 RATA Status Evaluation
9	Process/Category:	Emissions Data Evaluation Report ----- Stack Flow RATA Status Evaluation

**Check Code:** RATSTAT-5

**Check Name:** Determine Event Conditional Status

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** If a QA Cert Event was found that affects this MHV record, evaluate the conditional status.

**Specifications:**

Set *SubsequentRATATestRecord* = null.  
 Set *RATAMissingOpDataInfo* = null.  
 Set *RATA Event Operating Level Count* = null.

if (*CurrentRATAStatus* is null and *PriorRATAEventRecord* is not null)

if (*PriorRATAEventRecord*.ConditionalDataBeginDate/Hour is null or *CurrentDateHour* is prior to the  
*PriorRATAEventRecord*.ConditionalDataBeginDate/Hour)

Set *CurrentRATAStatus* = "OOC-Event".  
 Set *OverrideRATABAF* = 1.0.

else

Locate the earliest record in *RATATestRecordsByLocationForQASStatus* where the SystemID is equal to the  
*PriorRATAEventRecord*.SystemID, the TestResult is not equal to "INVALID" and the EndDate/Hour is on or after the  
*PriorRATAEventRecord*.ConditionalDataBeginDate/Hour.

if (*RATATestRecordsByLocationForQASStatus* is found)

Set *SubsequentRATATestRecord* = the found record in *RATATestRecordsByLocationForQASStatus*.

if (*RATATestRecordsByLocationForQASStatus*.QANeedsEvaluationFlag = "Y")

Set *CurrentRATAStatus* = "Recertification Test Not Yet Evaluated".

else if (*RATATestRecordsByLocationForQASStatus*.TestResultCode is null)

Set *CurrentRATAStatus* = "OOC-Recertification Test Has Critical Errors".

if (*CurrentMhvParameter* == "FLOW")

Set *OverrideRATABAF* = *SubsequentRATATestRecord*.OverallBiasAdjustmentFactor.

else if (*RATATestRecordsByLocationForQASStatus*.TestResultCode = "FAILED")

Set *CurrentRATAStatus* = "OOC-Recertification Test Failed".

if (*CurrentMhvParameter* == "FLOW")

Set *OverrideRATABAF* = *SubsequentRATATestRecord*.OverallBiasAdjustmentFactor.

else if (*RATATestRecordsByLocationForQASStatus*.TestResultCode = "ABORTED")

Set *CurrentRATAStatus* = "OOC-Recertification Test Aborted".

if (*CurrentMhvParameter* == "FLOW")

Set *OverrideRATABAF* = *SubsequentRATATestRecord*.OverallBiasAdjustmentFactor.

else

if (*PriorRATATestRecord* is null)

*RequiredLevelCount* = *MaxLevelCount*

else (if **PriorRATAEventRecord**.RATA3Required is equal to "Y")  
    *RequiredLevelCount* = 3

else (if **PriorRATAEventRecord**.RATA2Required is equal to "Y")  
    *RequiredLevelCount* = 2

else  
    *RequiredLevelCount* = 1

If (number of levels in **RATATestRecordsByLocationForQAStatus**.OpLevelCodeList is less than *RequiredLevelCount*)

    Set **CurrentRATAStatus** = "OOC-Incomplete Recertification".

    if (**CurrentMhvParameter** == "FLOW")  
        Set **OverrideRATABAF** = **SubsequentRATARecord**.OverallBiasAdjustmentFactor.

    else  
        Set **RATA Event Operating Level Count** to the *RequiredLevelCount*.

If (**InvalidRATARecord** is null)

    Locate the earliest record in **RATATestRecordsByLocationForQAStatus** where the SystemID is equal to the **PriorRATAEventRecord**.SystemID, the TestResult is equal to "INVALID" and the EndDate/Hour is on or after the **PriorRATAEventRecord**.ConditionalDataBeginDate/Hour and is before the EndDate/EndHour of the **RATATestRecordsByLocationForQAStatus** record retrieved above.

    if (**RATATestRecordsByLocationForQAStatus** is found)  
        Set **InvalidRATARecord** = the found record in **RATATestRecordsByLocationForQAStatus**.

else

    if (**PriorRATAEventRecord**.RATA3Required is equal to "Y")  
        Set **RATA Event Operating Level Count** to 3.

    else (if **PriorRATAEventRecord**.RATA2Required is equal to "Y")  
        Set **RATA Event Operating Level Count** to 2.

    else  
        Set **RATA Event Operating Level Count** to 1.

if (**CurrentRATAStatus** is null AND **Annual Reporting Requirement** == false)

    If (**SubsequentRATARecord** is not null and **SubsequentRATARecord**.EndDate/Hour is greater than October 30th of the year of the **CurrentDateHour**) OR (**SubsequentRATARecord** is null and the **CurrentDateHour** is in the 3rd quarter))

        Set **CurrentRATAStatus** = "OOC-Conditional Period Expired".

        if (**CurrentMhvParameter** == "FLOW")  
            Set **OverrideRATABAF** = 1.0.

if (**CurrentRATAStatus** is null)

    if (**PriorRATAEventRecord**.RATACertEvent == "Y") and (**PriorRATAEventRecord**.SystemTypeCode is <> "HF")

        if ((**CurrentMhvParameter** <> "FLOW" and **PriorRATAEventRecord**.EventCode = 125) or

(*CurrentMhvParameter* == "FLOW" and *PriorRATAEventRecord.EventCode* = 305))

if (the associated BeginDate of the system in the *PriorRATAEventRecord* is null)

Set *CurrentRATAStatus* = "Invalid Monitor System"

else

If (the associated SystemTypeCode of the system in the *PriorRATAEventRecord* == "SO2")

Locate the record in *LocationProgramRecordsByHourLocation* with the latest UnitMonitorCertBeginDate where the ProgramCode is in *ProgramRequiresSo2SystemCertificationList* and the UnitMonitorCertBeginDate is ON OR BEFORE the associated BeginDate of the system in the *PriorRATAEventRecord*.

If (the record in *LocationProgramRecordsByHourLocation* is not found)

Locate the record in *LocationProgramRecordsByHourLocation* with the latest EmissionsRecordingBeginDate where the ProgramCode is in *ProgramRequiresSo2SystemCertificationList* and the EmissionsRecordingBeginDate is ON OR BEFORE the associated BeginDate of the system in the *PriorRATAEventRecord*.

else if (the associated SystemTypeCode of the system in the *PriorRATAEventRecord* == "NOX")

Locate the record in *LocationProgramRecordsByHourLocation* with the latest UnitMonitorCertBeginDate where the ProgramCode is in *ProgramRequiresNoxSystemCertificationList* and the UnitMonitorCertBeginDate is ON OR BEFORE the associated BeginDate of the system in the *PriorRATAEventRecord*.

If (the record in *LocationProgramRecordsByHourLocation* is not found)

Locate the record in *LocationProgramRecordsByHourLocation* with the latest EmissionsRecordingBeginDate where the ProgramCode is in *ProgramRequiresNoxSystemCertificationList* and the EmissionsRecordingBeginDate is ON OR BEFORE the associated BeginDate of the system in the *PriorRATAEventRecord*.

else if (the associated SystemTypeCode of the system in the *PriorRATAEventRecord* == "NOXC")

Locate the record in *LocationProgramRecordsByHourLocation* with the latest UnitMonitorCertBeginDate where the ProgramCode is in set *ProgramRequiresNoxcSystemCertificationList* and the UnitMonitorCertBeginDate is ON OR BEFORE the associated BeginDate of the system in the *PriorRATAEventRecord*.

If (the record in *LocationProgramRecordsByHourLocation* is not found)

Locate the record in *LocationProgramRecordsByHourLocation* with the latest EmissionsRecordingBeginDate where the ProgramCode is in set *ProgramRequiresNoxcSystemCertificationList* and the EmissionsRecordingBeginDate is ON OR BEFORE the associated BeginDate of the system in the *PriorRATAEventRecord*.

else if (the associated SystemTypeCode of the system in the *PriorRATAEventRecord* in set ("HCL, HG, ST"))

Locate the record in **LocationProgramRecordsByHourLocation** with the latest UnitMonitorCertBeginDate where the ProgramCode is in set {MATS} and the UnitMonitorCertBeginDate is ON OR BEFORE the associated BeginDate of the system in the **PriorRATAEventRecord**.

If (the record in **LocationProgramRecordsByHourLocation** is not found)

Locate the record in **LocationProgramRecordsByHourLocation** with the latest EmissionsRecordingBeginDate where the ProgramCode is in set {MATS} and the EmissionsRecordingBeginDate is ON OR BEFORE the associated BeginDate of the system in the **PriorRATAEventRecord**.

else

Locate the record in **LocationProgramRecordsByHourLocation** with the latest UnitMonitorCertBeginDate where the UnitMonitorCertBeginDate is ON OR BEFORE the associated BeginDate of the system in the **PriorRATAEventRecord**.

If (the record in **LocationProgramRecordsByHourLocation** is not found)

Locate the record in **LocationProgramRecordsByHourLocation** with the latest EmissionsRecordingBeginDate where the EmissionsRecordingBeginDate is ON OR BEFORE the associated BeginDate of the system in the **PriorRATAEventRecord**.

If (the record in **LocationProgramRecordsByHourLocation** is not found)

Set **CurrentRATAStatus** = "Missing Program".

else if (**LocationProgramRecordsByHourLocation**.UnitMonitorCertDeadline is not null)

if (CurrentDate is prior to the **LocationProgramRecordsByHourLocation**.UnitMonitorCertDeadline)

Set **CurrentRATAStatus** = "IC-Conditional".

else

Set **CurrentRATAStatus** = "OOC-Conditional Period Expired".

if (**CurrentMhvParameter** == "FLOW")

Set **OverrideRATABAF** = 1.0.

else

if (CurrentDate is prior to the **LocationProgramRecordsByHourLocation**.UnitMonitorCertBeginDate + 180 days)

Set **CurrentRATAStatus** = "IC-Conditional".

else

Set **CurrentRATAStatus** = "OOC-Conditional Period Expired".

if (**CurrentMhvParameter** == "FLOW")

Set **OverrideRATABAF** = 1.0.

else

If (the number of calendar days ON OR AFTER the **PriorRATAEventRecord**.QACertEventDate and ON OR BEFORE the **CurrentDateHour** > 180)

Set **CurrentRATAStatus** = "OOC-Conditional Period Expired".

if (**CurrentMhvParameter** == "FLOW")  
Set **OverrideRATABAF** = 1.0.

else if (the quarter of the **PriorRATAEventRecord.QACertEventDate** is equal to the quarter of the **CurrentDateHour**)

If (the number of calendar days ON OR AFTER the **PriorRATAEventRecord.QACertEventDate** and ON OR BEFORE the **CurrentDateHour** > 90)

If ( **PrimaryBypassActiveForHour** is true AND **QaStatusSystemTypeCode** is "NOX" )

If ( Days in **QaCertEventSuppDataDictionaryArray** for the current location and QA Cert Event Date where QaCertEventKey is equal to **PriorRATAEventRecord.QaCertEventKey** > 90 )

Set **CurrentRATAStatus** = "OOC-Conditional Period Expired".

Else

Set **CurrentRATAStatus** = "IC-Conditional".

Else

If (**Rpt Period Op Hours Accumulator Array** for the location == -1)  
Set **CurrentRATAStatus** = "Invalid Op Data".

else if (the number of calendar days ON OR AFTER the **PriorRATAEventRecord.QACertEventDate** and ON OR BEFORE the **CurrentDateHour** is equal to **Rpt Period Op Days Accumulator Array** for the location)

Set **CurrentRATAStatus** = "OOC-Conditional Period Expired".

if (**CurrentMhvParameter** == "FLOW")  
Set **OverrideRATABAF** = 1.0.

else

Set **CurrentRATAStatus** = "IC-Conditional".

else

Set **CurrentRATAStatus** = "IC-Conditional".

else if (**PriorRATAEventRecord.MinOpDaysPriorQuarter** is null)  
Set **PriorRATAEventRecord.MinOpDaysPriorQuarter** = 0  
Set **PriorRATAEventRecord.MaxOpDaysPriorQuarter** = 0

For each quarter beginning with the quarter of the **PriorRATAEventRecord.QACertEventDate** and continuing through the quarter BEFORE the **CurrentDateHour**:

if (**EarliestLocationReportDate** <= the last day of the quarter being checked)

If ( **PrimaryBypassActiveForHour** is true AND **QaStatusSystemTypeCode** is "NOX" )

Locate a record in

***SystemOperatingSuppDataRecordsByLocation*** where:

- 1) SystemId is equal to ***QaStatusSystemId***.
- 2) Year is equal to the year being checked.
- 3) Quarter is equal to the quarter being checked.
- 4) OpSuppDataTypeCode = "OP".

If ( ***SystemOperatingSuppDataRecordsByLocation*** is found )  
 Set *OperatingDayCount* =  
***SystemOperatingSuppDataRecordsByLocation***.Days.

Else  
 Set *OperatingDayCount* = null.

Else

Locate the record in ***OperatingSuppDataRecordsbyLocation***  
 where the OpTypeCode is equal to "OPDAYS" and the reporting  
 period is equal to the quarter being checked.

If ( ***OperatingSuppDataRecordsbyLocation*** is found )  
 Set *OperatingDayCount* =  
***OperatingSuppDataRecordsbyLocation***.OpValue.

Else  
 Set *OperatingDayCount* = null.

if ( *OperatingDayCount* is null )

Locate the record in ***ReportingFrequencyByLocation*** where  
 CalendarYear/Quarter are equal to the quarter being checked.

if found, and (the quarter being checked is 2 or 3, or  
***ReportingFrequencyByLocation***.ReportingFrequencyCode is equal to  
 "Q"),

Set ***PriorRATAEventRecord***.MinOpDaysPriorQuarter = -1  
 Set ***RATAMissingOpDataInfo*** = "[YEAR] Q[QTR]" (where  
 [YEAR] is the year of the quarter being checked and [QTR] is  
 the number of the quarter being checked.)  
 exit for.

else if ( the quarter being checked is the quarter of the  
***PriorRATAEventRecord***.QaCertEventDate )

*supplementalCount* = null.

If ( ***PrimaryBypassActiveForHour*** is true AND  
***QaStatusSystemTypeCode*** is "NOX" AND  
***PriorRATAEventRecord***.QaCertEventDateSystemSuppDataExists is true  
 )

*supplementalCount* =  
***PriorRATAEventRecord***.QaCertEventSystemOpDaysCount.

If ( *supplementalCount* is null AND  
***PriorRATAEventRecord***.QaCertEventDateSuppDataExists is true )

*supplementalCount* =  
***PriorRATAEventRecord***.QaCertEventOpDaysCount.

If ( *supplementalCount* is NOT null )

Set ***PriorRATAEventRecord.MinOpDaysPriorQuarter*** =  
***PriorRATAEventRecord.MinOpDaysPriorQuarter*** +  
*supplementalCount*.

Set ***PriorRATAEventRecord.MaxOpDaysPriorQuarter*** =  
***PriorRATAEventRecord.MaxOpDaysPriorQuarter*** +  
*supplementalCount*.

Else

If ( *OperatingDayCount* MINUS the number of calendar days in  
the quarter being checked that are PRIOR to the  
***PriorRATAEventRecord.QACertEventDate*** > 0 )

Set ***PriorRATAEventRecord.MinOpDaysPriorQuarter*** =  
*OperatingDayCount* MINUS the number of calendar  
days in the quarter being checked that are PRIOR to the  
***PriorRATAEventRecord.QACertEventDate***

If ( *OperatingDayCount* is less than the number of calendar  
days in the quarter being checked that are ON OR AFTER the  
***PriorRATAEventRecord.QACertEventDate*** )

Set ***PriorRATAEventRecord.MaxOpDaysPriorQuarter***  
= *OperatingDayCount*.

else

Set ***PriorRATAEventRecord.MaxOpDaysPriorQuarter***  
= the number of calendar days in the quarter being  
checked that are ON OR AFTER the  
***PriorRATAEventRecord.QACertEventDate***.

else

Set ***PriorRATAEventRecord.MinOpDaysPriorQuarter*** =  
***PriorRATAEventRecord.MinOpDaysPriorQuarter*** +  
*OperatingDayCount*.

Set ***PriorRATAEventRecord.MaxOpDaysPriorQuarter*** =  
***PriorRATAEventRecord.MaxOpDaysPriorQuarter*** +  
*OperatingDayCount*.

If ( ***PrimaryBypassActiveForHour*** is true AND ***QaStatusSystemTypeCode*** is "NOX" )

Set *CurrentOpDays* to Days in ***SystemOperatingSuppDataDictionaryArray*** for  
the current location where *SystemId* is equal to ***QaStatusSystemId***.

Else

Set *CurrentOpDays* to ***Rpt Period Op Days Accumulator Array*** for the Location.

if (***PriorRATAEventRecord.MinOpDaysPriorQuarter*** == -1  
set ***CurrentRATAStatus*** to "Missing Op Data"

else if (***PriorRATAEventRecord.MinOpDaysPriorQuarter*** + *CurrentOpDays* > 90)

Set ***CurrentRATAStatus*** = "OOC-Conditional Period Expired".



```
        if (CurrentMhvParameter == "FLOW")
            Set OverrideRATABAF = 1.0.

        else if ( PriorRATAEventRecord.MinOpDaysPriorQuarter ==
PriorRATAEventRecord.MaxOpDaysPriorQuarter )
            Set CurrentRATAStatus = "IC-Conditional".

        else if (PriorRATAEventRecord.MaxOpDaysPriorQuarter + CurrentOpDays > 90)
            Set CurrentRATAStatus = "Undetermined-Conditional Data".

        else
            Set CurrentRATAStatus = "IC-Conditional".

    else
        Set CurrentRATAStatus = "IC-Conditional".

else

    If (the quarter of the PriorRATAEventRecord.ConditionalBeginDate is equal to the quarter of the
CurrentDateHour)

        If ( PrimaryBypassActiveForHour is true AND QaStatusSystemTypeCode is "NOX" )

            If ( Hours in QaCertEventSuppDataDictionaryArray for the current location and
            Conditional Data Begin Hour where QaCertEventKey is equal to
            PriorRATAEventRecord.QaCertEventKey > 720 )
                Set CurrentRATAStatus = "OOC-Conditional Period Expired".
            Else
                Set CurrentRATAStatus = "IC-Conditional".

        Else

            Count the number of HourlyOpData records for the location where OpTime is greater
            than 0 and Date/Hour is ON OR AFTER the
            PriorRATAEventRecord.ConditionalBeginDate/Hour and ON OR BEFORE
            CurrentDateHour,

            If the number > 720,

                Set CurrentRATAStatus = "OOC-Conditional Period Expired".

                if (CurrentMhvParameter == "FLOW")
                    Set OverrideRATABAF = 1.0.

                else
                    Set CurrentRATAStatus = "IC-Conditional".

            else

                if (PriorRATAEventRecord.MinOpHoursPriorQuarter is null)
                    Set PriorRATAEventRecord.MinOpHoursPriorQuarter = 0
                    Set PriorRATAEventRecord.MaxOpHoursPriorQuarter = 0

                for each quarter beginning with the quarter of the
                PriorRATAEventRecord.ConditionalBeginDate and continuing through the quarter
                BEFORE the CurrentDateHour:
```

if (*EarliestLocationReportDate* <= the last day of the quarter being checked)

If ( *PrimaryBypassActiveForHour* is true AND  
*QaStatusSystemTypeCode* is "NOX" )

Locate a record in  
*SystemOperatingSuppDataRecordsByLocation* where:

- 1) *SystemId* is equal to *QaStatusSystemId*.
- 2) *Year* is equal to the year being checked.
- 3) *Quarter* is equal to the quarter being checked.
- 4) *OpSuppDataTypeCode* = "OP" if  
*AnnualReportingRequirement* == true OR the quarter  
being checked != 2, otherwise "OPMJ".

If ( *SystemOperatingSuppDataRecordsByLocation* is found )  
Set *OperatingHourCount* =  
*SystemOperatingSuppDataRecordsByLocation*.Hours.

Else  
Set *OperatingHourCount* = null.

Else

if (*Annual Reporting Requirement* == false AND the quarter  
being checked == 2)

Locate the record in  
*OperatingSuppDataRecordsbyLocation* where the  
*OpTypeCode* is equal to "OSHOURLS" and the reporting  
period is equal to the quarter being checked.

else

Locate the record in  
*OperatingSuppDataRecordsbyLocation* where the  
*OpTypeCode* is equal to "OPHOURLS", *FuelCode* is  
null, and the reporting period is equal to the quarter  
being checked.

If ( *OperatingSuppDataRecordsByLocation* is found )  
Set *OperatingHourCount* =  
*OperatingSuppDataRecordsByLocation*.OpValue.

Else  
Set *OperatingHourCount* = null.

if ( *OperatingHourCount* is null )

Locate the record in *ReportingFrequencyByLocation* where  
*CalendarYear/Quarter* are equal to the quarter being checked.

if found, and (the quarter being checked is 2 or 3, or  
*ReportingFrequencyByLocation*.ReportingFrequencyCode is  
equal to "Q"),

Set *PriorRATAEventRecord*.MinOpHoursPriorQuarter  
= -1

Set ***RATAMissingOpDataInfo*** = "[YEAR] Q[QTR]"  
(where [YEAR] is the year of the quarter being checked  
and [QTR] is the number of the quarter being checked.)  
exit for.

else if ( the quarter being checked is the quarter of the  
***PriorRATAEventRecord.ConditionalBeginDate*** )

*supplementalCount* = null.

If ( ***PrimaryBypassActiveForHour*** is true AND  
***QaStatusSystemTypeCode*** is "NOX" AND  
***PriorRATAEventRecord.ConditionalBeginHourSystemSuppDat***  
***aExists*** is true )

*supplementalCount* =  
***PriorRATAEventRecord.ConditionalBeginSystemOpHo***  
***ursCount***.

If ( *supplementalCount* is null AND  
***PriorRATAEventRecord.ConditionalBeginHourSuppDataExists***  
is true )

*supplementalCount* =  
***PriorRATAEventRecord.ConditionalBeginOpHoursCou***  
***nt***.

If ( *supplementalCount* is NOT null )

Set ***PriorRATAEventRecord.MinOpHoursPriorQuarter***  
= ***PriorRATAEventRecord.MinOpHoursPriorQuarter*** +  
*supplementalCount*.  
Set ***PriorRATAEventRecord.MaxOpHoursPriorQuarter***  
= ***PriorRATAEventRecord.MaxOpHoursPriorQuarter*** +  
*supplementalCount*.

Else

If ( *OperatingHourCount* MINUS the number of  
calendar hours in the quarter being checked that are  
PRIOR to the  
***PriorRATAEventRecord.ConditionalBeginDate/Hour*** >  
0)

Set  
***PriorRATAEventRecord.MinOpHoursPriorQua***  
***rter*** = *OperatingHourCount* MINUS the  
number of calendar hours in the quarter being  
checked that are PRIOR to the  
***PriorRATAEventRecord.ConditionalBeginDate***  
***/Hour***

If ( *OperatingHourCount* is less than the number of  
calendar hours in the quarter begin checked that are ON  
OR AFTER the  
***PriorRATAEventRecord.ConditionalBeginDate/Hour***)

Set

**PriorRATAEventRecord**.MaxOpHoursPriorQuarter = *OperatingHourCount*.

else

Set

**PriorRATAEventRecord**.MaxOpHoursPriorQuarter = the number of calendar hours in the quarter being checked that are ON OR AFTER the

**PriorRATAEventRecord**.ConditionalBeginDate/Hour.

else

Set **PriorRATAEventRecord**.MinOpHoursPriorQuarter = **PriorRATAEventRecord**.MinOpHoursPriorQuarter + *OperatingHourCount*.

Set **PriorRATAEventRecord**.MaxOpHoursPriorQuarter = **PriorRATAEventRecord**.MaxOpHoursPriorQuarter + *OperatingHourCount*.

If ( **PrimaryBypassActiveForHour** is true AND **QaStatusSystemTypeCode** is "NOX" )

Set *CurrentOpHours* to Hours in **SystemOperatingSuppDataDictionaryArray** for the current location where SystemId is equal to **QaStatusSystemId**.

Else

Set *CurrentOpHours* to **Rpt Period Op Hours Accumulator Array** for the Location.

if ( **PriorRATAEventRecord**.MinOpHoursPriorQuarter == -1)  
set **CurrentRATAStatus** to "Missing Op Data"

else if ( **Rpt Period Op Days Accumulator Array** for the location == -1)

if ( **PriorRATAEventRecord**.MinOpHoursPriorQuarter > 720)

Set **CurrentRATAStatus** = "OOC-Conditional Period Expired".

if ( **CurrentMhvParameter** == "FLOW")  
Set **OverrideRATABAF** = 1.0.

else

Set **CurrentRATAStatus** = "Invalid Op Data".

else

if ( **PriorRATAEventRecord**.MinOpHoursPriorQuarter + *CurrentOpHours* > 720)

Set **CurrentRATAStatus** = "OOC-Conditional Period Expired".

if ( **CurrentMhvParameter** == "FLOW")  
Set **OverrideRATABAF** = 1.0.

else if ( **PriorRATAEventRecord**.MinOpHoursPriorQuarter == **PriorRATAEventRecord**.MaxOpHoursPriorQuarter)  
Set **CurrentRATAStatus** = "IC-Conditional".

else if ( **PriorEventRecord**.MaxOpHoursPriorQuarter + *CurrentOpHours* > 720)

---

Set *CurrentRATAStatus* = "Undetermined-Conditional Data".

else

Set *CurrentRATAStatus* = "IC-Conditional".**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2/O2 RATA Status Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- H2O RATA Status Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- H2OM RATA Status Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- Hg RATA Status Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOX RATA Status Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- NOXC RATA Status Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- NOXR Unused P-PB NOX RATA Status Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- SO2 RATA Status Evaluation
9	Process/Category:	Emissions Data Evaluation Report ----- Stack Flow RATA Status Evaluation

**Check Code:** RATSTAT-6  
**Check Name:** Evaluate Prior Multi-Level RATA

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Determines (if applicable) if a prior multi level RATA exists and is acceptable.

**Specifications:**

Set *PriorRataIsAlternateSingleLevelRATA* = false.

Set *ThreeLoadRATAExpirationDate* to null.

If (*CurrentMhvParameter* == "FLOW" AND *PriorRATAREcord* is not null AND *CurrentRATAStatus* is null, starts with "IC", or starts with "Undetermined")

Set *PriorRataIsAlternateSingleLevelRATA* = true.

Set *PriorMultiLevelRATAREcord* = null.

Set *InvalidMultiLevelRATAREcord* = null.

Set *PriorMaxLevelRATAREcord* = null.

if (the number of levels in *PriorRATAREcord*.OpLevelCodeList is greater than or equal to the *MaxLevelCount*)

Set *PriorRataIsAlternateSingleLevelRATA* = false.

exit check.

else if (*PriorRATAREcord*.OpLevelCodeList contains 2 levels)

Set *PriorRataIsAlternateSingleLevelRATA* = false.

if (*MaxLevelCount* > 3)

exit check.

else if (*AnnualReportingRequiremnt* == true)

if (*PriorRATAREcord*.OpLevelCodeList contains 1 level and *PriorRATAREcord*.TestClaimCode == "SLC" )

Set *PriorRataIsAlternateSingleLevelRATA* = false.

if (*PriorRataIsAlternateSingleLevelRATA* == true AND *RATAEventOperatingLevelCount* is null or less than 2)

Locate the most recent record in *RATATestRecordsByLocationForQASatus* for the location where the SystemID is equal to the *PriorRATAREcord*.SystemID and the TestResultCode is not equal to "INVALID" and the EndDate/Hour is prior to the *PriorRATAREcord*.EndDate/Hour, and (the number of operating levels in the OpLevelCodeList is greater than or equal to 2 or the TestClaimCode == "SLC").

if (*RATATestRecordsByLocationForQASatus* is found)

Set *PriorMultiLevelRATAREcord* = the found record in *RATATestRecordsByLocationForQASatus*.

Locate the most recent record in *RATATestRecordsByLocationForQASatus* for the location where the SystemID is equal to the *PriorRATAREcord*.SystemID and the EndDate/Hour is prior to the *PriorRATAREcord*.EndDate/Hour and the EndDate/Hour is greater than the *PriorMultiLevelRATAREcord*.EndDate/Hour and the TestResult is equal to "INVALID", and (the number of operating levels the OpLevelCodeList is greater than or equal to 2 or the TestClaimCode == "SLC").

if (*RATATestRecordsByLocationForQASatus* is found)

Set *InvalidMultiLevelRATAREcord* = the found record in *RATATestRecordsByLocationForQASatus*.

else

Locate the most recent record in *RATATestRecordsByLocationForQAStatus* for the location where the SystemID is equal to the *PriorRATATestRecord*.SystemID and the EndDate/Hour is prior to the *PriorRATATestRecord*.EndDate/Hour and the TestResultCode is equal to "INVALID", and the number of operating levels the OpLevelCodeList is greater than or equal to 2 or the TestClaimCode == "SLC").

if (*RATATestRecordsByLocationForQAStatus* is found)

Set *InvalidMultiLevelRATATestRecord* = the found record in *RATATestRecordsByLocationForQAStatus*.

if (*PriorMultiLevelRATATestRecord* is not null)

Locate the most recent record in *QACertificationEventRecords* where the SystemID is equal to the *PriorMultiLevelRATATestRecord*.SystemID and RATA2Required is equal to "Y" and the QACertEventDate is either:

- a) prior to the *CurrentDateHour* OR
- b) equal to both the *CurrentDateHour* and the ConditionalBeginDate/Hour;

AND either:

- a) QACertEventDate/Hour is after the *PriorMultiLevelRATATestRecord*.EndDate/Hour OR
- b) QACertEventDate/Hour is equal to the *PriorMultiLevelRATATestRecord*.EndDate/Hour AND (TestCompletionDate is null or the TestCompletionDate/Hour is after the *PriorMultiLevelRATATestRecord*.EndDate/Hour)

AND either

- a) *Annual Reporting Requirement* is equal to true OR
- b) QACertEventDate/Hour is on or after April 1 of the year of *CurrentDateHour*

if (*QACertificationEventRecords* is found)

Set *SubsequentRATATestRecord* = *PriorMultiLevelRATATestRecord*.

Set *CurrentRATAStatus* = "OOC-Incomplete Recertification".

Set *OverrideRATAFactor* = 1.0.

else

if (*PriorMultiLevelRATATestRecord* .QANeedsEvaluationFlag = "Y")

Set *CurrentRATAStatus* = "Prior Multi-Level RATA Not Yet Evaluated".

else if (*PriorMultiLevelRATATestRecord* .TestResultCode = null or *PriorMultiLevelRATATestRecord* .TestResultCode = "FAILED" or *PriorMultiLevelRATATestRecord* .TestResultCode = "ABORTED")

Set *CurrentRATAStatus* = "OOC-Incomplete QA RATA".

Set *OverrideRATAFactor* = *PriorRATATestRecord*.OverallBiasAdjustmentFactor.

else if (the number of levels in *PriorMultiLevelRATATestRecord*.OpLevelCodeList is greater than or equal to *MaxLevelCount*)

exit check.

else

Set *CurrentRATAStatus* = "OOC-Incomplete QA RATA".

Set *OverrideRATAFactor* = *PriorRATATestRecord*.OverallBiasAdjustmentFactor.

if (**CurrentRATAStatus** is null, starts with "IC", or starts with "Undetermined" AND **RATAEventOperatingLevelCount** is null or less than **MaxLevelCount**))

Set **InvalidMultiLevelRATAREcord** = null.

Locate the most recent record in **RATATestRecordsByLocationForQAStatus** for the location where the SystemID is equal to the **QaStatusSystemId** and the TestResultCode is not equal to "INVALID" and the EndDate/Hour is prior to the **PriorRATAREcord.EndDate/Hour** and the number of operating levels in the OpLevelCodeList is equal to the **MaxLevelCount**.

if (**RATATestRecordsByLocationForQAStatus** is found)

Set **PriorMaxLevelRATAREcord** = the found record in **RATATestRecordsByLocationForQAStatus**.

Locate the most recent record in **RATATestRecordsByLocationForQAStatus** for the location where the SystemID is equal to the **QaStatusSystemId** and the EndDate/Hour is prior to the **PriorRATAREcord.EndDate/Hour** and the EndDate/Hour is greater than the **PriorMaxLevelRATAREcord.EndDate/Hour** and the TestResultCode is equal to "INVALID" and the number of operating levels the OpLevelCodeList is equal to the **MaxLevelCount**.

if (**RATATestRecordsByLocationForQAStatus** is found)

Set **InvalidMultiLevelRATAREcord** = the found record in **RATATestRecordsByLocationForQAStatus**.

else

Locate the most recent record in **RATATestRecordsByLocationForQAStatus** for the location where the SystemID is equal to the **QaStatusSystemId** and the EndDate/Hour is prior to the **PriorRATAREcord.EndDate/Hour** and the TestResultCode is equal to "INVALID" and the number of operating levels the OpLevelCodeList is equal to the **MaxLevelCount**.

if (**RATATestRecordsByLocationForQAStatus** is found)

Set **InvalidMultiLevelRATAREcord** = the found record in **RATATestRecordsByLocationForQAStatus**.

if (**PriorMaxLevelRATAREcord** is null)

Set **CurrentRATAStatus** = "OOC-No Prior Maximum Level RATA".  
Set **OverrideRataBaf** = 1.0.

else

Locate the most recent record in **QACertificationEventRecords** where the SystemID is equal to the **QaStatusSystemId** and

AND either

- a) MaxLevelCount is equal to 2 and RATA2Required is equal to "Y" OR
- b) MaxLevelCount is equal to 2 and RATA3Required is equal to "Y" OR
- c) MaxLevelCount is equal to 3 and RATA3Required is equal to "Y"

AND the QACertEventDate is either:

- a) prior to the **CurrentDateHour** OR
- b) equal to both the **CurrentDateHour** and the ConditionalBeginDate/Hour;

AND either:

- a) QACertEventDate/Hour is after the **PriorMaxLevelRATAREcord.EndDate/Hour** OR



b) QACertEventDate/Hour is equal to the **PriorMaxLevelRATAREcord.EndDate/Hour** AND (TestCompletionDate is null or the TestCompletionDate/Hour is after the **PriorMaxLevelRATAREcord.EndDate/Hour**)

if (**QACertificationEventRecords** is found)

Set **SubsequentRATAREcord** = **PriorMaxLevelRATAREcord**.  
 Set **CurrentRataStatus** = "OOC-Incomplete Recertification".  
 Set **OverrideRataBaf** = 1.0.

else if (**PriorMaxLevelRATAREcord.QANeedsEvaluationFlag** = "Y")

Set **CurrentRATASStatus** = "Prior Maximum Level RATA Not Yet Evaluated".

else if (**PriorMaxLevelRATAREcord.TestResultCode** = null)

Set **CurrentRATASStatus** = "OOC-Prior Maximum Level RATA Has Critical Errors".  
 Set **OverrideRataBaf** = **PriorRATAREcord.OverallBiasAdjustmentFactor**.

else if (**PriorMaxLevelRATAREcord.TestResultCode** = "FAILED")

Set **CurrentRATASStatus** = "OOC-Prior Maximum Level RATA Failed".  
 Set **OverrideRataBaf** = **PriorRATAREcord.OverallBiasAdjustmentFactor**.

else if (**PriorMaxLevelRATAREcord.TestResultCode** = "ABORTED")

Set **CurrentRATASStatus** = "OOC-Prior Maximum Level RATA Aborted".  
 Set **OverrideRataBaf** = **PriorRATAREcord.OverallBiasAdjustmentFactor**.

else

if **PriorMaxLevelRATAREcord.TestReasonCode** = "INITIAL",

Locate the latest record in **QACertificationEventRecords** where

- 1) SystemID is equal to the **QaStatus.SystemId**
- 2) QaCertEventCode is equal to "305"
- 3) QaCertEventDate/Hour is prior to the **CurrentDateHour**;

if (**QACertificationEventRecords** is found, and the TestCompletionDate in the located record is after **PriorMaxLevelRATAREcord.EndDate**)

Set **PriorMaxLevelRATAREcord.TestExpirationDate** = the end of the quarter twenty quarters after the TestCompletionDate .

else

Set **PriorMaxLevelRATAREcord.TestExpirationDate** = the end of the quarter twenty quarters after the **PriorMaxLevelRATAREcord.EndDate**.

else

Set **PriorMaxLevelRATAREcord.TestExpirationDate** = the end of the quarter twenty quarters after the **PriorMaxLevelRATAREcord.EndDate**.

if (the date for **CurrentDateHour** is after the **PriorMaxLevelRATAREcord.TestExpirationDate**)

if (**Annual Reporting Requirement** == false)

Set **CurrentRATASStatus** = "OOC-Prior Maximum Level RATA Expired".  
 Set **OverrideRataBaf** = **PriorRATAREcord.OverallBiasAdjustmentFactor**.

else

Set *GraceOpHours* = *RptPeriodOpHoursAccumulatorArray* for the location.

If (*GraceOpHours* < 0)

Set *CurrentRATASStatus* = "Invalid Op Data".

else if (*GraceOpHours* > 720)

Set *CurrentRATASStatus* = "OOC-Prior Maximum Level RATA Expired".  
Set *OverrideRataBaf* = *PriorRATASRecord*.OverallBiasAdjustmentFactor.

else

For each quarter beginning with the quarter after the  
*PriorMaxLevelRATASRecord*.TestExpirationDate and continuing through the  
quarter prior to the *CurrentDateHour*,

if (*EarliestLocationReportDate* <= the last day of the quarter being  
checked)

Locate a record in *OperatingSuppDataRecordsByLocation*  
where the reporting period is equal to the year/quarter being  
checked and the OpTypeCode = "OPHOURS" and FuelCode is  
null.

if (*OperatingSuppDataRecordsByLocation* is found)

Add OpValue to *GraceOpHours*.

if (*GraceOpHours* > 720)

Set *CurrentRATASStatus* = "OOC-Prior  
Maximum Level RATA Expired".  
Set *OverrideRataBaf* =  
*PriorRATASRecord*.OverallBiasAdjustmentFact  
or.

exit for.

else

Locate the record in *ReportingFrequencyByLocation*  
where CalendarYear/Quarter are equal to the quarter  
being checked.

if found, and (the quarter being checked is 2 or 3, or  
*ReportingFrequencyByLocation*.ReportingFrequencyC  
ode is equal to "Q"),

Set *CurrentRATASStatus* = "Missing Op Data".  
Set *RATAMissingOpDataInfo* = "[YEAR]  
Q[QTR]" (where [YEAR] is the year of the  
quarter being checked and [QTR] is the number  
of the quarter being checked.)  
exit for.

## Results:

Result

Response

Severity

**Usage:**

- |   |                   |  |
|---|-------------------|--|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- CO2/O2 RATA Status Evaluation               |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- H2O RATA Status Evaluation                  |
| 3 | Process/Category: | Emissions Data Evaluation Report ----- H2OM RATA Status Evaluation                 |
| 4 | Process/Category: | Emissions Data Evaluation Report ----- Hg RATA Status Evaluation                   |
| 5 | Process/Category: | Emissions Data Evaluation Report ----- NOX RATA Status Evaluation                  |
| 6 | Process/Category: | Emissions Data Evaluation Report ----- NOXC RATA Status Evaluation                 |
| 7 | Process/Category: | Emissions Data Evaluation Report ----- NOXR Unused P-PB NOX RATA Status Evaluation |
| 8 | Process/Category: | Emissions Data Evaluation Report ----- SO2 RATA Status Evaluation                  |
| 9 | Process/Category: | Emissions Data Evaluation Report ----- Stack Flow RATA Status Evaluation           |

<b>Check Code:</b>	RATSTAT-7
<b>Check Name:</b>	Determine Expiration Dates for Most Recent Prior RATA Test
<b>Related Former Checks:</b>	
<b>Applicability:</b>	CEM Check
<b>Description:</b>	Determines the expiration dates for the Applicable Prior RATA test. This includes the Test Expiration Date both with and without any extensions

**Specifications:**

if (*CurrentRATAStatus* is null and *PriorRATARecord* is not null and *PriorRATAEventRecord* is null)

Set *PriorTestExpirationDate* = null

Set *PriorTestExpirationDateWithExtension* = null

Set *MissingOpData* = false

Set *NumberOfExtensionQuarters* = 0

Set *PriorTestExpirationDate* = *PriorRATARecord*.TestExpirationDate.

Set *PriorTestExpirationDateWithExtension* = *PriorRATARecord*.TestExpirationDateWithExtension.

If (*PriorRATARecord*.IgnoreGraceForExtensions is equal to 1)

Set *PriorTestIgnoreGraceForExtensions* = true

Else

Set *PriorTestIgnoreGraceForExtensions* = false

if (*PriorTestExpirationDate* is null)

if (*Annual Reporting Requirement* == false)

if (*PriorRATARecord*.EndDate is between 10/01/2007 and 12/31/2007)

Set *PriorTestExpirationDate* = 09/30/2008

else

Set *PriorTestExpirationDate* = September 30th of the year of the *PriorRATARecord*.EndDate.

else if (*QaStatusSystemDesignationCode* == "B")

Locate a record in *TestExtensionExemptionRecords* where the SystemID is equal to the *QaStatusSystemId* and the ExtensionExemptionCode is equal to "NRB720" and a ReportingPeriod equal to the *CurrentReportingPeriod*.

if (*TestExtensionExemptionRecords* is found)

Set *PriorTestExpirationDate* = the end of the quarter eight quarters after the *PriorRATARecord*.EndDate.

if (*PriorTestExpirationDate* is null)

if (*PriorRataIsAlternateSingleLevelRATA* == true)

Set *PriorTestExpirationDate* = the end of the quarter one year after the *PriorMultiLevelRATARecord*.EndDate.

if (*PriorMultiLevelRATARecord*.GracePeriodInd == 1)

Set *PriorTestExpirationDate* = the end of the quarter prior to the *PriorTestExpirationDate*.

else

if (*PriorRATARecord*.RataFrequencyCd in set {4QTRS,8QTRS})

Locate the most recent *QACertificationEventRecords* for the *PriorRATARecord*.SystemID where RATARequired is equal to "Y" and the BeginDate/Hour is prior to the

**PriorRATAREcord.BeginDate/Hour.**

if (**QACertificationEventRecords** is found and **RATACertEvent** == "Y" and the **ConditionalDataBeginDate** is null and the **CompletionTestDate/Hour** is after the **PriorRATAREcord.EndDate/Hour**)

if (**PriorRATAREcord.SystemTypeCode** is in set (HCL, HF, HG, ST))

Locate the record in **LocationProgramRecordsByHourLocation** with the latest **EmissionsRecordingBeginDate** where the **ProgramCode** is equal to **MATS** and the **EmissionsRecordingBeginDate** is **ON OR BEFORE** the **BeginDate** of the associated system in the **PriorRATAEventRecord**.

If (the record in **LocationProgramRecordsByHourLocation** is found) and (**EmissionsRecordingBeginDate** is later than **QACertificationEventRecords.CompletionTestDate**)

Set **PriorTestExpirationDate** = the end of the quarter one year after the **EmissionsRecordingBeginDate**.

Else

Set **PriorTestExpirationDate** = the end of the quarter one year after the **QACertificationEventRecords.CompletionTestDate**.

if (**PriorRATAREcord.GracePeriodInd** == 1)

Set **PriorTestIgnoreGraceForExtensions** = true.

Else

Set **PriorTestExpirationDate** = the end of the quarter one year after the **QACertificationEventRecords.CompletionTestDate**.

if (**PriorRATAREcord.GracePeriodInd** == 1)

Set **PriorTestExpirationDate** = the end of the quarter prior to the **PriorTestExpirationDate**.

else

if (**PriorRATAREcord.SystemTypeCode** is in set (HCL, HF, HG, ST))

Locate the record in **LocationProgramRecordsByHourLocation** with the latest **EmissionsRecordingBeginDate** where the **ProgramCode** is equal to **MATS** and the **EmissionsRecordingBeginDate** is **ON OR BEFORE** the **BeginDate** of the associated system in the **PriorRATAEventRecord**.

If (the record in **LocationProgramRecordsByHourLocation** is found) and (**EmissionsRecordingBeginDate** is later than **PriorRATAREcord.EndDate**)

Set **PriorTestExpirationDate** = the end of the quarter one year after the **EmissionsRecordingBeginDate**.

Else

Set **PriorTestExpirationDate** = the end of the quarter one year after the **PriorRATAREcord.EndDate**.

Else

Set **PriorTestExpirationDate** = the end of the quarter one year after the

**PriorRATAREcord.EndDate.**

if (**PriorRATAREcord.GracePeriodInd** == 1)

Set **PriorTestExpirationDate** = the end of the quarter prior to the **PriorTestExpirationDate**.

else

Locate the most recent **QACertificationEventRecords** for the **PriorRATAREcord.SystemID** where **RATAREquired** is equal to "Y" and the **BeginDate/Hour** is prior to the **PriorRATAREcord.BeginDate/Hour**.

if (**QACertificationEventRecords** is found AND **RATACertEvent** == "Y" and the **ConditionalDataBeginDate** is null and the **CompletionTestDate/Hour** is after the **PriorRATAREcord.EndDate/Hour**)

Set **PriorTestExpirationDate** = the end of the quarter two quarters after the **QACertificationEventRecords.CompletionTestDate**.

else

Set **PriorTestExpirationDate** = the end of the quarter two quarters after the **PriorRATAREcord.EndDate**.

Set **PriorRATAREcord.TestExpirationDate** = **PriorTestExpirationDate**.

If (**PriorTestIgnoreGraceForExtensions** is true)

Set **PriorRATAREcord.IgnoreGraceForExtensions** = 1

Else

Set **PriorRATAREcord.IgnoreGraceForExtensions** = 0

if (**CurrentDateHour** is ON OR BEFORE the **PriorTestExpirationDate**)

Set **CurrentRATAStatus** = "IC".

else if (**Annual Reporting Requirement** == false)

Set **CurrentRATAStatus** = "OOC-Expired".

if (**CurrentMhvParameter** == "FLOW")

Set **OverrideRATABAF** = **PriorRATAREcord.OverallBiasAdjustmentFactor**.

else

if (**PriorTestExpirationDateWithExtension** is null)

if (**CurrentMhvParameter** == "FLOW" and **PriorRataIsAlternateSingleLevelRATA** == true)

if (**PriorMultiLevelRATAREcord.GracePeriodInd** == 1)

**StartQuarter** = the quarter of the **PriorMultiLevelRATAREcord.EndDate**

else

**StartQuarter** = the quarter after the **PriorMultiLevelRATAREcord.EndDate**

set **EndQuarter** = the quarter two years after the quarter of the **PriorMultiLevelRATAREcord.EndDate**.

else

if (**PriorRATAREcord.GracePeriodInd** == 1) and (**PriorTestIgnoreGraceForExtensions** is false)

**StartQuarter** = the quarter of the **PriorRATAREcord.EndDate**

else

*StartQuarter* = the quarter after the **PriorRATARecord**.EndDate

set *EndQuarter* = the quarter two years after the quarter of the **PriorRATARecord**.EndDate.

Set *MaximumExtensionDate* = the last date of *EndQuarter*

Set *StartNonQaPrimaryBypassQuarter* = *StartQuarter*

For each quarter beginning with the *StartQuarter* and continuing through the earlier of the quarter prior to the quarter of the **CurrentDateHour** and *EndQuarter*

// Prevent extensions beyond the maximum expiration date

if *PriorTestExpirationDate* plus *NumberOfExtensionQuarters* + 1 is after *MaximumExtensionDate*,  
exit loop

if (**EarliestLocationReportDate** > the last day of the quarter being checked)

Set *NumberOfExtensionQuarters* = *NumberOfExtensionQuarters* + 1.

Set *StartNonQaPrimaryBypassQuarter* = year/quarter being checked plus one quarter.

else

If ( *PrimaryBypassActiveForHour* is true AND *QaStatusSystemTypeCode* is "NOX" )

Locate a record in **SystemOperatingSuppDataRecordsByLocation** where:

- 1) *SystemId* is equal to *QaStatusSystemId*.
- 2) Year is equal to the year being checked.
- 3) Quarter is equal to the quarter being checked.
- 4) *OpSuppDataTypeCode* = "OP".

If ( **SystemOperatingSuppDataRecordsByLocation** is found )

Set *OperatingHourCount* = **SystemOperatingSuppDataRecordsByLocation**.Hours.

Else

Set *OperatingHourCount* = null.

Else

Locate a record in **OperatingSuppDataRecordsByLocation** where the reporting period is equal to the year/quarter being checked and the *OpTypeCode* = "OPHOURS".

If ( **OperatingSuppDataRecordsbyLocation** is found )

Set *OperatingHourCount* = **OperatingSuppDataRecordsByLocation**.OpValue.

Else

Set *OperatingHourCount* = null.

if ( *OperatingHourCount* is NOT null AND *OperatingHourCount* < 168)

Set *NumberOfExtensionQuarters* = *NumberOfExtensionQuarters* + 1.

Set *StartNonQaPrimaryBypassQuarter* = year/quarter being checked plus one quarter.

else if (*QaStatusSystemTypeCode* begins with "SO2")

Locate a record in **TestExtensionExemptionRecords** where the *SystemID* is equal to the **QaStatusSystemId** and the *ExtensionExemptionCode* is equal to "LOWSQTR" and the reporting period is equal to the year/quarter being checked.

if (**TestExtensionExemptionRecords** is found)

Set *NumberOfExtensionQuarters* = *NumberOfExtensionQuarters* + 1.  
Set *StartNonQaPrimaryBypassQuarter* = year/quarter being checked plus one quarter.

else if ( *OperatingHourCount* is null )

Locate the record in ***ReportingFrequencyByLocation*** where  
CalendarYear/Quarter are equal to the year/quarter being checked .

if found, and (the quarter being checked is 2 or 3, or  
***ReportingFrequencyByLocation***.ReportingFrequencyCode is equal to "Q"),

Set *Missing Op Data* to true.  
Set ***RATAMissingOpDataInfo*** = "[YEAR] Q[QTR]" (where [YEAR] is  
the year of the quarter being checked and [QTR] is the number of the  
quarter being checked.)

else if (*QaStatusSystemDesignationCode* == "PB")

if ( the year being checked < 2021 )

Locate *PbExtensionRecord* in ***TestExtensionExemptionRecords*** where the  
SystemID is equal to the *QaStatusSystemId*, the ExtensionExemptionCode is  
equal to "NONQAPB" or "GRACEPB", and the reporting period is equal to the  
year/quarter being checked.

else

*PbExtensionRecord* = null.

if ( *PbExtensionRecord* is NOT null )

Set *NumberOfExtensionQuarters* = *NumberOfExtensionQuarters* + 1.  
Set *StartNonQaPrimaryBypassQuarter* = year/quarter being checked plus one  
quarter.

else if ( *OperatingHourCount* is null )

Locate the record in ***ReportingFrequencyByLocation*** where  
CalendarYear/Quarter are equal to the year/quarter being checked .

if found, and (the quarter being checked is 2 or 3, or  
***ReportingFrequencyByLocation***.ReportingFrequencyCode is equal to "Q"),

Set *Missing Op Data* to true.  
Set ***RATAMissingOpDataInfo*** = "[YEAR] Q[QTR]" (where [YEAR] is  
the year of the quarter being checked and [QTR] is the number of the  
quarter being checked.)

else if ( *OperatingHourCount* is null )

Locate the record in ***ReportingFrequencyByLocation*** where CalendarYear/Quarter are  
equal to the year/quarter being checked .

if found, and (the quarter being checked is 2 or 3, or  
***ReportingFrequencyByLocation***.ReportingFrequencyCode is equal to "Q"),

Set *Missing Op Data* to true.



Set ***RATAMissingOpDataInfo*** = "[YEAR] Q[QTR]" (where [YEAR] is the year of the quarter being checked and [QTR] is the number of the quarter being checked.)

if (***QaStatusSystemDesignationCode*** == "PB")

if ( the year of ***StartNonQaPrimaryBypassQuarter*** < 2021 )

// Allow additional extensions for non QA Primary Bypass exemptions.

For each quarter beginning with and continuing through the earlier of the quarter prior to the quarter of the ***CurrentDateHour*** AND 2020 Q4

Locate a record in ***TestExtensionExemptionRecords*** where the SystemID is equal to the ***QaStatusSystemId***, the ExtensionExemptionCode is equal to "NONQAPB" or "GRACEPB", and the reporting period is equal to the year/quarter being checked.

if (***TestExtensionExemptionRecords*** is found)

Set ***NumberOfExtensionQuarters*** = ***NumberOfExtensionQuarters*** + 1.

else

exit loop.

Set ***PriorTestExpirationDateWithExtension*** = ***PriorTestExpirationDate***.

Add ***NumberOfExtensionQuarters*** to ***PriorTestExpirationDateWithExtension***.

If ***PriorTestExpirationDateWithExtension*** is greater than ***MaximumExtensionDate***

Set ***PriorTestExpirationDateWithExtension*** = ***MaximumExtensionDate***

Set ***PriorRATAREcord***.TestExpirationDateWithExtension = ***PriorTestExpirationDateWithExtension***.

else

Set ***PriorRATAREcord***.TestExpirationDateWithExtension = ***PriorTestExpirationDate***

If (***CurrentDateHour*** is ON OR BEFORE the ***PriorTestExpirationDateWithExtension***)

Set ***CurrentRATAStatus*** = "IC-Extension".

else if (***Missing Op Data*** is true)

Set ***CurrentRATAStatus*** = "Missing Op Data".

Set ***PriorRATAREcord***.TestExpirationDateWithExtension = null

else

If ( ***PrimaryBypassActiveForHour*** is true AND ***QaStatusSystemTypeCode*** is "NOX" )

Set ***CurrentOpHours*** = Hours in ***SystemOperatingSuppDataDictionaryArray*** for the current location where SystemId is equal to ***QaStatusSystemId***.

Else

Set ***CurrentOpHours*** = ***RptPeriodOpHoursAccumulatorArray*** for the location.

if ( ***CurrentOpHours*** == -1 )

Set ***CurrentRATAStatus*** = "Invalid Op Data".

else

Set *GraceOpHours* = *CurrentOpHours*.

if (*GraceOpHours* > 720)

Set *CurrentRATAStatus* = "OOC-Expired".

if (*CurrentMhvParameter* == "FLOW")

Set *OverrideRATABAF* = *PriorRATARecord*.OverallBiasAdjustmentFactor.

else

If there are no quarters beginning with the LATER of the quarter after the *PriorTestExpirationDateWithExtension* and the quarter of the *EarliestLocationReportDate* and ending with the quarter prior to the *CurrentDateHour*,

Set *CurrentRATAStatus* = "IC-Grace".

else

For each quarter beginning with the quarter after the *PriorTestExpirationDateWithExtension* and continuing through the quarter prior to the *CurrentDateHour*,

if (*EarliestLocationReportDate* <= the last day of the quarter being checked)

If ( *PrimaryBypassActiveForHour* is true AND  
*QaStatusSystemTypeCode* is "NOX" )

Locate a record in  
*SystemOperatingSuppDataRecordsByLocation* where:

- 1) *SystemId* is equal to *QaStatusSystemId*.
- 2) Year is equal to the year being checked.
- 3) Quarter is equal to the quarter being checked.
- 4) *OpSuppDataTypeCode* = "OP".

If ( *SystemOperatingSuppDataRecordsByLocation* is found )  
Set *OperatingHourCount* =  
*SystemOperatingSuppDataRecordsByLocation*.Hours.

Else

Set *OperatingHourCount* = null.

Else

Locate a record in *OperatingSuppDataRecordsByLocation*  
where the reporting period is equal to the year/quarter being  
checked and the *OpTypeCode* = "OPHOURS" and *FuelCode* is  
null.

If ( *OperatingSuppDataRecordsByLocation* is found )  
Set *OperatingHourCount* =  
*OperatingSuppDataRecordsByLocation*.OpValue.

Else

Set *OperatingHourCount* = null.

if ( *OperatingHourCount* is NOT null )



**Usage:**

- |   |                   |  |
|---|-------------------|--|
| 1 | Process/Category: | Emissions Data Evaluation Report ----- CO2/O2 RATA Status Evaluation               |
| 2 | Process/Category: | Emissions Data Evaluation Report ----- H2O RATA Status Evaluation                  |
| 3 | Process/Category: | Emissions Data Evaluation Report ----- H2OM RATA Status Evaluation                 |
| 4 | Process/Category: | Emissions Data Evaluation Report ----- Hg RATA Status Evaluation                   |
| 5 | Process/Category: | Emissions Data Evaluation Report ----- NOX RATA Status Evaluation                  |
| 6 | Process/Category: | Emissions Data Evaluation Report ----- NOXC RATA Status Evaluation                 |
| 7 | Process/Category: | Emissions Data Evaluation Report ----- NOXR Unused P-PB NOX RATA Status Evaluation |
| 8 | Process/Category: | Emissions Data Evaluation Report ----- SO2 RATA Status Evaluation                  |
| 9 | Process/Category: | Emissions Data Evaluation Report ----- Stack Flow RATA Status Evaluation           |

**Check Code:** RATSTAT-8

**Check Name:** Determine Final RATA Status

**Related Former Checks:**

**Applicability:** CEM Check

**Description:** Evaluates the determined RATA Status and changes it if needed based on an ignored test or the status of the alternate system.

**Specifications:**

Set *AlternateRATARecord* = null.

if (*CurrentRATAStatus* begins with "OOC")

Set *InvalidRATATestNumber* = null.

if (*InvalidMultiLevelRATARecord* is not null)

Set *Invalid RATA Test Number* = *InvalidMultiLevelRATARecord*.TestNumber

Set *CurrentRATAStatus* = *CurrentRATAStatus* & "\*".

if (*CurrentMhvParameter* == "FLOW")

Set *RATA Status BAF* = *InvalidMultiLevelRATARecord*.OverallBiasAdjustmentFactor.

else if (*InvalidRATARecord* is not null)

Set *InvalidRATATestNumber* = *InvalidRATARecord*.TestNumber

Set *CurrentRATAStatus* = *CurrentRATAStatus* & "\*".

if (*CurrentMhvParameter* == "FLOW")

Set *RATA Status BAF* = *InvalidRATARecord*.OverallBiasAdjustmentFactor.

else if (*OverrideRATABAF* is not null)

if (*CurrentMhvParameter* == "FLOW")

Set *RATA Status BAF* = *OverrideRATABAF*

else if (*CurrentRATAStatus* begins with "IC" or "Undetermined")

If (*QaStatusSystemTypeCode*== "NOX")

Set *ComponentIDList* = null.

Set *AlternateSystemIDList* = null.

For each record in *MonitorSystemComponentRecordsforHourandLocation* where the SystemID is equal to the *QaStatusSystemId* and ComponentTypeCd in list {"CO2", "NOX", "O2"}

Add *MonitorSystemComponentRecordsforHourandLocation*.ComponentID to *ComponentIDList*.

if (*ComponentIDList* is not null)

For each record in *MonitorSystemComponentRecordsforHourandLocation* where the ComponentID is in *ComponentIDList* and SysTypeCd in list {"CO2", "O2", "NOXC"}.

Add *MonitorSystemComponentRecordsforHourandLocation*.SystemID to *AlternateSystemIDList*.

if (*AlternateSystemIDList* is not null)

If (*PriorRATAEventRecord* is not null)

If (*PriorRATAEventRecord*.ConditionalBeginDate is not null)

Locate the most recent record in *RATATestRecordsByLocationForQAStatus* for the location where the SystemID is in *AlternateSystemIDList* and the EndDate/Hour is prior to the *CurrentDateHour* and the EndDate/Hour is after the *PriorRATAEventRecord*.ConditionalBeginDate/Hour.

If there are multiple records found with the same begindate, prefer the record with TestResultCode = "PASSED" or "PASSAPS", then prefer the record with TestResultCode = "FAILED" or "ABORTED".

if (*RATATestRecordsByLocationForQAStatus* is found)

Set *AlternateRATARecord* = the found record in *RATATestRecordsByLocationForQAStatus*.

if (*AlternateRATARecord*.TestResultCode = null)

Set *CurrentRATAStatus* = "OOC-Prior Alternate System RATA Has Critical Errors".

else if (*AlternateRATARecord*.TestResultCode = "FAILED")

Set *CurrentRATAStatus* = "OOC-Prior Alternate System RATA Failed".

else if (*AlternateRATARecord*.TestResultCode = "ABORTED")

Set *CurrentRATAStatus* = "OOC-Prior Alternate System RATA Aborted".

else

Locate the most recent record in *RATATestRecordsByLocationForQAStatus* for the location where the SystemID is in *AlternateSystemIDList* and the EndDate/Hour is prior to the *CurrentDateHour* and the EndDate/Hour is after the *PriorRATAEventRecord*.ConditionalBeginDate/Hour and the QANeedsEvaluationFlag is equal to "Y".

if (*RATATestRecordsByLocationForQAStatus* is found)

Set *AlternateRATARecord* = the found record in *RATATestRecordsByLocationForQAStatus*.

Set *CurrentRATAStatus* = "Prior Alternate System RATA Not Yet Evaluated".

else if (*PriorRATARecord* is not null)

Locate the most recent record in *RATATestRecordsByLocationForQAStatus* for the location where the SystemID is in *AlternateSystemIDList* and the EndDate/Hour is prior to the *CurrentDateHour* and the EndDate/Hour is after the *PriorRATARecord*.EndDate/Hour.

If there are multiple records found with the same begindate, prefer the record with TestResultCode = "PASSED" or "PASSAPS", then prefer the record with TestResultCode = "FAILED" or "ABORTED".

if (*RATATestRecordsByLocationForQAStatus* is found)

Set *AlternateRATARecord* = the found record in *RATATestRecordsByLocationForQAStatus*.

if (*AlternateRATARecord*.TestResultCode = null)

Set **CurrentRATAStatus** = "OOC-Prior Alternate System RATA Has Critical Errors".

else if (**AlternateRATARecord**.TestResultCode = "FAILED")

Set **CurrentRATAStatus** = "OOC-Prior Alternate System RATA Failed".

else if (**AlternateRATARecord**.TestResultCode = "ABORTED")

Set **CurrentRATAStatus** = "OOC-Prior Alternate System RATA Aborted".

else

Locate the most recent record in **RATATestRecordsByLocationForQAStatus** for the location where the SystemID is in **AlternateSystemIDList** and the EndDate/Hour is prior to the **CurrentDateHour** and the EndDate/Hour is after the **PriorRATARecord**.EndDate/Hour and the QANeedsEvaluationFlag is equal to "Y".

if (**RATATestRecordsByLocationForQAStatus** is found)

Set **AlternateRATARecord** = the found record in **RATATestRecordsByLocationForQAStatus**.

Set **CurrentRATAStatus** = "Prior Alternate System RATA Not Yet Evaluated".

If (**Current RATA Status** begins with "IC" or "Undetermined")

If (**PriorRATARecord** is null)

Set **RATA Status BAF** = 1

else if (**Current RATA Status** begins with "IC-Cond", "Undetermined-Cond" or "PendingOOC-Cond" AND (**PriorRATAEventRecord**.QACertEventCode is in set {40, 50, 51, 100, 101, 120, 125, 151, 250, 255, 300, 305}) OR **PriorRATARecord**.TestResultCode does NOT begin with "PASS"))

Set **RATA Status BAF** = 1

else if (**QaStatusSystemId** is NOT equal to **PriorRATARecord**.SystemID)

Locate the most recent record in **RATATestRecordsByLocationForQAStatus** for the location where the SystemID is equal to the **QaStatusSystemId**, the TestResultCode is NOT equal to "INVALID" and the EndDate/Hour is prior to the **CurrentDateHour**

If found,

Set **RATA Status BAF** to the OverallBiasAdjustmentFactor in the RATA record found above.

else

Set **CurrentRATAStatus** to "OOC-No Prior Test or Event".

Locate the most recent record in **RATATestRecordsByLocationForQAStatus** for the location where the SystemID is equal to the **QaStatusSystemId**, the TestResultCode is equal to "INVALID" and the EndDate/Hour is prior to the **CurrentDateHour**.

If found,

Set **InvalidRATATestNumber** to the TestNumber in the RATA record found above.

Set **CurrentRATAStatus** = **CurrentRATAStatus** & "\*".

else

Set **RATA Status BAF** = **PriorRATARecord**.OverallBiasAdjustmentFactor

If (*CurrentRATAStatus* does not begin with "IC")

Return result *CurrentRATAStatus* .



**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
Invalid Monitor System	The [testtype] status for [key] could not be determined, because the Monitor System record for MonitoringSystemID [system] has a critical error.	Critical Error Level 1
Invalid Op Data	The [testtype] status for [key] could not be determined, because the OperatingTime in at least one Hourly Operating Data records was missing or invalid.	Critical Error Level 1
Missing Op Data	The [testtype] status for [key] could not be determined, because the Op Supp Data record for OPHOURS, OSHOURS, or OPDAYS is missing for [MISSINGOPDATAINFO] (and possibly other previous reporting periods). If you have submitted emissions data for prior quarters, you should be able to retrieve these records by logging on to the EPA host.	Critical Error Level 1
Missing Program	The [testtype] status for [key] could not be determined, because a Unit Program record associated with the initial certification event for QACertEventCode [code] QACertEventDate [eventdate] either does not exist or has a UnitMonitorCertificationBeginDate inconsistent with the BeginDate of the associated Monitor System record.	Critical Error Level 1
OOO-Conditional Period Expired	The conditional data period for QACertEventCode [code] QACertEventDate [eventdate] for SystemID [EVENTKEY] has expired.	Critical Error Level 1
OOO-Conditional Period Expired*	The conditional data period for QACertEventCode [code] QACertEventDate [eventdate] for SystemID [EVENTKEY] has expired.	Critical Error Level 1
OOO-Event	You reported a QA Certification Event record for QACertEventCode [code] QACertEventDate [eventdate] for SystemID [eventkey], but you did not indicate the use of conditional data.	Critical Error Level 1
OOO-Event*	You reported a QA Certification Event record for QACertEventCode [code] QACertEventDate [eventdate] for SystemID [eventkey], but you did not indicate the use of conditional data. An invalid [testtype] was ignored.	Critical Error Level 1
OOO-Expired	The prior RATA for SystemID [RATASYS] with TestNumber [testnum] has expired.	Critical Error Level 1
OOO-Expired*	The prior RATA for [RATASYS] with TestNumber [testnum] has expired. An invalid prior [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Incomplete QA RATA	The prior RATA for FLOW SystemID [RATASYS] with TestNumber [testnum] was a single-level RATA instead of the required multi-level RATA. If applicable, please review the prior single-level RATA to determine if it contained a single load flow claim qualification record under Part 75, Appendix B, Section 2.3.1.3(c)(3)).	Critical Error Level 1
OOO-Incomplete QA RATA*	The prior RATA for FLOW SystemID [RATASYS] with TestNumber [testnum] was a single-level RATA instead of the required multi-level RATA. An invalid prior test with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Incomplete Recertification	The subsequent recertification RATA for FLOW SystemID [SUBSYS] with TestNumber [subtestnum] was performed at fewer than the required operating levels.	Critical Error Level 1
OOO-Incomplete Recertification*	The subsequent recertification RATA for FLOW SystemID [SUBSYS] with TestNumber [subtestnum] was performed at fewer than the required operating levels. An invalid prior test with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-No Prior Maximum Level RATA	You did not report a valid prior [max]-level flow RATA for [key].	Critical Error Level 1
OOO-No Prior Maximum Level RATA*	You did not report a valid prior [max]-level flow RATA for [key]. An invalid RATA with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-No Prior Test or Event	You did not report a prior [testtype] or certification event for [key].	Critical Error Level 1
OOO-No Prior Test or Event*	You did not report a valid prior [testtype] or certification event for [key]. An invalid [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Prior Alternate System RATA Aborted	A prior RATA with TestNumber [alttestnum] for MonitoringSystemID [altsys] was aborted, so [key], which contains a component that is also in the former system, is out-of-control.	Critical Error Level 1
OOO-Prior Alternate System RATA Failed	A prior RATA with TestNumber [alttestnum] for MonitoringSystemID [altsys] failed, so [key], which contains a component that is also in the former system, is out-of-control.	Critical Error Level 1

OOO-Prior Alternate System RATA Has Critical Errors	A prior RATA with TestNumber [alttestnum] for MonitoringSystemID [altsys] has critical errors, so [key], which contains a component that is also in the former system, is out-of-control.	Critical Error Level 1
OOO-Prior Maximum Level RATA Aborted	The prior [max]-level flow RATA for [key] with TestNumber [maxtestnum] was aborted.	Critical Error Level 1
OOO-Prior Maximum Level RATA Aborted*	The prior [max]-level flow RATA for [key] with TestNumber [maxtestnum] was aborted. An invalid RATA with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Prior Maximum Level RATA Expired	The prior [max]-level flow RATA for [key] with TestNumber [maxtestnum] has expired.	Critical Error Level 1
OOO-Prior Maximum Level RATA Expired*	The prior [max]-level flow RATA for [key] with TestNumber [maxtestnum] has expired. An invalid RATA with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Prior Maximum Level RATA Failed	The prior [max]-level flow RATA for [key] with TestNumber [maxtestnum] failed.	Critical Error Level 1
OOO-Prior Maximum Level RATA Failed*	The prior [max]-level flow RATA for [key] with TestNumber [maxtestnum] failed. An invalid RATA with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Prior Maximum Level RATA Has Critical Errors	The prior [max]-level flow RATA for [key] with TestNumber [maxtestnum] has critical errors.	Critical Error Level 1
OOO-Prior Maximum Level RATA Has Critical Errors*	The prior [max]-level flow RATA for [key] with TestNumber [maxtestnum] has critical errors. An invalid RATA with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Prior Test Aborted	The prior RATA for SystemID [RATASYS] with TestNumber [testnum] was aborted.	Critical Error Level 1
OOO-Prior Test Aborted*	The prior RATA for SystemID [RATASYS] with TestNumber [testnum] was aborted. An invalid prior [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Prior Test Failed	The prior RATA for SystemID [RATASYS] with TestNumber [testnum] failed.	Critical Error Level 1
OOO-Prior Test Failed*	The prior RATA for SystemID [RATASYS] with TestNumber [testnum] failed. An invalid prior [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Prior Test Has Critical Errors	The prior RATA for SystemID [RATASYS] with TestNumber [testnum] has critical errors.	Critical Error Level 1
OOO-Prior Test Has Critical Errors*	The prior RATA for SystemID [RATASYS] with TestNumber [testnum] has critical errors. An invalid prior [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Recertification Test Aborted	The subsequent recertification RATA for SystemID [subsys] with TestNumber [subtestnum] was aborted.	Critical Error Level 1
OOO-Recertification Test Aborted*	The subsequent recertification RATA for SystemID [subsys] with TestNumber [subtestnum] was aborted. An invalid [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Recertification Test Failed	The subsequent recertification RATA for SystemID [subsys] with TestNumber [subtestnum] failed.	Critical Error Level 1
OOO-Recertification Test Failed*	The subsequent recertification RATA for SystemID [subsys] with TestNumber [subtestnum] failed. An invalid [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1
OOO-Recertification Test Has Critical Errors	The subsequent recertification RATA for SystemID [subsys] with TestNumber [subtestnum] has critical errors.	Critical Error Level 1
OOO-Recertification Test Has Critical Errors*	The subsequent recertification RATA for SystemID [subsys] with TestNumber [subtestnum] has critical errors. An invalid [testtype] with TestNumber [invtestnum] was ignored.	Critical Error Level 1

Prior Alternate System RATA Not Yet Evaluated	The RATA status for [key] could not be determined, because a prior RATA with TestNumber [alttestnum] for MonitoringSystemID [altsys], which contains a component that is also in the former system, has not yet been evaluated.	Critical Error Level 1
Prior Maximum Level RATA Not Yet Evaluated	The RATA status for [key] could not be determined, because the prior [max]-level flow RATA with TestNumber [maxtestnum] has not yet been evaluated.	Critical Error Level 1
Prior Multi-Level RATA Not Yet Evaluated	The RATA status could not be determined, because the prior multi-level flow RATA for SystemID [RATASYS] with TestNumber [multitestnum] has not yet been evaluated.	Critical Error Level 1
Prior Test Not Yet Evaluated	The RATA status could not be determined, because the applicable prior RATA for SystemID [RATASYS] with TestNumber [testnum] has not yet been evaluated.	Critical Error Level 1
Recertification Test Not Yet Evaluated	The RATA status could not be determined, because the subsequent recertification RATA for SystemID [subsys] with TestNumber [subtestnum] has not yet been evaluated.	Critical Error Level 1
Undetermined-Conditional Data	The software could not determine if the current hour was within the conditional data period for QACertEventCode [code] QACertEventDate [eventdate] for SystemID [eventkey].	Informational Message

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- CO2/O2 RATA Status Evaluation
2	Process/Category:	Emissions Data Evaluation Report ----- H2O RATA Status Evaluation
3	Process/Category:	Emissions Data Evaluation Report ----- H2OM RATA Status Evaluation
4	Process/Category:	Emissions Data Evaluation Report ----- Hg RATA Status Evaluation
5	Process/Category:	Emissions Data Evaluation Report ----- NOX RATA Status Evaluation
6	Process/Category:	Emissions Data Evaluation Report ----- NOXC RATA Status Evaluation
7	Process/Category:	Emissions Data Evaluation Report ----- NOXR Unused P-PB NOX RATA Status Evaluation
8	Process/Category:	Emissions Data Evaluation Report ----- SO2 RATA Status Evaluation
9	Process/Category:	Emissions Data Evaluation Report ----- Stack Flow RATA Status Evaluation

**Check Category:**

**Weekly System Integrity Status**

**Check Code:** WSISTAT-1  
**Check Name:** Initialize Status Checking

**Related Former Checks:**

**Applicability:**

**Description:** Initialized parameters need for status checking.

**Specifications:**

Set *WsiStatus* to null.  
Set *WsiPluginEventRecord* to null.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hg System Integrity Status Evaluation
---	-------------------	--

**Check Code:** WSISTAT-2

**Check Name:** Locate Prior Test

**Related Former Checks:**

**Applicability:**

**Description:** This check locates the test prior to the current hour. If a test was not found it determines whether the status is OOC because at least 7 total operating days have occurred.

**Specifications:**

For the *WsiTestDictionary* entry where the key is equal to *QaStatusComponentId*.

If (*WsiTestDictionary* entry exists)

Set *WsiPriorTestRecord* to *WsiTestDictionary*.MostRecentTestRecord.

Else

Set *WsiPriorTestRecord* to null.

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hg System Integrity Status Evaluation
---	-------------------	--

**Check Code:** WSISTAT-3

**Check Name:** Check For Intervening Event

**Related Former Checks:**

**Applicability:**

**Description:** Locates an event with codes 110 and 130 and a matching component id, and a test date and hour preceeding the current hour but after the current test.

**Specifications:**

Set *WsiInterveningEventRecord* to null.

If (*WsiStatus* is equal to null)

Locate the most recent record in *QACertificationEventRecords* where:

- a) ComponentID is equal to *QaStatusComponentId*.
- b) QaCertEventDateHour is prior to *CurrentDateHour*.
- c) QaCertEventDateHour is after *WsiPriorTestRecord*.TestDateHour.
- d) QaCertEventCode is equal to "110" or "130"

If found

Set *WsiInterveningEventRecord* to the located record.  
Set *WsiPluginEventRecord* to the located record.  
Set *WsiStatus* to "OOC-Event".

Else

If (*WsiPriorTestRecord*.TestResultCode is equal to null)

Set *WsiStatus* to "OOC-Test Has Critical Errors".

Else if (*WsiPriorTestRecord*.TestResultCode is equal to "FAILED")

Set *WsiStatus* to "OOC-Test Failed".

Else

For the *WsiTestDictionary* entry where the key is equal to *QaStatusComponentId*.

If (*WsiTestDictionary*.OperatingDateList is not null) AND (the count of days in *WsiTestDictionary*.OperatingDateList is greater than 7)

Set *WsiStatus* to "OOC-Expired".

Else

Set *WsiStatus* to "IC".

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hg System Integrity Status Evaluation
---	-------------------	--

**Check Code:** WSISTAT-4

**Check Name:** Return the Final Status

**Related Former Checks:**

**Applicability:**

**Description:** Returns the value in WSI Result Status as the check result.

**Specifications:**

If (*WsiStatus* does not begin with "IC")

return result *WsiStatus* .

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
OOO-Event	You reported a QA Certification Event record for QACertEventCode [code] QACertEventDate [event] for [compkey], and have not yet performed the required recertification tests.	Critical Error Level 1
OOO-Expired	The prior weekly system integrity test for [compkey] on [date] has expired.	Critical Error Level 1
OOO-No Prior Test	You did not report a prior weekly system integrity test for [compkey] during the reporting period. Any weekly system integrity that may have been completed in a prior reporting period has expired.	Critical Error Level 1
OOO-Test Failed	The prior weekly system integrity test for [compkey] completed on [date] failed.	Critical Error Level 1
OOO-Test Has Critical Errors	The prior weekly system integrity test for [compkey] completed on [date] has critical errors.	Critical Error Level 1

**Usage:**

1 Process/Category: Emissions Data Evaluation Report ----- Hg System Integrity Status Evaluation



**Check Code:** WSISTAT-5

**Check Name:** Check for Intervening Like-Kind Event

**Related Former Checks:**

**Applicability:** General Check

**Description:** When a previous test does not exist, this check locates an event with codes 140 and 141 and a matching component id, and an event date and hour preceeding the current hour. If found and at least seven operating days occurred between the event and the current hour, an OOC-NoPriorTest occurs. If the event is not found, and at least seven operating days have occurred since the beginning of the quarter, an OOC-NoPriorTest also occurs.

**Specifications:**

Set *WsiInterveningLinkKindEventRecord* to null.

Locate the most recent record in *QACertificationEventRecords* where:

- a) ComponentID is equal to *QaStatusComponentId*.
- b) QaCertEventCode is equal to "140" or "141"
- c) QaCertEventDateHour is prior to *CurrentDateHour*.
- d) If *WsiPriorTestRecord* is NOT equal to null, then QaCertEventDateHour is after *WsiPriorTestRecord*.TestDateHour.

If found

Set *WsiInterveningLinkKindEventRecord* to the located record in *QACertificationEventRecords*.

Set *EarliestOperatingDate* equal to the day after *WsiInterveningLinkKindEventRecord*.QaCertEventDate.

If (the count of days on or after *EarliestOperatingDate* in *OperatingDateArray* for current location is greater than 7)

If *WsiPriorTestRecord* is equal to null

Set *WsiStatus* to "OOC-No Prior Test".

Else

Set *WsiPluginEventRecord* to *WsiInterveningLinkKindEventRecord*.

Set *WsiStatus* to "OOC-Event".

Else

Set *WsiStatus* to "IC-Undetermined".

Else

If *WsiPriorTestRecord* is equal to null

If *QaStatusMatsErbDate* is not null, AND *QaStatusMatsErbDate* is later than *QaStatusComponentBeginDate*,

Set *EarliestOperatingDate* equal to the day after *QaStatusMatsErbDate*.

Else

Set *EarliestOperatingDate* equal to the day after *QaStatusComponentBeginDate*.

If (the count of days on or after *EarliestOperatingDate* in *OperatingDateArray* for current location is greater than 7)

Set *WsiStatus* to "OOC-No Prior Test".

Else

Set *WsiStatus* to "IC-Undetermined".

**Results:**

<u>Result</u>	<u>Response</u>	<u>Severity</u>
---------------	-----------------	-----------------

**Usage:**

1	Process/Category:	Emissions Data Evaluation Report ----- Hg System Integrity Status Evaluation
---	-------------------	--