## 2.5.1 Monitor Hourly Value Data

### *Monitor Hourly Value Data* Overview

Use the MONITOR HOURLY VALUE DATA (MHV) record to report each value measured by a continuous emission monitoring system (CEMS), or stack gas flow rate monitoring system. The monitored parameters may include $SO_2$ concentration, $NO_x$ concentration, $CO_2$ concentration, $O_2$ concentration, $H_2O$ concentration (moisture), and volumetric flow. Use this record also to report the appropriate missing data substitution values (except for parameters that do not have substitute data requirements). These instructions contain a subsection for each measured parameter, to give specific direction on how to report for that parameter.

**$SO_2$ Concentration**
If you use continuous emissions monitoring systems (CEMS) to determine $SO_2$ mass emissions or $SO_2$ emissions rate for MATS, report $SO_2$ concentration in an MHV record for each hour or partial hour of unit operation, with one exception: do not report an MHV record for hours in which only gaseous fuel is combusted, if you account for $SO_2$ mass emissions during those hours using the provisions of §75.11(e)(1) in lieu of operating and recording data from the $SO_2$ monitoring system.

**Volumetric Flow**
If you use stack flow monitoring to determine hourly heat input rate or $SO_2$, $CO_2$, or $NO_x$ mass emissions, report volumetric flow in an MHV record for each operating hour or partial operating hour.

Table 10, below, summarizes which elements to report for SO2C and FLOW MHV records.

**Table 10: *MHV* Elements for SO2C or Flow**

| MHV Elements to Report | SO2C or Flow | |
|---|---|---|
| | Measured Data | Missing Data |
| Parameter Code | ✓ | ✓ |
| Unadjusted Hourly Value | ✓ | |
| Adjusted Hourly Value | ✓ | ✓ |
| Method of Determination Code (MODC) | ✓ | ✓ |
| Monitoring System ID | ✓ | ✓ |
| Component ID | ✓ | ✓ |
| Percent Available | ✓ | ✓ |
| Moisture Basis | | |

**$NO_x$ Concentration**
If you use a $NO_x$-diluent monitoring system to determine and report the $NO_x$ emission rate and/or a $NO_x$ concentration monitor in conjunction with Stack Flow to determine $NO_x$ mass, report an MHV record, as follows, for NOXC for each unit or stack operating hour as needed for those determinations.

a) Monitoring locations with only a $NO_x$-diluent monitoring system: Report the NOXC MHV record ~~only~~ for hours in which a quality-assured $NO_x$ concentration is available and a quality-assured diluent gas ($CO_2$ or $O_2$) concentration is available. ~~(~~Whenever ~~either~~ the $NO_x$ concentration or diluent concentration is missing for an hour, report a $NO_x$ concentration MHV record without an unadjusted value and report the appropriate substitute data value for $NO_x$ emission rate in the DERIVED HOURLY VALUE (DHV) record~~. and do not report an MHV record.)~~ Report an MODC of "46" for hours in which a quality-assured $NO_x$ concentration and a quality-assured diluent gas ($CO_2$ or $O_2$) is unavailable.

The elements to report for (a) are summarized in Table 11.

**Table 11: *MHV* Elements for NOXC Record (NOX Rate System Only)**

| MHV Elements to Report | NOXC MHV Record | |
|---|---|---|
| | Measured Data | Missing Data |
| Parameter Code | ✓ | ✓~~NA~~ |
| Unadjusted Hourly Value | ✓ | ~~NA~~ |
| Adjusted Hourly Value | | ~~NA~~ |
| MODC | ✓ | ✓~~NA~~ |
| Monitoring System ID | | ~~NA~~ |
| Component ID | ✓ | ✓~~NA~~ |
| Percent Available | | ~~NA~~ |
| Moisture Basis | | ~~NA~~ |

b) Monitoring locations with only a $NO_x$ concentration monitoring system: Report the NOXC MHV record for every operating hour. If a valid $NO_x$ concentration is not obtained for the hour, report substitute data in the ADJUSTED HOURLY VALUE element of the record using the applicable missing data procedures for NOXC.

c) Monitoring locations with both a $NO_x$-diluent and a $NO_x$ concentration monitoring system: Report the NOXC MHV record for every operating hour using the Monitoring System ID for the $NO_x$ concentration monitoring system. If a valid $NO_x$ concentration is not obtained for the hour, report the applicable substitute $NO_x$ concentration data in the MHV record using the applicable missing data procedures for NOXC; and report the appropriate substitute data value for $NO_x$ emission rate in the DHV record.

The elements to report for (b) and (c) are summarized in Table 12 below.

**Table 12: *MHV* Elements for NOXC Record (NOXC System)**

| MHV Elements to Report | NOXC MHV Record | |
|---|---|---|
| | Measured Data | Missing Data |
| Parameter Code | ✓ | ✓ |
| Unadjusted Hourly Value | ✓ | |
| Adjusted Hourly Value | ✓ | ✓ |
| MODC | ✓ | ✓ |
| Monitoring System ID | ✓[1] | ✓[1] |
| Component ID | ✓ | ✓ |
| Percent Available | ✓ | ✓ |
| Moisture Basis | | |

[1] Report the NOXC System ID.

Note that for units with add-on $NO_x$ emission controls, hours in which the flue gases are discharged through an unmonitored bypass stack are considered to be missing data hours. However, when the outlet $NO_x$ monitor is unavailable and proper operation of the emission controls is not verified, §75.34 (a)(1) allows you to report data from a certified $NO_x$ monitor at the control device inlet. If you choose this option, these hours are treated as "available" hours for the purposes of the missing data look backs and percent monitor data availability (PMA) calculations.

For a summary of these requirements, see Table 13 below.

**Reporting of High Range and Full Scale Exceedance Defaults**
Treat any hour(s) in which a default high range value (200 percent of Maximum Potential Concentration (MPC)) or a full scale exceedance value (200 percent of range) is used in the calculation of the hourly average $NO_x$ concentration as follows:

a) For $NO_x$ concentration monitoring systems: Treat these hours as quality-assured monitor operating hours and include them in missing data lookback and as available hours for percent monitor data availability calculations.

b) For $NO_x$-diluent monitoring systems:

1. If a quality-assured diluent value is available for the hour, treat the hour as quality-assured data and use the appropriate $NO_x$ concentration value in conjunction with the quality-assured average diluent gas concentration for the hour to calculate and report $NO_x$ emission rate in the DHV record.
2. If a quality-assured diluent gas concentration is not available for the hour, then consider the $NO_x$ emission rate data for the hour to be missing and do not report ~~any~~ the unadjusted hourly value or adjusted hourly value in the MHV record for the hour. Instead, report the maximum potential $NO_x$ emission rate (MER) as a substitute data value in a DHV record using an MODC of 25.

c) Where both $NO_x$ concentration and $NO_x$-diluent monitoring systems are identified:

1. If a quality-assured diluent value is available for the hour, treat the hour as a quality-assured monitor operating hour and include it in the missing data lookback and as an available hour for percent monitor data availability calculations. Also, use the $NO_x$ concentration value in conjunction with the quality-assured average diluent gas concentration for the hour to calculate and report $NO_x$ emission rate in the DHV record.
2. If a quality-assured diluent gas concentration is not available for the hour, treat the hour as a quality-assured monitor operating hour for NOXC and include it in the missing data lookback for NOXC and as an available hour for percent monitor data availability calculations for the NOXC system. However, the $NO_x$ emission rate data for the hour is considered to be missing. Report the MER as a substitute data value in a DHV record using an MODC of 25.

**Table 13: Summary of $NO_x$ *Monitor Hourly Value* Record Reporting Requirements**

| Use of $NO_x$ Analyzer | Monitoring System ID Used | Missing Data Instructions |
|---|---|---|
| For $NO_x$ emission rate only<br>or<br>Both $NO_x$ emission rate and $NO_x$ mass calculation using $NO_x$ emission rate x Heat input rate | Blank<br><br>(Report the $NO_x$–diluent monitoring system ID in the DHV record) | Leave the unadjusted and adjusted hourly values blank in the ~~Do not report an~~ MHV record for the hour. Perform $NO_x$ missing data substitution in the DHV record (if $NO_x$ or diluent concentration is unavailable). |
| For $NO_x$ mass calculation using $NO_x$ concentration x stack flow | $NO_x$ concentration monitoring System ID | Perform missing data substitution for $NO_x$ concentration in an MHV record. |
| Both $NO_x$ emission rate and $NO_x$ mass calculation using $NO_x$ concentration x stack flow | $NO_x$ concentration monitoring System ID | Perform missing data substitution for $NO_x$ concentration in an MHV record. Also perform missing data substitution in the DHV record for $NO_x$ emission rate if either the $NO_x$ or diluent concentration is missing. |

### $CO_2$ Concentration

Report a MHV record for $CO_2$ Concentration only if you use a $CO_2$ analyzer to determine $CO_2$ concentration. If you use an $O_2$ concentration monitor and Equation F-14a or F-14b to determine $CO_2$ concentration for each hour, report a MHV record for $O_2$ concentration for the hour (see the instructions for $O_2$ Concentration below) and report the calculated $CO_2$ concentration in a DHV record.

If you use a $CO_2$ analyzer reading to calculate $NO_x$ emission rate, $CO_2$ mass emission rate, and/or Heat Input, report a MHV record for CO2C for each unit or stack operating hour as needed for those determinations. If you also use a $CO_2$ analyzer reading to calculate HCl, HF, Hg, and/or $SO_2$ emission rates, record a MHV record for CO2C for each unit or stack operating hour as needed for those determinations.

**Table 14: *MHV* Elements for CO2C**

| MHV Elements to Report | CO2C MHV Records | |
|---|---|---|
| | Measured Data | Missing Data[3] |
| Parameter Code | ✓ | ✓ |
| Unadjusted Hourly Value | ✓ | ✓ |
| Adjusted Hourly Value | | |
| MODC | ✓ | ✓ |
| Monitoring System ID | [1] | [1] |
| Component ID | ✓ | ✓ |
| Percent Available | [2] | ✓ |
| Moisture Basis | | |

[1] If the $CO_2$ component is part of a $CO_2$ system, report the $CO_2$ System ID. Otherwise, leave the System ID blank.

[2] If the $CO_2$ is used to calculate heat input or $CO_2$ mass rate, report the Percent Available value for every operating hour.

[3] If the $CO_2$ value is used to calculate heat input or $CO_2$ mass rate, report an MHV record for CO2C for every operating hour. ~~Otherwise, do not report CO2C MHV records for missing data hours~~.

a) Whenever you use a $CO_2$ monitor to determine $CO_2$ mass emissions and/or for heat input rate: Report a MHV record using the $CO_2$ Monitoring System ID, for each hour or partial hour of unit operation. When the hourly $CO_2$ concentration is missing, or for hours in which the flue gases are discharged through an unmonitored bypass stack, use the missing data routines in §75.35 and 75.36 to provide substitute data values.

If the $CO_2$ monitor is also used as the diluent monitor for a $NO_x$-diluent monitoring system, whenever a $CO_2$ RATA is failed on the $CO_2$ monitoring system, then both the $CO_2$ and $NO_x$-diluent monitoring systems are considered out-of-control. (See Appendix B §2.3.2(g)). Report the applicable substitute $CO_2$ concentration data in the MHV record using the applicable missing data procedures for CO2C. For $NO_x$ emission rate, report the appropriate substitute data value in the DHV record.

However, if the $CO_2$ data for the $CO_2$ monitoring system is considered out-of-control due to the expiration of the applicable $CO_2$ RATA but the $NO_x$ RATA has not yet expired,[1] then substitute data should only be used for $CO_2$ mass and heat input rate calculations and not for calculation of the $NO_x$ emission rate. For $NO_x$ emission rate, the actual measured $CO_2$ concentration should be used. In such cases, report two $CO_2$ concentrations for each hour until a $CO_2$ RATA is completed. First, report the appropriate substitute $CO_2$ data using the $CO_2$ System ID. Second, report the actual $CO_2$ value recorded by the $CO_2$ component, leaving the System ID blank. (The actual $CO_2$ value will be used in the $NO_x$

[1] Note that this situation should only arise if the $NO_x$ emission rate RATA was done using $O_2$ as the diluent for the reference method or if the $CO_2$ RATA data are not submitted. If the RATA was conducted using a $CO_2$ diluent in the reference method, then there should be sufficient $CO_2$ data available to submit a RATA for the $CO_2$ system.

emission rate calculation for the hour, while the substitute data value will be used in the $CO_2$ mass and heat input rate calculations.)

b) If you use the $CO_2$ monitor only to calculate $NO_x$ emission rate: Report an MHV record for $CO_2$ concentration. ~~Leave the Monitoring System ID blank.~~ Leave the ~~Do not report~~ unadjusted or adjusted hourly values blank ~~an MHV record~~ for the hour if: (1) a quality-assured $CO_2$ concentration is not available; or (2) a quality-assured $NO_x$ concentration is not available; or (3) both (1) and (2). Instead, report a substitute data value for $NO_x$ emission rate in the DHV record. Report an MODC of "46" when the $CO_2$ monitor used only to calculate $NO_x$ emission rate is unavailable.

Note that hours in which the flue gases are discharged through an unmonitored bypass stack are considered to be missing data hours. For these hours, do not report a MHV record. In the DHV record, report the $NO_x$ MER and MODC of "23."

When a default high range value (200 percent of MPC) or a full-scale exceedance value (200 percent of the range) is used in the calculation of the hourly average $NO_x$ concentration, the $NO_x$ concentration is considered to be both quality-assured and available. Therefore, if a quality-assured $CO_2$ concentration is available for that hour, report a MHV record and calculate the $NO_x$ emission rate in the usual manner. However, if a quality-assured $CO_2$ concentration is not available for that hour, the $NO_x$ emission rate data for the hour are considered missing. In that case, do not report a MHV record for the hour and report the maximum potential $NO_x$ emission rate (MER) as a substitute data value in DHV record, using an MODC of "25."

c) If you use the $CO_2$ monitor to calculate HCl, HF, Hg, and/or $SO_2$ emission rates and the $CO_2$ monitor is out-of-control: Report the applicable substitute $CO_2$ concentration data as required under Part 75 in the MHV record using the applicable missing data procedures for CO2C. Note that MATS does not allow the use of missing data routines. Therefore, report the appropriate out-of-control method of determination code (MODC) for the HCl, HF, Hg, and/or $SO_2$ emissions rates in the MATS DERIVED HOURLY VALUE DATA (MDHV) record.

**$O_2$ Concentration**

Report an MHV record for $O_2$ concentration for each hour in which you use the $O_2$ concentration to determine the hourly $NO_x$, HCl, HF, Hg, or $SO_2$ emission rates, heat input rate, or $CO_2$ concentration. Report two MHV records for $O_2$ concentration (one wet-basis and one dry-basis) for each hour in which you use $O_2$ concentration to determine percent moisture.

If the $O_2$ value is used for the heat input calculation, report the MHV record for $O_2$ for every operating hour and use the appropriate substitute data for any operating hour in which a quality-assured $O_2$ value in not obtained. Otherwise, report the MHV record only for hours in which a quality-assured $O_2$ value is obtained.

**Table 15: *MHV* Elements for O2C**

| MHV Elements to Report | O2C MHV Records | |
|---|---|---|
| | Measured Data | Missing Data[4] |
| Parameter Code | ✓ | ✓ |
| Unadjusted Hourly Value | ✓ | ✓ |

| MHV Elements to Report | O2C MHV Records | |
|---|---|---|
| | Measured Data | Missing Data[4] |
| Adjusted Hourly Value | | |
| MODC | ✓ | ✓ |
| Monitoring System ID | [1] | [1] |
| Component ID | ✓ | ✓ |
| Percent Available | [2] | ✓ |
| Moisture Basis | [3] | |

[1] If the $O_2$ component is part of a $CO_2$ system, report the $CO_2$ System ID. If the $O_2$ component is part of an $O_2$ system, report the $O_2$ System ID. Otherwise, leave the System ID blank.

[2] If the $O_2$ value is used to calculate heat input, report the Percent Available value for every operating hour.

[3] If the $O_2$ value is used to calculate $H_2O$, report the Moisture basis. Otherwise, leave this field blank.

[4] If the $O_2$ value is used to calculate heat input, report an MHV record for O2C for every operating hour. ~~Otherwise, do not report O2C MHV records for missing data hours.~~

a) Whenever you use an $O_2$ monitor to determine $CO_2$ concentration, $CO_2$ mass emissions, and/or for heat input rate (as part of a $CO_2$ monitoring system): Report an MHV record using the $CO_2$ Monitoring System ID, for each hour or partial hour of unit operation in which a quality-assured $O_2$ value is obtained. When the hourly $O_2$ concentration is missing, or for hours in which the flue gases are discharged through an unmonitored bypass stack, use the missing data routines in §75.36 to provide substitute data values if the $O_2$ value is used to determine heat input.

If the $O_2$ monitor is also used as the diluent monitor for a $NO_x$-diluent monitoring system, whenever a $CO_2$ RATA is failed on the $CO_2$ monitoring system, then the $CO_2$, and $NO_x$-diluent monitoring systems (as applicable) are each considered to be out-of-control. (See Appendix B §2.3.2(g).) If heat input is calculated from the $O_2$, report the applicable substitute $O_2$ concentration data in the MHV record using the applicable missing data procedures for O2C. For $CO_2$ concentration, $CO_2$ mass, and $NO_x$ emission rate, report the appropriate substitute data values in the appropriate DHV records. However, if the $O_2$ data for the $CO_2$ monitoring system is considered out-of-control due to the expiration of the applicable $CO_2$ RATA but the $NO_x$ RATA has not yet expired,[2] then substitute data should only be used for $CO_2$ concentration and heat input rate calculations and not for calculation of the $NO_x$ emission rate. The actual measured $O_2$ concentration should be used to calculate $NO_x$ emission rate. In such cases, report two $O_2$ concentrations for each hour until a $CO_2$ RATA is completed. First, report the appropriate substitute $O_2$ data using the $CO_2$ system. Second, report the actual $O_2$ value recorded by the $O_2$ component, leaving the System ID blank. (The monitor $O_2$ value will be used in the $NO_x$ emission

[2] Note that this situation should only arise if the $NO_x$ emission rate RATA was done using $O_2$ as the diluent for the reference method or if the $CO_2$ RATA data are not submitted. If the RATA was conducted using a $CO_2$ diluent in the reference method, then there should be sufficient $CO_2$ data available to submit a RATA for the $CO_2$ system.

rate calculation for the hour, while the substitute data value will be used in the heat input rate calculation.)

b) Whenever you use an $O_2$ monitoring system to determine heat input rate: Report an MHV record using the $O_2$ Monitoring System ID, for each hour or partial hour of unit operation. When the hourly $O_2$ concentration is missing, or for hours in which the flue gases are discharged through an unmonitored bypass stack, use the missing data routines in §75.36 to provide substitute data values.

If the $O_2$ monitor is also used as the diluent monitor for a $NO_x$-diluent monitoring system, whenever $O_2$ RATA is failed for the $O_2$ monitoring system, then the $NO_x$-diluent monitoring systems is also considered to be out-of-control. (See Appendix B §2.3.2(g).) For heat input that is calculated from the $O_2$, report the applicable substitute $O_2$ concentration data in the MHV record using the applicable missing data procedures for O2C. For $NO_x$ emission rate, report the appropriate substitute data values in the appropriate DHV record. However, if the $O_2$ data for the $O_2$ monitoring system is considered out-of-control due to t3he expiration of the applicable $O_2$ RATA but the $NO_x$ RATA has not yet expired,[3] then substitute data should only be used for calculating heat input rate and not for calculation of the $NO_x$ emission rate. The actual measured $O_2$ concentration should be used to calculate $NO_x$ emission rate. In such cases, report an additional $O_2$ concentration record for each hour until an $O_2$ RATA is completed. First, report the appropriate substitute $O_2$ data using the $O_2$ System ID. Secondly, report the actual $O_2$ value recorded by the $O_2$ component leaving the System ID blank. (The recorded $O_2$ value will be used in the $NO_x$ emission rate calculation for the hour, while the O2C substitute data value will be used in the heat input rate calculations.)

c) If the $O_2$ value is used only for calculating $NO_x$ emission rate: Report the MHV record for all stack operating hours.- Report ~~for~~ $O_2$ unadjusted and adjusted hourly values only when quality-assured values are obtained for both $O_2$ and $NO_x$ concentration. ~~Leave the System ID blank.~~ Report an MODC of "46" when the $O_2$ monitor used only to calculate $NO_x$ emission rate is unavailable. Note that hours in which the flue gases are discharged through an unmonitored bypass stack are considered to be missing data hours. (For these hours, do not report an MHV record. In the DHV record, report the $NO_x$ MER and an MODC of "23.")

d) If you use the $O_2$ monitor to calculate HCl, HF, Hg, and/or $SO_2$ emission rates and the $O_2$ monitor is out-of-control: Report the applicable substitute $O_2$ concentration data as required under Part 75 in the MHV record using the applicable missing data procedures for O2C. Note that MATS does not allow the use of missing data routines. Therefore, report the appropriate out-of-control method of determination code (MODC) for the HCl, HF, Hg, and/or $SO_2$ emissions rate in the MATS DERIVED HOURLY VALUE DATA (MDHV) record.

e) If you also use wet and dry $O_2$ monitors to determine the hourly percent moisture: Report two $O_2$ MHV records for each hour. Report the wet $O_2$ measurement with a "W" as the MoistureBasis data element and report the dry $O_2$ measurement with a "D" as the MoistureBasis data element. If either the wet or dry $O_2$ component is also used to calculate heat input, $NO_x$, HCl, HF, Hg, and/or $SO_2$ emission rates, and/or $CO_2$ concentration, then follow the applicable reporting instructions from sections (a), (b), (c),

[3] Note that this situation should only arise if the $NO_x$ emission rate RATA was done using $CO_2$ as the diluent for the reference method or if the $O_2$ RATA data are not submitted. If the RATA was conducted using an $O_2$ diluent in the reference method, then there should be sufficient $O_2$ data available to submit a RATA for the $O_2$ system.

or (d) above, to report the data for that component. For the remaining component, report the MHV for each hour, and leave the System ID blank.

If either $O_2$ value is missing, or for hours in which the flue gases are discharged through an unmonitored bypass stack, perform missing moisture data substitution in the DHV record for moisture, in accordance with §75.37.

**Moisture (H2O)**

For any unit or stack that monitors $H_2O$ with a moisture sensor (or, for saturated gas streams, from a temperature sensor and look-up table), report the moisture value in a moisture MHV record for each operating hour or partial operating hour.

**Table 16: *MHV* Elements for H2O**

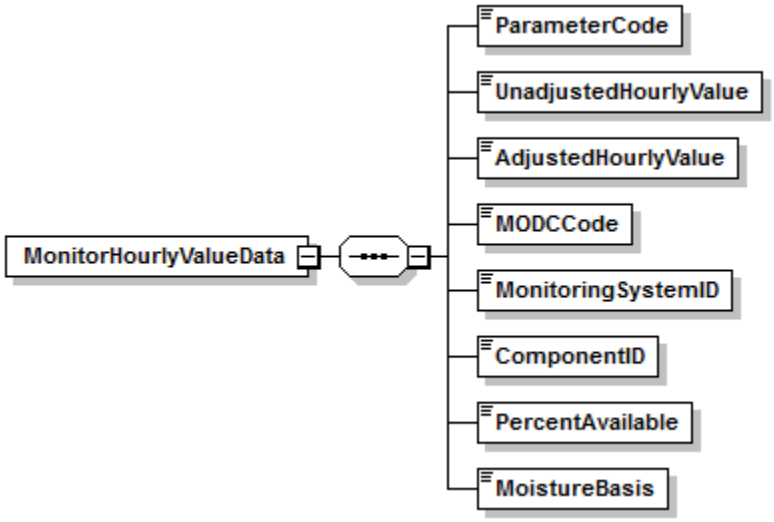
| MHV Elements to Report | H2O | |
|---|---|---|
| | Measured Data | Missing Data |
| Parameter Code | ✓ | ✓ |
| Unadjusted Hourly Value | ✓ | ✓ |
| Adjusted Hourly Value | | |
| MODC | ✓ | ✓ |
| Monitoring System ID | ✓ | ✓ |
| Component ID | ✓ | ✓ |
| Percent Available | ✓ | ✓ |
| Moisture Basis | | |

If you use a fuel-specific default moisture value, as allowed under §75.11 or §75.12 (for coal, wood, and natural gas burning units only), report the value in the MONITOR DEFAULT DATA record and use this constant in the calculation. Do not report a moisture MHV record on an hourly basis. However, if you have more than one active fuel-specific default moisture value defined in your monitoring plan, report the fuel-specific or pro-rated moisture value used in your emissions calculations in an $H_2O$ DHV record.

The Part 75 missing data procedures for moisture are found in §75.37. These procedures are modeled after the standard missing data procedures for $SO_2$. In most instances, the moisture missing data algorithm is the inverse of the $SO_2$ algorithm (i.e., the lower moisture values are more conservative and therefore an inverted moisture missing data algorithm must be applied (using 10th percentile values instead of 90th percentile values, minimum values instead of maximum values, etc.)). However, when Equations 19-3, 19-4, or 19-8 from Method 19 of 40 CFR Part 60 are used to determine $NO_x$ emission rate, a higher moisture value is more conservative and therefore the standard $SO_2$ missing data algorithm must be applied.

## *Monitor Hourly Value Data* XML Model

**Figure 11: *Monitor Hourly Value Data* XML Elements**




## *Monitor Hourly Value Data* XML Elements

**Parameter Code** *(ParameterCode)*
Report the Parameter Code that corresponds to the parameter monitored at the location defined by the Stack Pipe ID or Unit ID. Use the appropriate uppercase code as shown in Table 17.

**Table 17: Parameter Codes and Descriptions for the *MHV Data* Record**

| Code | Description |
|---|---|
| CO2C | $CO_2$ Concentration (%, pct) |
| FLOW | Volumetric Flow Rate (scfh) |
| H2O | Moisture (using moisture sensors, or temperature sensors) (%, pct) |
| NOXC | $NO_x$ Concentration (ppm) |
| O2C | $O_2$ Concentration (%, pct) |
| SO2C | $SO_2$ Concentration (ppm) |

**Unadjusted Hourly Value** *(UnadjustedHourlyValue)*
Report the unadjusted concentration or stack flow value for the hour. See below for parameter-specific instructions.

$SO_2$ Concentration
Report the unadjusted, quality-assured $SO_2$ concentration for the hour, expressed in parts per million (ppm) and round the resulting value to the appropriate number of decimal places per Table 18. For hours in which very low sulfur fuel is combusted, report the actual SO2

concentration even if you report a 2.0 ppm default value in the derived hourly value record. Leave this field blank for hours in which you use substitute data.

Leave this field blank for hours in which the flue gases are routed through an unmonitored bypass stack, or when the outlet $SO_2$ monitor is unavailable and proper operation of the emission controls is not verified, if you report the MPC for those hours. However, if you report data from a certified inlet monitor during those hours, report the unadjusted $SO_2$ concentration recorded by the monitor.

Do not leave this field blank for hours in which: (1) very low sulfur fuel is combusted and you report a 2.0 ppm default value in the derived hourly value record; or (2) you use the default high range value of 200 percent of the MPC in the calculation of the hourly $SO_2$ concentration; or (3) a full-scale exceedance occurs and you use 200 percent of the range in the calculation of the hourly $SO_2$ concentration. All of the hours described in (1) – (3), above, are treated as quality-assured monitor operating hours.

$NO_x$ Concentration

For both $NO_x$ concentration monitoring systems and $NO_x$-diluent monitoring systems, report the unadjusted, quality-assured $NO_x$ concentration for the hour, expressed in parts per million (ppm) and round the resulting value to the appropriate number of decimal places per Table 18. Leave this field blank for hours in which you use substitute data for $NO_x$ concentration.

Do not leave this field blank for hours in which: (1) you use a default high range value of 200 percent of the MPC in the calculation of the hourly $NO_x$ concentration; or (2) a full-scale exceedance occurs and you use 200 percent of the range in the calculation of the hourly $NO_x$ concentration. All of the hours described in (1) and (2), above are treated as quality-assured monitor operating hours. Refer to the Part 75 Emissions Monitoring Policy Manual for further discussion of overscaling and use of the default high range.

For units with add-on $NO_x$ emission controls, if you report data from a certified control device inlet monitor during hours in which the outlet $NO_x$ monitor is unavailable and proper operation of the emission controls is not verified, report the average, unadjusted $NO_x$ concentration recorded by the inlet monitor.

$CO_2$ Concentration

Report the $CO_2$ concentration for the hour, expressed in percent $CO_2$ (%$CO_2$) and round the resulting value to the appropriate number of decimal places per Table 18. If applicable, during hours in which you use substitute data, or for hours in which the flue gases are discharged through an unmonitored bypass stack, report the substituted value obtained from the $CO_2$ missing data procedures under §§75.35 or 75.36 (as applicable).

If applicable for Hg, HCl, HF, $SO_2$, and/or $NO_x$ emission rate calculations, for each hour in which you use the diluent cap value to calculate emission rate, report the actual quality-assured $CO_2$ concentration in MHV record for CO2C and appropriate MODC ("01" through "04"), and report an MODC of "14" in the DHV record for $NO_x$ emission rate and/or an MODC of "37" in the MDHV for Hg, HCl, HF, or $SO_2$ emission rate. Note: For MATS reporting, use of the diluent cap is restricted to startup and shutdown hours (as defined in Section 63.10042).

Whenever it is necessary to report a second $CO_2$ concentration record to calculate Hg and/or $NO_x$ emission rate for an hour, report the actual $CO_2$ concentration for the hour and the appropriate MODC (either "01" or "02"). See instructions under Description of Data for $CO_2$ Concentration.

$O_2$ Concentration

Report $O_2$ concentration for the hour, expressed in $\%O_2$, and round the resulting value to the appropriate number of decimal places per Table 18. For each hour in which you use the diluent cap value to calculate Hg, HCl, HF, $SO_2$, and/or $NO_x$ emission rate, report the actual quality-assured $O_2$ concentration and appropriate MODC ("01" through "04"). For each such hour, report an MODC of "14" in the $NO_x$ emission rate DHV record and/or an MODC of "37" in the MDHV for Hg, HCl, HF, or $SO_2$ emission rate. Note: For MATS reporting, use of the diluent cap is restricted to startup and shutdown hours (as defined in Section 63.10042).

For any hour in which there is a full scale exceedance of the $O_2$ monitor range, report the appropriate diluent cap value for the type of unit and an MODC of "20." You must also report a default record in the monitoring plan with a parameter code of O2X and a Default Purpose Code of "DC" containing this value even if you do not calculate an hourly $NO_x$ Emissions Rate. (Note that you may instead report a time weighted average calculated using the diluent cap value for the portion of the hour that the monitoring range was exceeded with the quality assured data collected during the portion of the hour when the range was not exceeded. In this case, report the hourly average but use an MODC of "20" to indicate a range exceedance has occurred during the hour.) If you use wet and dry $O_2$ monitors to determine the hourly percent moisture and both values are quality-assured, report two $O_2$ MHV records for each hour.

If you use $O_2$ concentration for the heat input rate calculation, report the appropriate substitute data value in this field when a quality-assured $O_2$ concentration for the hour is unavailable or for hours in which the flue gases are discharged through an unmonitored bypass stack. Otherwise, if a quality-assured $O_2$ concentration is not obtained, do not report an MHV record for the hour.

Moisture

Report moisture for the hour, expressed in $\%H_2O$, and round the resulting value, obtained either from a moisture sensor, or for saturated gas streams, from a temperature sensor and look-up table, to the appropriate number of decimal places per Table 18. Report the appropriate substitute data value for hours in which a quality-assured moisture percentage is unavailable or for hours in which the flue gases are discharged through an unmonitored bypass stack.

Volumetric Flow

For each operating hour (or partial operating hour) in which a quality-assured flow rate was measured (MODC "01" through "04" and "54"), report the unadjusted flow rate in units of scfh (wet-basis). Report flow rate to the appropriate number of decimal places per Table 18. For missing data hours, leave this field blank (this includes hours in which the flue gases are discharged through an unmonitored bypass stack).

If a start-up or shut-down hour results in a stack flow rate that is too low to be registered by the stack flow monitor, you may report a default minimum stack flow rate of 1,000 scfh. Report an MODC of "55" for the hour. Manual entry of this MODC is permitted.

**Adjusted Hourly Value** *(AdjustedHourlyValue)*

Leave this field blank for parameters CO2C, H2O, and O2C.

$SO_2$ Concentration

For each hour in which you obtain quality-assured values, apply the appropriate bias adjustment factor (BAF) to the rounded average $SO_2$ concentration for the hour. Report the adjusted $SO_2$ concentration for the hour in ppm and round the resulting value to the appropriate number of decimal places per Table 18.

Note that for an initial certification, analyzer replacement, or complete monitoring system replacement (as indicated by reporting a QA AND CERTIFICATION EVENT record with a QACertificationEventCode value of "100," "101," "120," or "125"), if you are using conditional data validation, the BAF is uncertain during the conditional data period. Therefore, apply a BAF of 1.000 from the beginning of the conditional data validation period to the completion hour of the certification or recertification RATA.

For each hour in which you use missing data procedures, report the substitute data value.

For each hour in which the flue gases are routed through an unmonitored bypass stack, or when the outlet $SO_2$ monitor is unavailable and proper operation of the emission controls is not verified, you may either report the MPC in this field or, if data are available from a certified inlet monitor, report the bias-adjusted $SO_2$ concentration measured by the monitor.

For each hour in which only very low sulfur fuel (as defined in §72.2) is combusted, report the bias-adjusted hourly average $SO_2$ concentration, unless it is less than 2.0 ppm, in which case, report "2.0 ppm."

For each hour in which a default high range value is used in the calculation of the hourly average $SO_2$ concentration, report the bias-adjusted hourly average in this field unless application of the BAF causes the hourly average to exceed 200 percent of the MPC, in which case, report 200 percent of the MPC.

When a full-scale exceedance of the high range occurs and 200 percent of the range is used in the calculation of the hourly average $SO_2$ concentration, report the bias-adjusted hourly average in this field unless application of the BAF causes the hourly average to exceed 200 percent of the range, in which case, report 200 percent of the range.

Refer to the Part 75 Emissions Monitoring Policy Manual for a further discussion of overscaling and use of the default high range value.

$NO_x$ Concentration

Report data in this field only if you use $NO_x$ concentration times stack flow rate to determine $NO_x$ mass emissions. Leave this field blank if you do not have a $NO_x$ concentration system.

For each hour in which you obtain a quality-assured value, apply the appropriate adjustment factor (1.000 or system BAF) to the rounded average $NO_x$ concentration for the hour. Report the adjusted average $NO_x$ concentration for the hour in ppm and round the resulting value to the appropriate number of decimal places per Table 18.

Note that for an initial certification, analyzer replacement, or complete monitoring system replacement (as indicated by reporting a QA AND CERTIFICATION EVENT record with a

QACertificationEventCode value of "100," "101," "120," or "125"), if you are using conditional data validation, the BAF is uncertain during the conditional data period. Therefore, apply a BAF of 1.000 from the beginning of the conditional data validation period to the completion hour of the certification or recertification RATA.

For each hour in which $NO_x$ concentration is missing, report the substitute $NO_x$ concentration value.

For each hour in which a default high range value is used in the calculation of the hourly average $NO_x$ concentration, report the bias-adjusted hourly average in this field, unless it exceeds 200 percent of the MPC, in which case, report 200 percent of the MPC.

When a full-scale exceedance of the high range occurs and 200 percent of the range is used in the calculation of the hourly average $NO_x$ concentration, report the bias-adjusted hourly average in this field, unless it exceeds 200 percent of the range, in which case, report 200 percent of the range.

For units with add-on $NO_x$ emission controls, if you report data from a certified $NO_x$ monitor at the control device inlet during hours in which the outlet $NO_x$ monitor is unavailable and proper operation of the emission controls is not verified, report the average, bias-adjusted $NO_x$ concentration recorded by the monitor. Include these hours in the missing data lookbacks and treat them as available hours in the PMA calculations.

Volumetric Flow

For hours in which quality-assured data are obtained, apply the appropriate bias adjustment factor (1.000 or BAF) to the rounded quality-assured value and report the adjusted stack flow for the hour. Report the resulting value to the appropriate precision according to Table 18. For each hour in which missing data procedures are used to report data, report the substitute data value. When the flue gases are discharged through an unmonitored bypass stack, report the appropriate substitute data value for flow rate (under §75.33) in this field. Do not leave this field blank.

Note that for an initial certification, analyzer replacement, or monitoring system replacement (as indicated by reporting a QA AND CERTIFICATION EVENT record with a QACertificationEventCode value of "300" or "305"), if you are using conditional data validation, the BAF is uncertain during the conditional data period. Therefore, apply a BAF of 1.000 from the beginning of the conditional data validation period to the completion hour of the certification or recertification RATA.

**Table 18: Precision of Reported Values for *Monitor Hourly Value Data***

| Parameter Codes | Required Precision* |
|---|---|
| CO2C, H2O, O2C | One Decimal Place |
| NOXC, SO2C | One Decimal Place |
| FLOW | Nearest 1,000 scfh |

* All substitute data values should be rounded to the same precision as quality-assured data.

**MODC Code** *(MODCCode)*

Report the appropriate method of determination code (MODC) to identify the type of monitoring system or value used to measure and report the concentration or stack flow for the hour. For CEMS, manual entry of MODCs "16," "17," and "21" is permitted. EPA has reserved codes "01" through "55." Codes "56" through "99" may be used by vendors and companies for other purposes but must not be reported in a quarterly report.

**Table 19: MODC Codes and Descriptions for *MHV***

| Code | Parameters | Description |
|---|---|---|
| 01 | All | Primary Monitoring System (and Primary Bypass (PB)) |
| 02 | All | Redundant Backup or Regular Non-Redundant Backup Monitoring System |
| 03 | All | Approved Alternative Monitoring System |
| 04 | All | Reference Method Backup System |
| 05 | SO2C | Preapproved Parametric Monitoring Method Data for Controlled Units |
| 06 | All | Average Hour Before/Hour After |
| 07 | All | Initial Missing Data (§75.31) |
| 08 | CO2C<br>NOXC<br>SO2C<br>FLOW | 90th Percentile Value in Lookback Period (SO2C and CO2C)<br>or<br>90th Percentile Value in Lookback Period in Corresponding Load Bin (NOXC and FLOW) |
| | H2O | 90th or 10th Percentile Value in Lookback Period |
| | O2C | 10th Percentile Value in Lookback Period |
| 09 | CO2C<br>NOXC<br>SO2C<br>FLOW | 95th Percentile Value in Lookback Period (SO2C and CO2C)<br>or<br>95th Percentile Value in Lookback Period in the Corresponding Load Bin (NOXC and FLOW) |
| | H2O | 95th or 5th Percentile Value in Lookback Period |
| | O2C | 5th Percentile Value in Lookback Period |
| 10 | All | Maximum (or Minimum for $O_2$ or $H_2O$, if applicable) Hourly Value in Lookback Period (SO2C, CO2C, O2C, and H2O)<br>or<br>Maximum Value in Lookback Period in Corresponding Load Bin (NOXC and FLOW) |
| 11 | NOXC<br>FLOW | Average Hourly Value in Load Range in Lookback Period |
| 12 | All | Maximum (or Minimum for $O_2$ or $H_2O$, if applicable) Potential Concentration (MPC) or Flow Rate (see Section 2.1 of Appendix A to Part 75) |
| 13 | SO2C<br>NOXC | Maximum Expected Concentration (MEC) (see §75.34(a)(5)) |
| 15 | SO2C<br>NOXC | 1.25 times the maximum hourly controlled concentration at the corresponding load or operation bin, in the applicable lookback period (see §75.34(a)(5)) |
| 16 | SO2C | $SO_2$ Concentration Value of 2.0 ppm during hours when very low sulfur fuels are combusted. These hours are included in missing data lookback and are treated as available hours for percent availability calculation. |

| Code | Parameters | Description |
|---|---|---|
| 17 | CO2C<br>NOXC<br>O2C<br>SO2C | Temporary Like-Kind Replacement Analyzer |
| 18 | NOXC<br>SO2C | Maximum Potential Concentration (MPC) used to determine the hourly average for the portion of the hour when a high range monitor was unavailable due to an expired linearity or daily calibration error test (See Policy Question 9.20) |
| 19 | NOXC<br>SO2C | 200 percent of MPC; Default High Range Value. These hours are included in missing data lookback and are treated as available hours for percent availability calculations. |
| 20 | CO2C<br>NOXC<br>O2C<br>SO2C<br>FLOW | 200 percent of the full-scale range setting (or diluent cap for $O_2$) when there is full-scale exceedance of high range. These hours are included in missing data lookback and are treated as available hours for percent availability calculations. |
| 21 | CO2C<br>H2O<br>NOXC<br>SO2C | Negative Hourly Average Concentration Replaced with Zero |
| 22 | NOXC<br>SO2C | Concentration from a certified monitor at the control device inlet, when exhaust gases are routed through an unmonitored bypass stack, or when the outlet monitor is unavailable and proper operation of the emission controls is not verified. These hours are included in missing data lookback and are treated as available hours for percent availability calculations. |
| 23 | NOXC<br>SO2C<br>CO2C | MPC when flue gases are routed through an unmonitored bypass stack. These hours are considered to be missing data hours. |
| 24 | NOXC | MEC of $NO_x$ when flue gases are routed through an unmonitored bypass stack and the add-on $NO_x$ emission controls are confirmed to be operating properly. |
| 46 | CO2C<br>NOXC<br>O2C | Missing data hour on a NOXR system where the $NO_x$ concentration or diluent concentration is missing for an hour. |
| 53 | All | Other quality-assured methodologies approved through petition. These hours are included in the missing data lookback and are treated as available hours for percent monitor availability calculations. |
| 54 | All | Other quality-assured methodologies approved through petition by EPA. These hours are included in missing data lookback and are treated as unavailable hours for percent availability calculations. |
| 55 | All | Other substitute data approved through petition by EPA. These hours are not included in missing data lookback and are treated as unavailable hours for percent availability calculations. |

$SO_2$ Concentration

When very low sulfur fuel is combusted, if a negative $SO_2$ concentration is replaced (in the Unadjusted Hourly Value field) with a value of zero ppm and the 2.0 ppm default $SO_2$ concentration is reported in the Adjusted Hourly Value field, report MODC "16," rather than "21" for that hour.

$NO_x$ Concentration
Note that MODCs "06" through "12," "23," "24," and "55" apply only when a separately certified NOXC monitoring system is defined in the monitoring plan and is used to calculate $NO_x$ mass and do not apply when only a $NO_x$-diluent monitoring system is defined.

$CO_2$ Concentration
MODCs "06" through "12" apply only when a $CO_2$ monitor is used for heat input rate or $CO_2$-mass determinations.

$O_2$ Concentration
MODCs "06" through "12" apply only when a separately certified $O_2$ monitoring system is defined in the monitoring plan and is used exclusively for heat input rate determinations in accordance with Equation F-17 or F-18 in Appendix F to Part 75.

**Monitoring System ID** *(MonitoringSystemID)*
~~For missing data substitution hours, leave this element blank.~~ Note that hours in which the flue gases are discharged through an unmonitored bypass stack are considered to be missing data hours.

For quality-assured data hours, report the ID of the monitoring system from which the concentration or stack flow was recorded, as indicated in the following sections (Refer to Tables 10-16 for specific situations other than quality-assured data hours that may require the reporting of monitoring system IDs). If the unit has more than one system for a parameter (i.e., a primary and a backup), report the ID of the primary system. In cases where a bypass stack is represented by a system, report the ID of the appropriate system to which the missing data hour should be attributed.~~:~~

$SO_2$ Concentration
For quality-assured data hours, report the ID of the Monitoring System from which the concentration value was recorded. Also, report the $SO_2$ concentration Monitoring System ID for the monitoring system in use at the time of any of the following occurrences: (1) when you report the 2.0 ppm default value for an hour during which very low sulfur fuel (as defined in §72.2) is combusted and the bias-adjusted hourly average $SO_2$ concentration is below 2.0 ppm; or (2) when you use a default high range value of 200 percent of the MPC in the calculation of the hourly average $SO_2$ concentration; or (3) when a full-scale exceedance of the high range occurs and you use a value of 200 percent of the range in the calculation of the hourly average $SO_2$ concentration. In these cases, the hours are treated as quality-assured monitor operating hours. Each of these occurrences is included in missing data lookback and is counted as an available hour for percent monitor data availability calculations.

If a like-kind replacement non-redundant backup analyzer is used during a period of maintenance or repair of the primary analyzer (see §75.20(d)), report the primary Monitoring System ID.

Volumetric Flow
If a full-scale exceedance occurs and you use a value of 200 percent of the range in the calculation of the hourly average flow rate, report the Monitoring System ID of the monitoring system which is in use at the time of the occurrence. Treat such hours as though they are quality-assured monitor operating hours for Part 75 purposes; include them in missing data lookback and count them as available hours for percent monitor data availability calculations.

$NO_x$ Concentration
If the $NO_x$ analyzer is only part of a $NO_x$ emission rate system and not part of any $NO_x$ concentration system, leave this field blank.

Otherwise, report the System ID for the $NO_x$ concentration system.

When reporting a default high range value of 200 percent of the MPC or when reporting a value of 200 percent of the range during a full-scale exceedance of the high range, report the System ID of the monitoring system in use at the time of the occurrence of the full-scale exceedance.

If a like-kind replacement non-redundant backup analyzer is used during a period of maintenance or repair of the primary analyzer (see §75.20(d)), report the primary Monitoring System ID.

$CO_2$ Concentration
If the $CO_2$ analyzer is only part of a $NO_x$ emission rate system, leave the System ID blank.

Otherwise, report the applicable System ID for the $CO_2$ monitoring system defined in the monitoring plan.

Report the Monitoring System ID of the monitoring system in use whenever a full-scale exceedance value of 200 percent of the range is used in the calculation of the hourly average $CO_2$ concentration. Treat such hours as though they are quality-assured monitor operating hours for Part 75 purposes; include them in missing data lookback and count them as available hours for percent monitor data availability calculations.

If a like-kind replacement non-redundant backup analyzer is used during periods of maintenance and repair of the primary analyzer (see §75.20(d)), report the primary Monitoring System ID.

$O_2$ Concentration
If the $O_2$ analyzer is only part of a $NO_x$ emission rate system (and/or an $H_2O$ system), leave the System ID blank and use only component IDs to identify the origin of the $O_2$ concentration values. Otherwise, report the applicable System ID as follows:

a) If the $O_2$ concentration is from an $O_2$ component of an $O_2$ monitoring system (used to determine hourly heat input rate), report the System ID for the $O_2$ monitoring system. (Note: the data will be QA'd by an $O_2$ RATA.)

b) If the $O_2$ concentration is from an $O_2$ component that is part of a $CO_2$ monitoring system (used for determining $CO_2$ concentration, $CO_2$ mass, and hourly heat input rate), report the System ID for the $CO_2$ monitoring system. (Note: the data will be QA'd by a $CO_2$ RATA.)

(Note that when either the wet or the dry $O_2$ component is part of either an $O_2$ or $CO_2$ monitoring system, that component will be reported using the applicable monitoring system as described in (a) and (b) above.)

$H_2O$ Concentration
Report the $H_2O$ System ID for every quality-assured hour.

**Component ID** *(ComponentID)*
For each hour of quality-assured data from a CEMS or from a stack gas flow rate system (except for 2-component systems, as noted below), identify the component used during the hour. ~~Leave this field blank when a quality-assured value from the CEMS is not available.~~If the component in use during the hour was a like-kind component, be sure to report the ID of the like-kind component. Refer to Tables 10-16 for specific situations other than quality-assured data hours that may require the reporting of monitoring component IDs. Note that hours in which the flue gases are discharged through an unmonitored bypass stack are considered to be missing data hours.

If a temporary like-kind replacement analyzer is used during periods of maintenance and repair of the primary analyzer (see §75.20(d)), assign and report a unique Component ID number (beginning with the prefix "LK" as defined in the COMPONENT DATA record, e.g., "LK1") for the like-kind replacement analyzer. The like-kind replacement analyzer Component ID may be manually entered. Note that the LK component must also be identified in the monitoring plan as a monitoring component of the primary monitoring system, and a MODC of "17" must be reported for each hour in which the analyzer provides valid data.

If you determine hourly stack flow rate by averaging (or subtracting) the readings from two flow components which are identified as components of the same monitoring system, leave this field blank. If the hourly flow rate is a substitute data value, leave this field blank. This includes hours in which the flue gases are discharged through an unmonitored bypass stack.

**Percent Available** *(PercentAvailable)*
If applicable for the parameter, report the percent monitor data availability to one decimal place for each hour.

$SO_2$ Concentration
For units with add-on $SO_2$ emission controls:

a) If you report the MPC for hours in which the flue gases are routed through an unmonitored bypass stack, or when the outlet $SO_2$ monitor is unavailable and proper operation of the emission controls is not verified, do not include these hours in the calculation of percent monitor data availability. Treat these hours as missing data hours.

b) If you report data from a certified inlet monitor during hours in which the flue gases are routed through an unmonitored bypass stack, or when the outlet $SO_2$ monitor is unavailable and proper operation of the emission controls is not verified, include these hours in the missing data lookbacks and treat them as available hours in the PMA calculations.

$NO_x$ Concentration
Report data in this field only if you use $NO_x$ concentration times stack flow as the primary methodology for $NO_x$ mass calculations for all hours. Report the percent monitor data availability for each hour.

$CO_2$ Concentration
Report percent monitor data availability for $CO_2$ concentration only when the $CO_2$ value is used for determining $CO_2$ mass rate or heat input rate.

$O_2$ Concentration

Report percent monitor data availability for $O_2$ concentration only when the $O_2$ value is used for determining heat input rate.

Moisture ($H_2O$)

If you use the standard moisture missing data procedures in §75.37, which are based on percent availability, calculate and report the moisture percent data availability for each operating hour.

**Moisture Basis** *(MoistureBasis)*

Leave this field blank unless you use wet and dry $O_2$ values to determine hourly moisture.

Since you are required to report separate hourly MHV records for each parameter (i.e., for wet basis $O_2$ and dry basis $O_2$), report one of the following uppercase codes to indicate the moisture basis of the hourly $O_2$ reading.

**Table 20: Moisture Basis Codes and Descriptions for *MHV***

| Code | Description |
|---|---|
| D | Dry |
| W | Wet |

## 2.5.1.1 MATS Monitor Hourly Value Data

### *MATS Monitor Hourly Value Data* Overview

If your EGU is subject to the MATS Rule (40 CFR Part 63, Subpart UUUUU), use the MATS MONITOR HOURLY VALUE DATA (MMHV) record to report each parameter (i.e., hazardous air pollutant (HAP)) that is measured by a continuous emission monitoring system (CEMS) or a sorbent trap monitoring system. The monitored parameters that are required to be reported using the ECMPS Client Tool may include Hg concentration, HCl concentration, and/or HF concentration. These instructions contain a subsection for each measured parameter, in order to give specific direction on how to report for that parameter. Other parameters applicable to MATS that are also required to be reported according to Part 75, such as $SO_2$, $CO_2/O_2$ concentration, stack gas flow rate, and moisture, are reported using the MONITOR HOURLY VALUE DATA (MHV) record.

(Note: If you use the low-emitting EGU (LEE) methodology for Hg, you are not required to report hourly Hg concentration data.)

**Hg Concentration**
If you measure the hourly average Hg concentration using a CEMS or sorbent trap monitoring system, report a MMHV record for each hour of unit operation-- including hours when a quality-assured Hg concentration value is not obtained.

There are no missing data substitution requirements or bias adjustment requirements for Hg concentration in Appendix A of Subpart UUUUU.

**HCl and HF Concentration**
If you measure the hourly average HCl and/or HF concentration using CEMS, report a MMHV record for each hour of unit operation—including hours when a quality-assured HCl or HF concentration value is not obtained.

There are no missing data substitution requirements or bias adjustment requirements for HCl or HF concentration in 40 CFR 63, Subpart UUUUU, Appendix B.

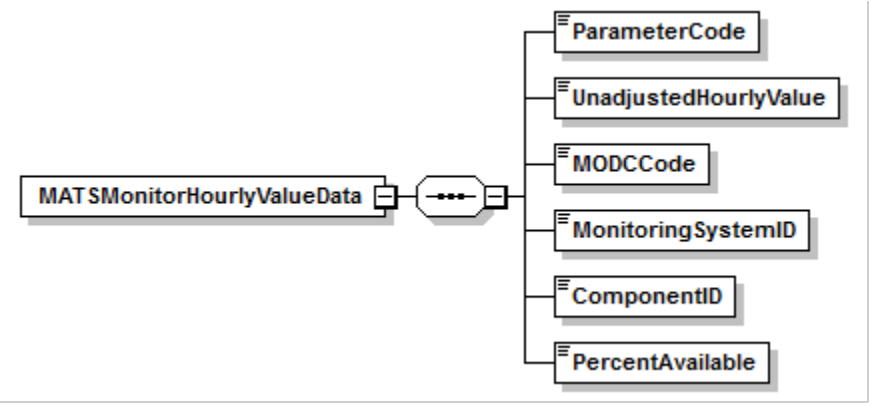
The MMHV elements to be reported are summarized in Table 21, below:

**Table 21: *MMHV* Elements for HGC, HCLC and HFC**

| MMHV Elements to Report | Measured | Unavailable |
|---|---|---|
| Parameter Code | ✓ | ✓ |
| Unadjusted Hourly Value | ✓ | |
| MODC | ✓ | ✓ |
| Monitoring System ID | ✓ | ✓ |
| Component ID | ✓ | ✓ |
| Percent Available | ✓ | ✓ |

## *MATS Monitor Hourly Value Data* XML Model

**Figure 12: *MATS Monitor Hourly Value Data* XML Elements**




## *MATS Monitor Hourly Value Data* XML Elements

**Parameter Code** *(ParameterCode)*
Report the Parameter Code that corresponds to the parameter monitored at the location defined by the Stack Pipe ID or Unit ID. Use the appropriate uppercase code as shown in Table 22.

**Table 22: Parameter Codes and Descriptions for the *MMHV Data* Record**

| Code | Description |
|---|---|
| HGC | Hg Concentration (µg/scm) |
| HCLC | HCl concentration (ppm) |
| HFC | HF concentration (ppm) |

**Unadjusted Hourly Value** *(UnadjustedHourlyValue)*
Report the unadjusted concentration for the hour. See below for parameter-specific instructions.

Hg Concentration
Report the quality-assured, unadjusted Hg concentration for the hour (obtained with an Hg CEMS or sorbent trap monitoring system, as applicable), expressed in µg/scm and rounded to three significant figures using scientific notation. For example, "0.0144 µg/scm" should be reported as "1.44E-2." The "E" must be capitalized and the field must not contain spaces in between the characters. Report only one figure to the left of the decimal point. Do not use "plus" characters after the "E" when reporting concentrations greater than or equal to one. For example, "1.44 µg/scm" should be reported as "1.44E0." For sorbent trap monitoring systems, report the same Hg concentration value for each hour of the sample collection period, except for "transition hours" (see "Specific Considerations," below).

Leave this field blank when a quality-assured Hg concentration value is not available.

HCl and HF Concentration

Report the quality assured, unadjusted HCl or HF concentration for the hour (as applicable) expressed in ppm, rounded to three significant figures using scientific notation, as shown above for Hg concentration. Leave this field blank when a quality-assured HCl or HF concentration value is not available.

**MODC Code** *(MODCCode)*

Report the appropriate method of determination code (MODC) to identify the type of monitoring system or value used to measure and report the Hg, HCl, or HF concentration for the hour. For CEMS, entry of MODCs "17" and "21" is permitted. For sorbent trap monitoring systems, entry of MODCs 01, 02, 32, 33, 34, 35, 41, 42, 43 and 44 is permitted. EPA has reserved codes "01" through "55." Codes "56" through "99" may be used by vendors and companies for other purposes but must not be reported in a quarterly report.

**Table 23: MODC Codes and Descriptions for *MMHV***

| Code | Parameters | Description |
|---|---|---|
| 01 | All | Primary Monitoring System |
| 02 | All | Redundant Backup or Regular Non-Redundant Backup Monitoring System |
| 17 | HGC, HCLC, HFC | Temporary Like-Kind Replacement Analyzer (CEMS only) |
| 21 | HGC, HCLC, HFC | Negative Hourly Average Concentration Replaced with Zero (CEMS only) |
| 32 | HGC | Hourly Hg concentration determined from analysis of a single sorbent trap multiplied by a factor of 1.111 |
| 33 | HGC | Hourly Hg concentration determined from the sorbent trap with the higher Hg concentration (relative deviation criterion for the paired traps is not met) |
| 34 | HGC, HCLC, HFC | Hourly Hg, HCl, or HF concentration missing or invalid |
| 35 | HGC, HCLC, HFC | Hourly Hg, HCl, or HF concentration not monitored (flue gases routed through an unmonitored bypass stack) |
| 41 | HGC | Hourly Hg concentration determined from two different pairs of sorbent traps from the same system during the hour. This code applies only to routine sorbent trap change outs during normal, day-to-day operation of the sorbent trap monitoring system. |
| 42 | HGC | Hourly Hg concentration determined from two different pairs of sorbent traps during the hour. This code applies only to sorbent trap change outs that occur during RATA test periods. |
| 43 | HGC | Hourly Hg concentration reported as method detection level when the sorbent trap concentration reading is below the method defined analytical detection level (see 63.10007(e)(1)) |
| 44 | HGC | Hourly Hg concentration determined from analysis of a single sorbent trap which reports the method detection level, multiplied by a factor of 1.111 in cases where the other trap was accidentally lost, damaged, or broken and could not be analyzed |

Hg, HCl, and HF Concentration

For an Hg, HCl, or HF CEMS or sorbent trap system, report all valid hourly concentration values using a MODC of "01" (or "02" if using a backup system).

If the hourly concentration is unavailable or invalid, report MODC "34" in the MMHV record for concentration and MODC "38" in the MDHV record for emission rate.

If the hourly concentration is below the method detection level, report the method detection level as the measured emissions level and report a MODC of "43" for either trap with a concentration below the method detection level. Report a MODC of "44" if one trap in a paired train meets the criteria to report the method detection level and the second trap is accidentally lost, damaged, or broken and could not be analyzed.

For sorbent trap monitoring systems, report the same MODC for each hour of the sample collection period except for "transition" hours when sorbent traps are changed out and data from more than one set of sorbent traps are used to calculate the Hg concentration. For routine trap change outs during normal, day-to-day operation of the sorbent trap monitoring system, report an MODC of "41" to indicate quality assured data hours during trap change out. For trap change outs that occur during RATA test periods, report an MODC of "42" to indicate quality assured data hours during RATA testing.

**Monitoring System ID** *(MonitoringSystemID)*

For quality-assured data hours, report the ID of the monitoring system from which the Hg, HCl, or HF concentration value was determined. ~~Leave this field blank when a quality-assured Hg, HCl, or HF concentration value is not available.~~

If a temporary like-kind replacement analyzer is used during a period of maintenance or repair of the primary Hg, HCl, or HF analyzer, report the primary monitoring system ID for each hour of quality-assured data obtained with the replacement analyzer.

**Component ID** *(ComponentID)*

For each hour of quality-assured data from an Hg, HCl, or HF CEMS, identify the component used during the hour. ~~Leave this field blank when a quality-assured value from the CEMS is not available.~~ For sorbent trap monitoring systems, leave this field blank for all operating hours. Note that hours in which the flue gases are discharged through an unmonitored bypass stack are considered to be data unavailable hours.

If a temporary like-kind replacement analyzer is used during periods of maintenance and repair of the primary analyzer, assign and report a unique Component ID number (beginning with the prefix "LK" as defined in the COMPONENT DATA record, e.g., "LK1") for the like-kind replacement analyzer (see section 2.2.3 of Appendix A and section 2.2 of Appendix B to Subpart UUUUU). The like-kind replacement analyzer Component ID may be manually entered. Note that the LK component must also be identified in the monitoring plan as a monitoring component of the primary monitoring system, and a MODC of "17" must be reported for each hour in which the analyzer provides valid data.

**Percent Available** *(PercentAvailable)*

You must calculate and report the percent monitor data availability (PMA) for Hg, HCl, or HF concentration (as applicable) according to §75.32, for both Hg CEMS and sorbent trap monitoring

systems (see Subpart UUUUU, Appendix A, sections 7.1.3.5, 7.1.4.8, and 7.2.5.3.3 and Appendix B, section 10.1.3.5). Hours with reported MODC values of 32 or 33 are "data available" hours for Hg concentration. Hours with reported MODC values of 34 and 35 are "data unavailable" hours.

## Specific Considerations

### Sorbent Trap Systems

- Report the sorbent trap results for each operating hour during the collection period (including hours during which sampling occurred during any portion of the hour). If more than one set of traps are used during an hour, EPA recommends that you report the average concentration (straight average or time weighted) for all traps used during that hour. Do not average concentrations from traps from two separate systems.
- The installation of a sorbent trap system nullifies the option to report a non-operating file during the quarter in which the trap was installed.

## 2.5.2 Derived Hourly Value Data

### *Derived Hourly Value Data* Overview

Submit a DERIVED HOURLY VALUE DATA (DHV) record for each overall parameter value determined at this monitoring location for each operating hour (or partial hour). This includes emissions values calculated from continuous emissions monitoring (CEM) data, as well as the overall $NO_x$ emission rate determined using Appendix E, the overall mass emission rates and heat input rate determined using Appendix D and Appendix G, and the hourly value for each parameter determined using the low mass emissions (LME) provisions. For hours in which the unit or stack did not operate, do not report this record. Derived emissions values include $SO_2$ mass (lb) or mass rate (lb/hr), $NO_x$ emission rate, $NO_x$ mass or mass rate, calculated $H_2O$ concentration, calculated $CO_2$ concentration, Heat Input or Heat Input rate, and $CO_2$ mass or mass rate values. Reporting instructions for each of the derived parameters are described in detail below.

**For CEM Methods**

Derived Hourly Heat Input Rate (mmBtu/hr)
For each unit or stack with a stack flow monitor and diluent monitor, report the calculated heat input rate in the AdjustedHourlyValue element of a DHV record. If you monitor heat input rate and report this record at a common stack, also apportion the heat input rate measured at the common stack to the individual units (i.e., report additional DHV records for heat input rate under the associated Unit IDs). If you monitor heat input rate and report this record at multiple stacks, also report the heat input rate for the unit in an additional DHV record.

Derived $SO_2$ Hourly Mass Emission Rate (lb/hr)
For each unit or stack with an $SO_2$ CEMS (or using the F23 methodology per §75.11(e)(1)), report the calculated $SO_2$ mass emission rate in the AdjustedHourlyValue element of a DHV record.

If you monitor $SO_2$ mass emission rate and report this record at a common stack, do not apportion the $SO_2$ mass emission rate measured at the common stack to the individual units (i.e., do not report any additional DHV records under the associate Unit IDs).

If, for a particular unit, you monitor $SO_2$ mass emission rate at multiple stacks (or ducts), do not report the combined $SO_2$ mass emission rate for the unit (i.e., do not report any unit-level DHV records).

Derived $NO_x$ Hourly Emission Rate (lb/mmBtu)
For each unit or stack with a $NO_x$ emission rate CEMS, report the calculated $NO_x$ emission rate in the UnadjustedHourlyValue element and the bias-adjusted emission rate in the AdjustedHourlyValue element of a DHV record. If you monitor $NO_x$ emission rate and report this record at a common stack, do not apportion the $NO_x$ emission rate measured at the common stack to the individual units (i.e., do not report any additional DHV records under the associated Unit IDs).

If, for a particular unit, you monitor $NO_x$ emission rate at multiple stacks (or ducts), calculate the heat-input weighted hourly emission rate for the unit, but do not report those hourly unit level values (i.e., do not report any unit-level DHV records for $NO_x$ emission rate). Rather, only use

them to calculate the quarterly and cumulative $NO_x$ emission rates for the unit. Report these quarterly and cumulative values in the unit-level SUMMARY VALUE DATA record.

For a combined-cycle turbine that uses a multiple-stack configuration, report separate stack-level DHV records for each hour in which there is both main stack and bypass stack operating time. Then, calculate a time-weighted unit-level $NO_x$ emission rate for each hour, as described in the SUMMARY VALUE DATA record instructions. Store, but do not report, these time-weighted, hourly unit-level emission rates. Rather, only use them to calculate the quarterly and cumulative unit-level $NO_x$ emission rates.

For Derived $NO_x$ Mass Emission Rate (lb/hr)
For each unit, stack, or pipe at which $NO_x$ mass emissions are measured or estimated, submit a DHV record, for every hour in the reporting period that the unit or stack operates.

If you monitor $NO_x$ mass emissions and report this record at a common stack, do not apportion the $NO_x$ mass emissions measured at the common stack to the individual units (i.e., do not report any additional DHV records under the associated Unit IDs).

If, for a particular unit, $NO_x$ mass emissions is monitored at multiple stacks (or ducts), do not report the combined hourly $NO_x$ mass emissions for the unit (i.e., do not report any unit-level DHV records for $NO_x$ mass rate).

Derived $CO_2$ Mass Emission Rate (tons/hr)
For any operating hour (or partial hour) for each unit, stack, or pipe at which $CO_2$ emissions are monitored using CEMS, including the use of $O_2$ CEMS, report $CO_2$ mass emission rate in a DHV record.

If you monitor $CO_2$ mass emission rate and report this record at a common stack, do not apportion the $CO_2$ mass emission rate measured at the common stack to the individual units (i.e., do not report any additional DHV records under the associated unit IDs).

If, for a particular unit, $CO_2$ mass emission rate is monitored at multiple stacks (or ducts), do not report the combined $CO_2$ mass emission rate for the unit (i.e., do not report any unit-level DHV records).

Derived $CO_2$ Concentration
For any operating hour (or partial hour) for each unit or stack at which $CO_2$ concentration is determined by calculating it from $O_2$ readings, report the derived $CO_2$ concentration value for each operating hour or partial operating hour in this record. Note that measured $CO_2$ concentration from a $CO_2$ system utilizing a $CO_2$ monitor should be recorded in the MONITOR HOURLY VALUE DATA (MHV) record.

Derived $H_2O$ (Moisture) Value
For any operating hour (or partial hour) for each unit or stack at which moisture is determined by calculating it from wet and dry $O_2$ readings, report the derived moisture value for each operating hour or partial operating hour in this record.

Note that measured $H_2O$ values from a moisture sensor or a temperature sensor and look-up table, if reporting for saturated gas streams, should be reported in the MHV record.

If you use a fuel-specific default moisture value, as allowed under §75.11 or §75.12 (for coal and wood-burning units and natural gas-fired boilers) and you have just one default value defined in your monitoring plan, do not report a MHV record or a DHV record on an hourly basis. However, if you have more than one active fuel-specific default moisture value defined in your monitoring plan, report the fuel-specific or pro-rated moisture value used in your emissions calculations in an $H_2O$ DERIVED HOURLY VALUE DATA record with a Method of Determination Code (MODC) of "40" on an hourly basis.

**Appendix D Methods**

Heat Input

If you use Appendix D fuel flowmetering to determine heat input, report the heat input rate calculated for each fuel in the appropriate HOURLY PARAMETER FUEL FLOW DATA records. In addition, report the total heat input rate for the hour in a DHV record for the location. (You must report this record even if only one fuel was combusted during the hour.) If the fuel flowmetering is at a common pipe, also report the apportioned hourly heat input rate in a DHV record for each unit that is part of the common pipe.

$SO_2$

If you use Appendix D fuel flowmetering to determine $SO_2$, report the $SO_2$ mass emission rate calculated for each fuel in the appropriate HOURLY PARAMETER FUEL FLOW DATA record. In addition, report the total $SO_2$ mass emission rate for the hour in a DHV record for the location. (You must report this record even if only one fuel was combusted during the hour.) If the fuel flowmetering is at a common pipe, do not report hourly apportioned $SO_2$ for the units.

**Appendix G Method for Hourly $CO_2$**

If you use Equation G-4 to determine hourly $CO_2$, report the $CO_2$ mass emission rate calculated for each fuel in the appropriate HOURLY PARAMETER FUEL FLOW DATA record. In addition, report the total $CO_2$ mass emission rate for the hour in a DHV record. (You must report this record even if only one fuel was combusted during the hour.)

**Appendix E Method for Hourly $NO_x$ Emission Rate**

If you use Appendix E to determine $NO_x$ emission rate, report the overall $NO_x$ emission rate for the hour in a DHV record. If you burn a single, consistent blend of fuels and established a single Appendix E curve for that fuel blend, report all the Appendix E related information in this DHV record. If you established a separate Appendix E curve for each fuel, report the fuel-specific $NO_x$ emission rate data in the appropriate HOURLY PARAMETER FUEL FLOW DATA record and in addition, report the overall $NO_x$ emission rate for the hour in a DHV record. (You must report this record even if only one fuel was combusted during the hour.)

**Hourly $NO_x$ Mass Rate Based on Appendix D Heat Input Rate**

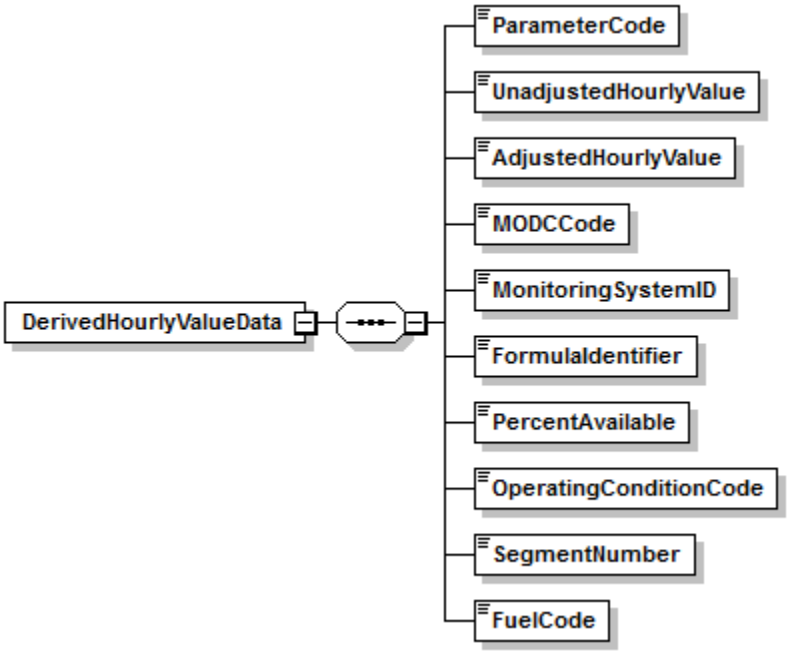
If you are required to report $NO_x$ mass rate, calculate this value from the heat input rate and $NO_x$ emission rate reported in the DHV record and report it in a DHV record.

**LME Methods**

For each parameter reported using the LME method, report a DHV record for each operating hour.

## *Derived Hourly Value Data* XML Model

**Figure 13: *Derived Hourly Value Data* XML Elements**




## *Derived Hourly Value Data* XML Elements

**Parameter Code** *(ParameterCode)*
Report the appropriate Parameter Code as shown in Table 24.

**Table 24: Parameter Codes and Descriptions for the *DHV Data* Record**

| Code | Description |
|---|---|
| CO2 | $CO_2$ Hourly Mass Emission Rate (tons/hr) |
| CO2C | $CO_2$ Concentration (derived from $O_2$ measurements) (%$CO_2$) |
| CO2M | $CO_2$ Hourly Mass (tons) (LME) |
| H2O | Moisture (from wet/dry $O_2$ measurements) (%$H_2O$) |
| HI | Heat Input Rate (mmBtu/hr) |
| HIT | Heat Input Total (mmBtu) (LME) |
| NOX | $NO_x$ Hourly Mass Emission Rate (lb/hr) |
| NOXM | $NO_x$ Hourly Mass (lb) (LME) |
| NOXR | $NO_x$ Emissions Rate (lb/mmBtu) |
| SO2 | $SO_2$ Hourly Mass Rate (lb/hr) |
| SO2M | $SO_2$ Hourly Mass (lb) (LME) |

**Unadjusted Hourly Value** *(UnadjustedHourlyValue)*
Report the unadjusted derived hourly value for the parameter specified, as follows:

$NO_x$ Emission Rate from CEM
Calculate and report the $NO_x$ emission rate (lb/mmBtu) based on the unadjusted $NO_x$ concentration and unadjusted diluent ($CO_2$ or $O_2$) concentration recorded in the MHV record. Report the resulting value to the appropriate number of decimal places in Table 25. For hours in which you use missing data procedures leave this field blank, including hours in which the flue gases are discharged through an unmonitored bypass stack.

If you use Equation 19-3 or 19-5 to determine $NO_x$ emission rate, you must use modified Equation 19-3D or 19-5D (as applicable) instead of Equation 19-3 or 19-5, for hours in which you use the diluent cap (see Table 29 in the MONITORING FORMULA DATA record in the Monitoring Plan Reporting Instructions).

All Other Parameters
Leave this field blank.

**Adjusted Hourly Value** *(AdjustedHourlyValue)*
Report the adjusted or "final" derived hourly value for the parameter specified.

$SO_2$ Mass Emission Rate (lb/hr)
For CEM methods, this value is normally derived using the bias-adjusted stack flow and the bias-adjusted $SO_2$ concentration (each reported in the MHV record), in conjunction with the appropriate equation in Appendix F to Part 75. However, for an hour in which a very low sulfur fuel (see §72.2) is combusted, the value may be calculated from a CEMS-derived heat input rate (i.e., from monitored stack flow rate, and diluent ($CO_2$ or $O_2$) concentration) and a default $SO_2$ emission rate using Equation F-23 (see §75.11(e)(1)).

For Appendix D units and pipes, report the total $SO_2$ mass emission rate for the location in this field. Use formula D-12 to combine $SO_2$ mass emission rates from multiple fuels (as reported in HOURLY PARAMETER FUEL FLOW).

Report all data for this element in lb/hr and to the appropriate number of decimal places per Table 25.

$NO_x$ Mass Emission Rate (lb/hr)
If you use $NO_x$ concentration times stack flow rate to determine $NO_x$ mass emissions, use the bias-adjusted stack flow and the bias-adjusted $NO_x$ concentration, (each reported in the MHV record), in conjunction with the appropriate equation in Appendix F to Part 75. If instead, $NO_x$ mass emissions are calculated from the $NO_x$ emission rate times heat input rate, use the adjusted $NO_x$ emission rate and adjusted heat input values as reported in the DHV record for each parameter. Report data for this element in lb/hr and to the appropriate number of decimal places per Table 25.

$NO_x$ Emission Rate (lb/mmBtu)

*CEM Systems*
For each hour in which you report $NO_x$ emission rate in the UnadjustedHourlyValue element, apply the appropriate adjustment factor (1.000 or bias adjustment factor (BAF)) to the rounded

average $NO_x$ emission rate and report the adjusted $NO_x$ emission rate for the hour. Report the resulting value to the appropriate number of decimal places per Table 25. Report the appropriate substitute data value for $NO_x$ emission rate for each hour that a quality-assured emission rate is not obtained, including hours in which the flue gases are discharged through an unmonitored bypass stack. Do not leave this field blank.

Note that for an initial certification, analyzer replacement, or complete monitoring system replacement (as indicated by reporting a QA CERTIFICATION EVENT record with an Event Code of 100, 101, 120, 125, 151, 250, 255, 300 or 305), if you are using conditional data validation, the BAF is uncertain during the conditional data period. Therefore, apply a BAF of 1.000 from the beginning of the conditional data validation period to the completion hour of the certification or recertification RATA. For any other events that require a RATA, apply the BAF from their previous RATA during the conditional data period, unless that RATA failed or was aborted, in which case use 1.000.

For a combined-cycle combustion turbine (CT) using a multiple-stack configuration to report $NO_x$ emission rate, use missing data substitution for any transition hour (i.e., an hour during which gases flow through both stacks), if either the main stack or bypass monitoring system is out of service, and draw the appropriate substitute data value from the bypass stack data pool.

If a full-scale exceedance of the low $NO_x$ range occurs and you use a default high range value of 200 percent of the MPC in the calculation of the hourly average $NO_x$ concentration reported in the MHV record, or if a full-scale exceedance of the high $NO_x$ range occurs and you use a value of 200 percent of the range in the calculation of the hourly average $NO_x$ concentration reported in the MHV record, use the reported $NO_x$ concentration in conjunction with the quality-assured diluent concentration for the hour to calculate and report the $NO_x$ emission rate. These hours are treated as quality-assured monitor operating hours; they are included in missing data lookback and are treated as available hours for percent monitor data availability calculations.

If a diluent concentration is unavailable during an hour in which a full scale exceedance of the $NO_x$ analyzer occurs or an hour in which the default high range value is used, the $NO_x$ emission rate for the hour is considered to be missing. In that case, do not report Monitor Hourly Value for $NO_x$ concentration for this hour since the $NO_x$ emission rate cannot be calculated; instead, report the maximum potential $NO_x$ emission rate (MER) in this field, and use an MODC of "25."

*Appendix E Systems*
Report the overall $NO_x$ emission rate for the unit to the appropriate number of decimal places per Table 25. If this value was determined from a consistent fuel mix curve, also report the appropriate System ID for the Appendix E $NO_x$ system. If a single fuel curve or curves were defined, report the fuel-specific $NO_x$ emission rate in the appropriate PARAMETER FUEL FLOW DATA record(s), and report the combined $NO_x$ emission rate for the unit in this record.

$CO_2$ Concentration (Derived from $O_2$ Concentration) (pct)
Report the $CO_2$ Concentration for the hour to the appropriate number of decimal places per Table 25. This is either the value calculated from a quality-assured $O_2$ concentration value (as reported in the MHV record), or the appropriate substitute data value, as specified in §75.35.

$CO_2$ Mass Emission Rate (tons/hr)
If you are using CEMS, this value is derived using the bias-adjusted stack flow and either the unadjusted $CO_2$ concentration reported in the MHV record (if you are using a $CO_2$ analyzer), or the $CO_2$ Concentration reported in the DHV record (if you are using an $O_2$ analyzer), in conjunction with the appropriate equation in Appendix F to Part 75.

For units using Appendix G, calculate and report, in PARAMETER FUEL FLOW DATA record(s), the $CO_2$ mass emissions (tons/hr) for each fuel separately using Equation G-4. Then use Equation G-4A (see Table 32, MONITORING FORMULA DATA record in the Monitoring Plan Reporting Instructions) to determine the combined $CO_2$ mass emission rate for the hour. Report the combined hourly $CO_2$ mass emission rate (tons/hr) in this field in the DHV record.

Report this element in tons per hour and to the appropriate number of decimal places per Table 25.

$H_2O$ (Moisture) (pct)
Report moisture for the hour, expressed in $\%H_2O$, rounded to one decimal place. Report the appropriate substitute data value for hours in which a quality-assured moisture percentage is unavailable or for hours in which the flue gases are discharged through an unmonitored bypass stack.

Heat Input (HI) Rate (mmBtu/hr)
Report this value in mmBtu per hour (mmBtu/hr) and to the appropriate number of decimal places per Table 25. If you use CEMS to determine hourly heat input rate, calculate the hourly rate using the diluent gas concentration, bias-adjusted hourly stack flow rate, percent moisture (if appropriate), and F-factor.

If you measure and report heat input rate at a common stack or pipe, also apportion and report heat input rate at the unit level. This apportionment should be based on megawatts, steam load, or fuel flow rate, using Equation F-21A, F-21B, or F-21D in Appendix F to Part 75, as applicable. These formulas use time-weighted hourly load to apportion the heat input rate measured at a common stack to the individual units.

For each hour, the sum of the individual heat inputs in mmBtu (i.e., the sum of the individual unit heat input rates, each multiplied by the corresponding unit operating time) must equal the total common stack heat input in mmBtu (i.e., the common stack heat input rate multiplied by the common stack operating time).

For a unit with a multiple stack configuration, with flow rate and diluent monitors on each stack, calculate the hourly heat input rate for the unit using Equation F-21C in Appendix F to Part 75. Also use Equation F-21C for multiple pipe configurations.

For each hour, the total unit heat input in mmBtu (i.e., the unit heat input rate multiplied by the unit operating time) must equal the sum of the individual stack (or pipe) heat inputs in mmBtu (i.e., the sum of the individual stack (or pipe) heat input rates, each multiplied by the corresponding stack (or pipe) operating time).

For Appendix D units combusting multiple fuels, report the hourly heat input rate calculated from all fuels in the DHV record. Report this record even if only one fuel was combusted during the hour.

For non-Acid Rain $NO_x$ Budget Program units that use $NO_x$ concentration times stack flow as the primary methodology to calculate $NO_x$ mass emissions, report the hourly heat input rate unless you are specifically exempted (e.g., by a State SIP) from reporting it for allocation purposes. However, you must report unit operating time and load (except for non load-based units) for each hour in the HOURLY OPERATING DATA record, even if you are not required to report hourly heat input.

If, for any operating hour, the heat input rate is calculated to be less than one mmBtu/hr, substitute for that hour a value of one mmBtu/hr. Use an MODC of "26" for any such hours. This applies only to monitoring locations where CEMS are installed (i.e., where HI Rate is calculated using equation F-15, F-16, F-17, or F-18.) This does not apply to HI Rate calculated through Appendix D or apportionment.

In the rare event no units attached to the common stack generated load (Load = 0) during the hour, heat input should be apportioned by operating time.

Total Heat Input (HIT) (mmBtu)
Report this value in mmBtu for LME units and to the appropriate number of decimal places per Table 25.

LME Units
Report the value for each required parameter as total mass (or heat input) for the hour. Report each value to the appropriate number of decimal places per Table 25.

**Table 25: Precision of Reported Values for *Derived Hourly Value Data***

| Parameter Codes | | Required Precision |
|---|---|---|
| CO2, CO2C, CO2M, H2O, HI, HIT, NOX, NOXM, SO2M | | One decimal place |
| SO2 | For CEM and Appendix D burning only oil during hour | One decimal place |
| SO2 | Appendix D burning any gas during hour | Four decimal places |
| NOXR | | Three decimal places |

**MODC Code** *(MODCCode)*
For CEM methods for parameters CO2C, NOXR or H2O, report one of the following MODCs as shown in Table 26 to identify the monitoring system or missing data procedure used to report the derived value or when you were directed to report it for an approved alternative monitoring system. For parameter HI, use an MODC of "26" when the calculated Heat Input Rate is zero or negative and was therefore replaced with a value of 1.0. Report an MODC of "40" for parameter H2O when a fuel-specific or pro-rated default value is used in determining the derived value.

For all other parameters, leave this field blank.

$NO_x$ Hourly Emission Rate

Report an MODC of "14" when the diluent cap value for $CO_2$ or $O_2$ is used in place of the measured value reported in the MHV records. Also, be sure that you register the appropriate diluent cap value for the unit in the MONITORING DEFAULT DATA record in the monitoring plan. A diluent cap value can only be used for calculating $NO_x$ emission rate during operating hours for which a quality-assured measured diluent ($CO_2$ or $O_2$) value is obtained.

For full-scale exceedances of a $NO_x$ analyzer, EPA requires reporting of an MODC reflecting the monitoring system in use during the exceedance, or reporting an MODC of "25" if the diluent concentration normally reported in the MHV records is not quality-assured. Therefore, during full-scale exceedances, when 200 percent of MPC or 200 percent of range is reported for $NO_x$ concentration in the MHV record and is used in conjunction with a quality-assured diluent gas concentration to calculate the $NO_x$ emission rate, report the MODC code associated with the monitoring system that is in use at the time of the full-scale exceedance (for example, report "01" if the primary $NO_x$-diluent monitoring system is in use). If a full-scale exceedance of the $NO_x$ analyzer occurs and no quality-assured diluent gas concentration for the hour is available, report an MODC of "25" for that hour. Manual entry of an MODC of "21" is permitted.

**Table 26: MODC Codes and Descriptions for *DHV***

| Code | Parameter(s) | Description |
|---|---|---|
| 01 | CO2C, NOXR, H2O | Primary Monitoring System (and Primary Bypass (PB) for NOXR) |
| 02 | CO2C, NOXR, H2O | Redundant Backup or Regular Non-Redundant Backup Monitoring System |
| 03 | All | Approved Part 75 Alternative Monitoring System |
| 04 | CO2C, NOXR, H2O | Reference Method Backup System |
| 05 | NOXR | Part 75 Approved Parametric Method for Controlled Units |
| 06 | CO2C, NOXR, H2O | Average Hour Before/Hour After |
| 07 | CO2C, NOXR, H2O | Initial Missing Data (§75.31) |
| 08 | CO2C, NOXR | 90th Percentile Value in Lookback Period (CO2C)<br>or<br>90th Percentile Value in Lookback Period in Corresponding Load Bin (NOXR) |
| | H2O | 90th or 10th Percentile Value in Load Range in Lookback Period |
| 09 | CO2C, NOXR | 95th Percentile Value in Lookback Period (CO2C)<br>or<br>95th Percentile Value in Lookback Period in Corresponding Load Bin (NOXR) |
| | H2O | 95th or 5th Percentile Value in Load Range in Lookback Period |
| 10 | CO2C, NOXR | Maximum Hourly Value in Lookback Period (CO2C)<br>or<br>Maximum Value in Lookback Period in Corresponding Load Bin (NOXR) |
| | H2O | Maximum or Minimum Hourly Moisture Percentage in Lookback Period |
| 11 | NOXR | Average Hourly Rate in Load Range in Lookback Period |

| Code | Parameter(s) | Description |
|---|---|---|
| 12 | CO2C, NOXR | Maximum Potential Concentration or Emission Rate |
| | H2O | Maximum or Minimum Potential Moisture Percentage |
| 13 | NOXR | Maximum Controlled $NO_x$ Emission Rate (MCR) |
| 14 | NOXR | Diluent Cap (if the cap is replacing a $CO_2$ measurement, it should be 5.0 percent for boilers and 1.0 percent for turbines; if it is replacing an $O_2$ measurement, it should be 14.0 percent for boilers and 19.0 percent for turbines.) |
| 15 | NOXR | 1.25 times the maximum controlled $NO_x$ Emission Rate at the corresponding load or operational bin, in the applicable lookback |
| 21 | CO2C, H2O NOXR | A negative hourly value replaced with a zero |
| 22 | NOXR | $NO_x$ Emission Rate calculated from a certified $NO_x$ monitor at the control device inlet, when the outlet $NO_x$ monitor is unavailable and proper operation of the emission controls is not verified. These hours are included in missing data lookback and are treated as available hours for percent availability calculations. |
| 23 | NOXR | Maximum Potential $NO_x$ Emission Rate (MER) for an hour in which flue gases are discharged through an unmonitored bypass stack |
| 24 | NOXR | MCR for an hour in which flue gases are discharged downstream of the $NO_x$ emission controls through an unmonitored bypass stack, and the add-on $NO_x$ emission controls are confirmed to be operating properly |
| 25 | NOXR | MER. Use only when a $NO_x$ concentration full-scale exceedance occurs and the diluent monitor is unavailable. |
| 26 | HI | One mmBtu/hr substituted for Heat Input Rate for an operating hour in which the calculated Heat Input Rate is zero or negative |
| 40 | H2O | Fuel-Specific or Pro-Rated moisture default value |
| 45 | HIT | Maximum Rated Hourly Heat Input Rate (used to determine heat input for LME units generally using long-term fuel flow method) |
| 53 | All | Other quality-assured methodologies approved through petition. These hours are included in the missing data lookback and are treated as available hours for percent monitor availability calculations. |
| 54 | All | Other quality-assured methodologies approved through petition by EPA. These hours are included in missing data lookback and are treated as unavailable hours for percent availability calculations. |
| 55 | All | Other substitute data approved through petition by EPA. These hours are not included in missing data lookback and are treated as unavailable hours for percent availability calculations. |

* EPA has reserved MODCs "01" through "55." MODCs "56" through "99" may be used by vendors and companies for other purposes; do not report these codes in a quarterly report. MODCs "30" and "31" were defined in EDR v2.0 for Ozone Trading Commission (OTC) NBP units only and are no longer allowed.

**Monitoring System ID** *(MonitoringSystemID)*

Report the Monitoring System ID for the appropriate monitoring system that is providing quality-assured data for the hour. -For missing data hours report the Monitoring System ID for the

appropriate monitoring system that is unable to provide quality assured data for the hour. For ~~missing data hours and~~ hours in which the flue gases are discharged through an unmonitored bypass stack, leave this field blank. Also, leave this field blank for the calculated $SO_2$, $NO_x$, and $CO_2$ hourly mass emission rates.

If either: (1) a default high range $NO_x$ concentration value of 200 percent of the MPC is reported due to a full-scale exceedance of the low range; or (2) a value of 200 percent of the range is reported during a full-scale exceedance of the high range, report the ID number of the $NO_x$-diluent monitoring system which is in use at the time of the full-scale exceedance.

For heat input records, report the Monitoring System ID for the $O_2$ or $CO_2$ system that provided the value used in the calculation. However, if missing data substitution was used in the MHV record, leave the System ID blank in this DHV record also. Table 27 below summarizes these requirements.

**Table 27: System ID Reporting for Derived Hourly Values**

| Parameter Code | Description | System ID to Report |
|---|---|---|
| CO2 | $CO_2$ Hourly Mass Rate | Leave blank |
| CO2C | $CO_2$ Concentration (from an $O_2$ monitor) | $CO_2$ System ID |
| H2O | Moisture (from wet/dry $H_2O$ system) | $H_2O$ System ID |
| HI | Heat Input | $CO_2$ or $O_2$ System ID if CEM. Otherwise, leave blank. |
| NOX | $NO_x$ Hourly Mass Rate from $NO_x$ Concentration and Stack Flow | Leave blank |
| | $NO_x$ Hourly Mass Rate from $NO_x$ Emissions Rate and Heat Input | Leave blank |
| NOXR | $NO_x$ Emissions Rate | $NO_x$ System ID for CEM system or NOXE System ID for Appendix E mixed-fuel curve. Otherwise, leave blank. |
| SO2 | $SO_2$ Hourly Mass Rate | Leave blank |

**Formula Identifier** *(FormulaIdentifier)*
Report the Formula ID from the MONITOR FORMULA DATA record that is used for the calculation of the parameter. Leave this field blank for missing data hours (except for parameter code NOXR and NOx-diluent systems) and for LME records. If you are using the Appendix D methodology to determine $SO_2$, $CO_2$, or Heat Input and burning multiple fuels for the hour, report the Formula ID from the MONITOR FORMULA DATA record with Formula Code D-12, G-4A, or D-15A respectively. If burning a single fuel for the hour, leave this field blank. If using multiple Appendix E curves to determine the $NO_x$ emission rate for the hour, report the Formula ID from the MONITOR FORMULA DATA record with Formula Code E-2. If using a single curve for the hour, leave this field blank.

**Percent Available** *(PercentAvailable)*
For NOXR from a CEM system, H2O, or CO2C, report the percent monitor data availability (PMA) to one decimal place for all hours. Do not report PMA for Heat Input Rate, $SO_2$, $NO_x$, or $CO_2$ hourly mass emission rates.

**Operating Condition Code** *(OperatingConditionCode)*
This field applies only to Appendix E NOXR data, LME NOXM data. For an Appendix E $NO_x$ emission rate record (for a unit using one correlation curve for a consistent fuel mixture), report the appropriate code from Table 28 below to indicate the condition that was used to determine the $NO_x$ emission rate for the hour.

See the instructions for this field in the HOURLY PARAMETER FUEL FLOW DATA record for details about when to report each operating condition code.

**Table 28: Operating Condition Codes and Descriptions for *DHV***

| Code | Description |
|---|---|
| B | Unit operated at base load or set point temperature (LME) |
| C | Controls Operating Properly (LME) |
| E | Emergency Fuel (Appendix E) |
| M | Correlation Curve for the Fuel Mixture has Expired (Appendix E) |
| N | Operating Parameter is Outside of Normal Limits (Appendix E) |
| P | Unit operated at peak load or higher internal operating temperature (LME) |
| U | Uncontrolled Hour (Appendix E or LME) |
| W | Operation Above Highest Tested Heat Input Rate Point on the Curve (Appendix E) |
| X | Operating Parameter Data Missing or Invalid (Appendix E) |
| Y | Designated Operational and Control Equipment Parameters within Normal Limits (Appendix E) |
| Z | Operation Below Lowest Tested Heat Input Rate Point on the Curve (Appendix E) |

In the NOXM record for an LME unit that uses a fuel- and unit-specific default $NO_x$ emission rate and has $NO_x$ controls, indicate the status of the $NO_x$ controls for the hour by reporting:

C = Controls Operating Properly
U = Unit Controls Not Operating or Not Operating Properly

In the NOXM record for an LME combustion turbine that operates principally at base load (or at a set point temperature) but is capable of operating at a higher peak load (or higher internal operating temperature), indicate for each operating hour whether operation was a base load (B) or peak load (P).

B = Unit operated at base load or set point temperature
P = Unit operated at peak load or higher internal operating temperature

For all other records, leave this field blank.

**Segment Number** *(SegmentNumber)*
For an Appendix E $NO_x$ Emission Rate record (for a unit using one correlation curve for a consistent fuel mixture), report the Segment Number (1 – 4) indicating which portion of the correlation curve was used to determine the value for the hour. For operating condition codes N or X, report the segment number that contains the highest $NO_x$ emission rate on the curve for the fuel. Leave this field blank if the correlation curve was not used for the hour (i.e., the Operating Condition Code is E, M, U, or W).

**Fuel Code** *(FuelCode)*
For LME units, report the type of fuel combusted in the hour. If multiple fuels are burned, report the fuel type used to determine the mass emissions for the parameter in this record (i.e., the fuel with the highest emission factor for the parameter). If records are missing as to which fuel was burned in the hour, report the fuel with the highest emission factor for this parameter of all of the fuels capable of being burned in the unit.

**Table 29: Fuel Codes and Descriptions**

| Code | Description |
|---|---|
| BFG | Blast Furnace Gas |
| BUT | Butane (if measured as a gas) |
| CDG | Coal-Derived Gas |
| COG | Coke Oven Gas |
| DGG | Digester Gas |
| DSL | Diesel Oil |
| LFG | Landfill Gas |
| LPG | Liquefied Petroleum Gas |
| NNG | Natural Gas (as defined in §72.2) |
| OGS | Other Gas |
| OIL | Residual Oil |
| OOL | Other Oil |
| PDG | Producer Gas |
| PNG | Pipeline Natural Gas (as defined in §72.2) |
| PRG | Process Gas |
| PRP | Propane (if measured as a gas) |
| RFG | Refinery Gas |
| SRG | Unrefined Sour Gas |

## 2.5.2.1 MATS Derived Hourly Value Data

### *MATS Derived Hourly Value Data* Overview

If your EGU is subject to the MATS Rule (40 CFR Part 63, Subpart UUUUU), submit a MATS DERIVED HOURLY VALUE DATA (MDHV) record for each calculated (derived) parameter value determined at the monitoring location for each operating hour. MATS derived hourly values include electrical output-based emission rates for $SO_2$, Hg, HCl, or HF, and heat input-based emission rates for $SO_2$, Hg, HCl, or HF. Reporting instructions for each of the derived parameters are presented below.

**Derived $SO_2$ Hourly Emission Rates**
If you seek to comply with the acid gas emissions reduction requirements of the MATS rule by continuously monitoring the heat input-based or electrical output-based $SO_2$ emission rate as a surrogate for HCl, you must calculate and report the hourly $SO_2$ emission rate in the appropriate units of measure (see Table 30) for each operating hour in which valid values are reported for the unadjusted $SO_2$ concentration and all of the auxiliary parameters that are needed to calculate the $SO_2$ emission rate.

For the electrical output-based emission rate, the auxiliary parameters needed to convert the $SO_2$ concentration to lb/MWh include stack gas flow rate, gross electrical load, and (if applicable) stack gas moisture content. For the heat input-based emission rate, the auxiliary parameters needed to convert the $SO_2$ concentration to lb/mmBtu include diluent gas ($CO_2$ or $O_2$) concentration and (if applicable) stack gas moisture content.

Use only quality-assured, unadjusted hourly average $SO_2$ concentrations, stack gas flow rates, diluent gas concentrations, and (if applicable) moisture values to calculate the $SO_2$ emission rates. Do not calculate the hourly $SO_2$ emission rate if Part 75 substitute data is used for any of the auxiliary parameters. Also, do not calculate the electrical output-based emission rate if the electrical load for the operating hour is missing. When the electrical load is zero, report the "default electrical load" (as defined in §63.10042). The default electrical load is not considered to be substitute data.

For the purposes of the MATS rule, the hourly $SO_2$ emission rate (lb/mmBtu or lb/MWh) must not be calculated for any operating hour in which $SO_2$ concentration exceeds the low range of a dual-range $SO_2$ monitor and the high range is unable to provide quality-assured data due to an expired linearity check or an expired daily calibration error test. Whereas the Acid Rain Program and other programs that use Part 75 to monitor $SO_2$ mass emissions require a substitute data value (specifically, the maximum potential $SO_2$ concentration (MPC)) to be reported and used in the emissions calculations for such hours, the MATS rule prohibits Part 75 substitute data values from being used to calculate hourly pollutant emission rates. Note that default moisture percentages from Part 75 (if used) are not considered to be substitute data values. If the diluent cap is used in the calculation of the heat input-based emissions rate, the cap value is not considered to be substitute data.

For operating hours in which quality-assured data are not obtained for either the unadjusted $SO_2$ concentration or any essential auxiliary parameter(s), report a MDHV record, even though the $SO_2$ emission rate is not calculated for those hours (see the reporting instructions below for the "Unadjusted Hourly Value" field).

**Derived Hourly Hg, HCl, or HF Emission Rates**
If you seek to comply with the MATS rule by continuously monitoring the heat input-based or electrical output-based Hg, HCl, or HF emission rate, you must calculate and report in a MDHV record the hourly pollutant emission rate in the appropriate units of measure (as shown in Table 30) for any operating hour in which sufficient valid data are obtained for the unadjusted Hg, HCl, or HF concentration, and for all other parameters needed to convert Hg, HCl, or HF concentration to the units of the emission standard (see 40 CFR 60.13(h)(2)).

For the electrical output-based emission rate, the auxiliary parameters needed to convert the Hg, HCl, or HF concentration to lb/GWh or lb/MWh (as applicable) include stack gas flow rate, gross electrical load, and (if applicable) stack gas moisture content. For the heat input-based emission rates, the auxiliary parameters needed to convert the Hg, HCl, or HF concentration to lb/TBtu or lb/mmBtu (as applicable) include diluent gas ($CO_2$ or $O_2$) concentration and (if applicable) stack gas moisture content.

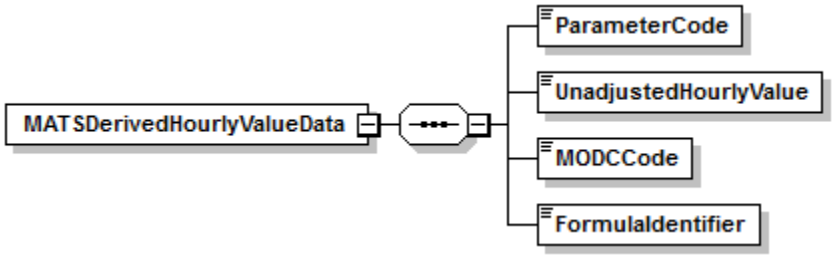
Use only quality-assured, unadjusted hourly average Hg, HCl, and HF concentrations, stack gas flow rates, diluent gas concentrations, and (if applicable) moisture values to calculate the Hg, HCl, or HF emission rates. Do not calculate the hourly emission rate if Part 75 substitute data is used for any of the auxiliary parameters. Also, do not calculate the electrical output-based emission rate if the electrical load for the operating hour is missing. For startup or shutdown hours, if the electrical load is zero, the output-based emission rate must be calculated using the "default electrical load" (as defined in §63.10042).

Note that default moisture percentages from Part 75 (if used) are not considered to be substitute data values. If the diluent cap is used in the calculation of the heat input-based emissions rate, the cap value is not considered to be substitute data.

For operating hours in which quality-assured data are not obtained for either the unadjusted pollutant concentration (i.e., Hg, HCl, or HF, as applicable) or any essential auxiliary parameter(s), report a MDHV record, even though the emission rate is not calculated for those hours (see the reporting instructions below for the "Unadjusted Hourly Value" field).

## *MATS Derived Hourly Value Data* XML Model

**Figure 14: *MATS Derived Hourly Value Data* XML Elements**




## *MATS Derived Hourly Value Data* XML Elements

**Parameter Code** *(ParameterCode)*
Report the appropriate Parameter Code as shown in Table 30:

**Table 30: Parameter Codes and Descriptions for the *MDHV Data* Record**

| Code | Description |
|---|---|
| SO2RE | Electrical Output-Based Hourly $SO_2$ Emission Rate (lb/MWh) |
| SO2RH | Heat Input-Based Hourly $SO_2$ Emission Rate (lb/mmBtu) |
| HGRE | Hg Electrical Output Based Emissions Rate (lb/GWh) |
| HGRH | Hg Heat Input Based Emissions Rate (lb/TBtu) |
| HCLRE | HCl Electrical Output Based Emissions Rate (lb/MWh) |
| HCLRH | HCl Heat Input Based Emissions Rate (lb/mmBtu) |
| HFRE | HF Electrical Output Based Emissions Rate (lb/MWh) |
| HFRH | HF Heat Input Based Emissions Rate (lb/mmBtu) |

**Unadjusted Hourly Value** *(UnadjustedHourlyValue)*
Report the unadjusted derived hourly value for the parameter specified, as follows:

$SO_2$ Emission Rates
If your EGU has a single unit-single stack exhaust configuration and you seek to comply with the acid gas emissions reduction requirements of the MATS rule by continuously monitoring either the heat input-based $SO_2$ emission rate (lb/mmBtu) or the electrical output-based $SO_2$ emission rate as a surrogate for HCl, report the unadjusted $SO_2$ emission rate in a MDHV record for each operating hour in which quality-assured values are obtained and reported in MHV records for the unadjusted $SO_2$ concentration and for all of the auxiliary parameters needed to convert the $SO_2$ concentration to lb/mmBtu or lb/MWh (as applicable). For the calculation of electrical output-based emission rates, use only unadjusted hourly $SO_2$ concentrations and stack gas flow rates—do not apply Part 75 bias adjustment factors to the $SO_2$ or flow rate data. Report the $SO_2$ emission rates to three significant figures using scientific notation, keeping only one digit to the left of the decimal point. For example, an $SO_2$ emission rate of 0.0756 lb/mmBtu would be reported as 7.56E-2, with no spaces in between the characters. Do not use "plus" characters after the "E" when reporting rates greater than or equal to one. For example, an $SO_2$ emission rate of 7.56 lb/mmBtu would be reported as 7.56E0.

Use appropriate equations from Table 28 of the ECMPS Monitoring Plan Reporting Instructions to determine the hourly lb/mmBtu or lb/MWh $SO_2$ emission rate. These equations must be defined in your electronic monitoring plan.

If the $SO_2$ concentration or any auxiliary parameter needed to calculate the $SO_2$ emission rate is either invalid or is a substitute data value, leave this field blank and report an MODC of "38."

If you seek to comply with the electrical output-based standard and the hourly electrical load is zero during unit operation, and all other essential parameters are valid, calculate the emission rate using the default electrical load and report an MODC of "39." If the electrical load is missing during unit operation, leave this field blank and report an MODC of "38."

If your affected EGU has a common stack or multiple stack exhaust configuration, see the "Specific Considerations for the MATS Rule" presented at the end of this section.

Hg, HCl, or HF Emission Rates

If your EGU has a single unit-single stack exhaust configuration and you seek to comply with the MATS rule by continuously monitoring either the heat input-based Hg, HCl, or HF emission rate (lb/TBtu or lb/mmBtu, as applicable) or the electrical output-based emission rate (lb/GWh or lb/MWh, as applicable), report the Hg, HCl, or HF emission rate in a MDHV record for each operating hour in which valid data are obtained and reported for the unadjusted Hg, HCl, or HF concentration (in a MMHV record) and for all of the auxiliary parameters needed to convert the pollutant concentration to the units of the emission standard (in MHV records). For the calculation of electrical output-based emission rates, use only unadjusted hourly stack gas flow rates—do not apply Part 75 bias adjustment factors to the flow rate data. Report the Hg, HCl, or HF emission rates to three significant figures using scientific notation, keeping only one digit to the left of the decimal point. For example, an Hg emission rate of 0.000385 lb/GWh would be reported as "3.85E-4" with no spaces in between characters and the "E" capitalized. Do not use "plus" characters after the "E" when reporting rates greater than or equal to one. For example, an Hg emission rate of 3.85 lb/GWh would be reported as "3.85E0."

Use appropriate equations from Table 33, 35, or 37 (as applicable) of the ECMPS Monitoring Plan Reporting Instructions to determine the hourly lb/mmBtu or lb/MWh Hg, HCl, or HF emission rate. These equations must be defined in your electronic monitoring plan.

If the Hg, HCl, or HF concentration or any auxiliary parameter needed to calculate the pollutant emission rate is either invalid or is a substitute data value, leave this field blank and report an MODC of "38."

If you seek to comply with the electrical output-based standard and the hourly electrical load is zero during unit operation, and all other essential parameters are valid, calculate the emission rate using the default electrical load and report an MODC of "39." If the electrical load is missing during unit operation, leave this field blank and report an MODC of "38."

If your affected EGU has a common stack or multiple stack exhaust configuration, see the "Specific Considerations for the MATS Rule" presented at the end of this section.

**MODC Code** *(MODCCode)*

For parameters HGRE, HGRH, HCLRE, HCLRH, HFRE, HFRH, SO2RE, or SO2RH, report an MODC of "36," "37," or "39" (as appropriate) for hours in which the emission rate is able to be calculated, and report "38" for hours in which the emission rate cannot be calculated. Entry of MODCs 36, 37, 38 and 39 is permitted.

For all other parameters, leave this field blank.

**Table 31: MODC Codes and Descriptions for *MDHV***

| Code | Parameter(s) | Description |
|---|---|---|
| 36 | HGRE, HGRH, HCLRE, HCLRH, HFRE, HFRH, SO2RE, SO2RH | Hourly Hg, HCl, $SO_2$, or HF emission rate calculated—valid data obtained for pollutant concentration and for all essential auxiliary parameters |
| 37 | HGRH, HCLRH, HFRH, SO2RH, | Hourly heat input-based Hg, HCl, $SO_2$, or HF emission rate calculated for a startup or shutdown hour, using the diluent cap value |
| 38 | HGRE, HGRH, HCLRE, HCLRH, HFRE, HFRH, SO2RE, SO2RH | Hourly Hg, HCl, or HF emission rate not calculated—valid concentration not available or one or more essential auxiliary parameters is either missing or reported as substitute data. |
| 39 | HGRE, HCLRE, HFRE, SO2RE | Hourly electric output-based Hg, HCl, $SO_2$, or HF emission rate calculated using the default electrical load value for a startup or shutdown hour where there is heat input to an affected EGU but zero gross output. |

**Formula Identifier** *(FormulaIdentifier)*
Report the Formula ID from the MONITOR FORMULA DATA record that is used for the calculation of the parameter.

Leave this field blank for hours in which the Hg, $SO_2$, HCl, or HF emission rate is not calculated. For operating hours in which the heat input-based Hg, $SO_2$, HCl, or HF emission rate is calculated, report the formula ID corresponding to the EPA Method 19 equation used. For operating hours in which the electrical output-based Hg, $SO_2$, HCl, or HF emission rate is calculated, report the formula ID corresponding (as applicable) to either Equation A-2 or A-3 from Table 33 of the ECMPS Monitoring Plan Reporting Instructions (for Hg), Equation S-2 or S-3 from Table 29 (for $SO_2$), Equation HC-2 or HC-3 from Table 35 (for HCl), or Equation HF-2 or HF-3 from Table 37 (for HF).

## Specific Considerations

### Specific Considerations for the MATS Rule

- For EGUs subject to the MATS Rule that have common stack configurations, you may monitor emissions concentration and the necessary auxiliary parameters at the common stack provided that all of the units sharing the stack are subject to the same emission limit (see 40 CFR 63.8(b)(2)(i)). If this monitoring option is implemented, do not apportion the hourly emission rate measured at the common stack to the individual units (i.e., do not report any additional MATS DERIVED HOURLY VALUE DATA records under the ID numbers of the units that share the common stack). However, if the units sharing the common stack are not subject to the same emission standard, you must either monitor the units individually to demonstrate compliance with the emission limits or monitor at the common stack and demonstrate compliance with the most stringent emission limit.

- If, for a particular unit, hourly emissions rates are monitored at multiple stacks (or ducts) report the hourly emission rate measured at each stack (or duct) and an hourly flow-weighted emission rate for the unit (i.e., report both stack (or duct)-level and unit-level MATS DERIVED HOURLY VALUE DATA records). Use Equation MS-1 to calculate the hourly unit-level emission rates:

$$E_h = \frac{\sum_{i=1}^{n} (ER)_i \, (Q)_i}{\sum_{i=1}^{n} (Q)_i}$$

(Equation MS-1)

Where:

| | | |
|---|---|---|
| $E_h$ | = | Flow-weighted hourly average pollutant emission rate for the EGU (lb/mmBtu, lb/TBtu, lb/MWh, or lb/GWh, as appropriate) |
| ER | = | Hourly average pollutant emission rate measured in the monitored stack or duct (lb/mmBtu, lb/TBtu, lb/MWh, or lb/GWh, as appropriate) |
| Q | = | Hourly stack gas flow rate measured in the monitored stack or duct (scfh, wet basis) |
| i | = | Designation for a particular stack or duct |
| n | = | Total number of monitored stacks or ducts |

- If quality-assured data are not obtained for the unadjusted pollutant concentration (i.e., Hg, HCl, HF, or $SO_2$, as applicable) and/or for any essential auxiliary parameter(s) at a particular monitored stack or duct, do not calculate the emission rate at that location and leave the "Unadjusted Hourly Value" field blank. Do not calculate the unit-level emission rate for any operating hour in which a valid emission rate is not able to be calculated for all of the stacks (or ducts).
- For common stack configurations, if you elect to comply with an electrical output-based standard, then, for hours in which all units that are operating in startup or shutdown mode and the combined electrical load is zero, provided that all other parameters used in the emission rate equation are valid, you must calculate the pollutant emission rate using the default electrical load (as defined in §63.10042). The default electrical load is not reported if any unit that shares the stack is operating normally while another unit(s) is in startup or shutdown mode.