

# **The Emissions Collection and Monitoring Plan Project**

## **Emissions XML Schema Version 1.5**

### **Submitted to:**

ECMPS Stakeholders

### **Submitted by:**

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## Table of Contents

1.0 Introduction.....	1
2.0 Emissions XML Schema Tables.....	1
Figure 1 Emissions .....	2
Figure 2 Emissions Schema XML Elements.....	2
Figure 3 Complex Elements of the Root .....	3
Figure 4 DailyCalibrationData .....	4
Figure 5 DailyCalibrationData XML Elements .....	5
Figure 6 DailyEmissionData .....	6
Figure 7 DailyEmissionData XML Elements .....	6
Figure 8 DailyFuelData .....	7
Figure 9 DailyFuelData XML Elements .....	7
Figure 10 DailyTestSummaryData.....	8
Figure 11 DailyTestSummaryData XML Elements .....	8
Figure 12 DerivedHourlyValueData .....	9
Figure 13 DerivedHourlyValueData XML Elements .....	9
Figure 14 HourlyFuelFlowData .....	10
Figure 15 HourlyFuelFlowData XML Elements.....	11
Figure 16 HourlyGFMDData .....	11
Figure 17 HourlyGFMDData XML Elements .....	12
Figure 18 HourlyOperatingData.....	13
Figure 19 HourlyOperatingData XML Elements .....	14
Figure 20 HourlyParameterFuelFlowData .....	15
Figure 21 HourlyParameterFuelFlowData XML Elements .....	15
Figure 22 LongTermFuelFlowData.....	16
Figure 23 LongTermFuelFlowData XML Elements.....	16
Figure 24 MATSDerivedHourlyValueData .....	17
Figure 25 MATSDerivedHourlyValueData XML Elements .....	17
Figure 26 MATSMonitorHourlyValueData .....	17
Figure 27 MATSMonitorHourlyValueData XML Elements .....	18
Figure 28 MonitorHourlyValueData .....	18
Figure 29 MonitorHourlyValueData XML Elements .....	19
Figure 30 SamplingTrainData .....	20
Figure 31 SamplingTrainData XML Elements .....	20

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Figure 32 SorbentTrapData .....	22
Figure 33 SorbentTrapData XML Elements .....	22
Figure 34 SummaryValueData .....	23
Figure 35 SummaryValueData XML Elements .....	23
Figure 36 WeeklySystemIntegrityData .....	24
Figure 37 WeeklySystemIntegrityData XML Elements .....	24
Figure 38 WeeklyTestSummaryData .....	25
Figure 39 WeeklyTestSummaryData XML Elements .....	25
Figure 40 Simple Types Used for Validation.....	26

## **Emissions XML Schema Version 1.5**

### **1.0 Introduction**

This document is the third in a series that outlines the Extensible Mark-up Language (XML) schema and how data files must be formatted for the Emissions Collection and Monitoring Plan System (ECMPS). A schema was developed for each data type, i.e., monitoring plan, quality assurance and certification test data, emissions data, and each data type will generate its own XML file. The schema will be used for all data that are imported into the ECMPS client submission tool and exported from the client submission tool. The move to XML will allow users to submit only the necessary data for a given submission of data. It will also allow for more robust data validation through the XML schema, and will keep the file size as small as possible.

The schema is included in a separate file. The schema may be viewed in any application that is able to display text files or an application specifically designed for viewing XML schema.

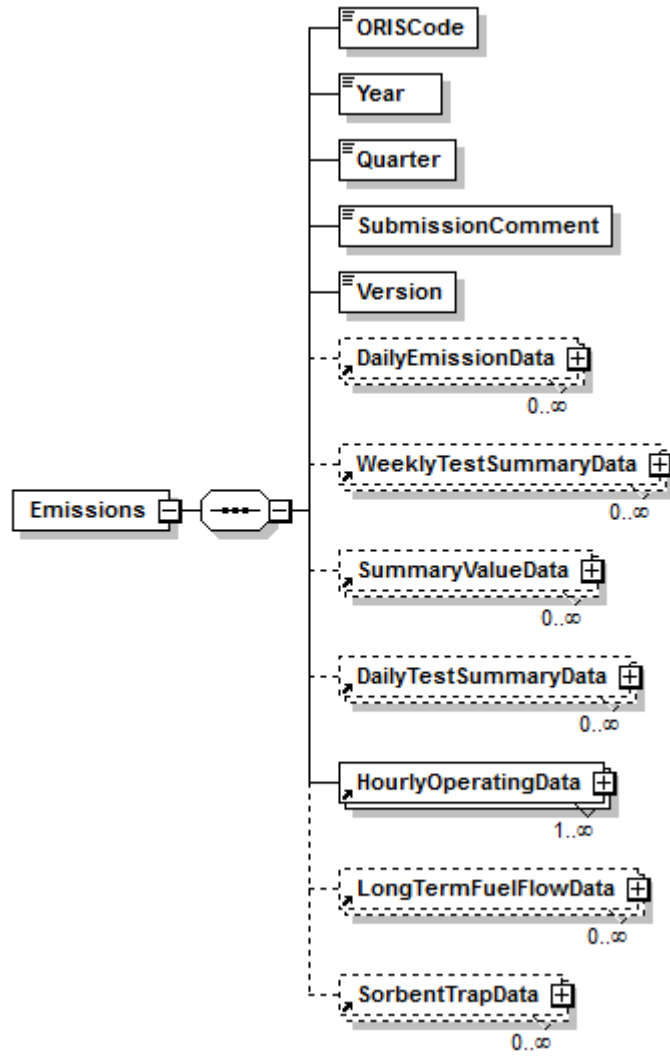
### **2.0 Emissions XML Schema Tables**

The following tables provide information about the data elements of the Emissions XML schema. The information includes a description of the data element, the type of the element, and a definition for the element.

Figures 1 and 2 provide information on the root element of the Emissions XML schema. Figure 3 lists all of the complex data elements and information that indicates the parent-child relationship between the major data elements. Figures 4 through 25 include information on the complex data elements in the XML schema.

Detailed information about the data types is included in Figure 26. The term "optional" is often used in the names of the various data types. The term "optional" in the name of these data validation data types only refers to the fact that the schema validation will accept a data element tag that does not include a value (an empty tag). Depending on the data being reported, these data elements might require data to be reported.

**Figure 1  
Emissions**



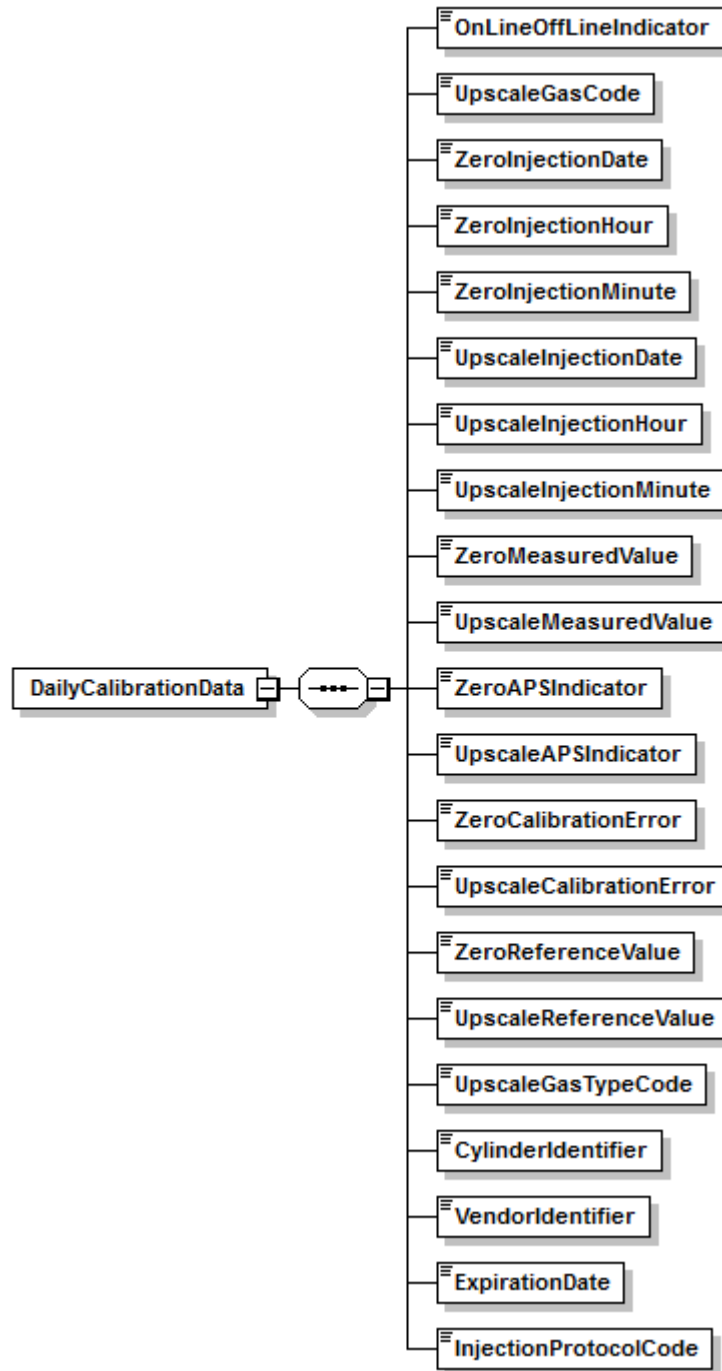
**Figure 2  
Emissions Schema XML Elements**

XML Tag	Type	Definition
ORISCode	ORISCodeType	EIA-assigned identifier or Facility identifier assigned by CAMD (if EIA number is not applicable).
Year	ReportingYearType	Reporting Year.
Quarter	ReportingYearQuarter	Reporting Quarter.
SubmissionComment	SubmissionCommentType	Comment on an emissions submission.
Version	VersionType	Identifies the XML schema version.

**Figure 3**  
**Complex Elements of the Root**

<b>Complex Element</b>	<b>Parent Element</b>	<b>Minimum Occurrences</b>	<b>Maximum Occurrences</b>
DailyCalibrationData	DailyTestSummaryData	0	unbounded
DailyEmissionData	Emissions	0	unbounded
DailyFuelData	DailyEmissionData	0	unbounded
DailyTestSummaryData	Emissions	0	unbounded
DerivedHourlyValueData	HourlyOperatingData	0	unbounded
Emissions		1	1
HourlyFuelFlowData	HourlyOperatingData	0	unbounded
HourlyGFMDData	HourlyOperatingData	0	unbounded
HourlyOperatingData	Emissions	1	unbounded
HourlyParameterFuelFlow Data	HourlyFuelFlowData	0	unbounded
LongTermFuelFlowData	Emissions	0	unbounded
MATSDerivedHourlyValue Data	HourlyOperatingData	0	unbounded
MATSMonitorHourlyValue Data	HourlyOperatingData	0	unbounded
MonitorHourlyValueData	HourlyOperatingData	0	unbounded
SamplingTrainData	SorbentTrapData	2	2
SorbentTrapData	Emissions	0	unbounded
SummaryValueData	Emissions	0	unbounded
WeeklySystemIntegrityData	WeeklyTestSummaryData	1	1
WeeklyTestSummaryData	Emissions	0	unbounded

**Figure 4**  
**DailyCalibrationData**

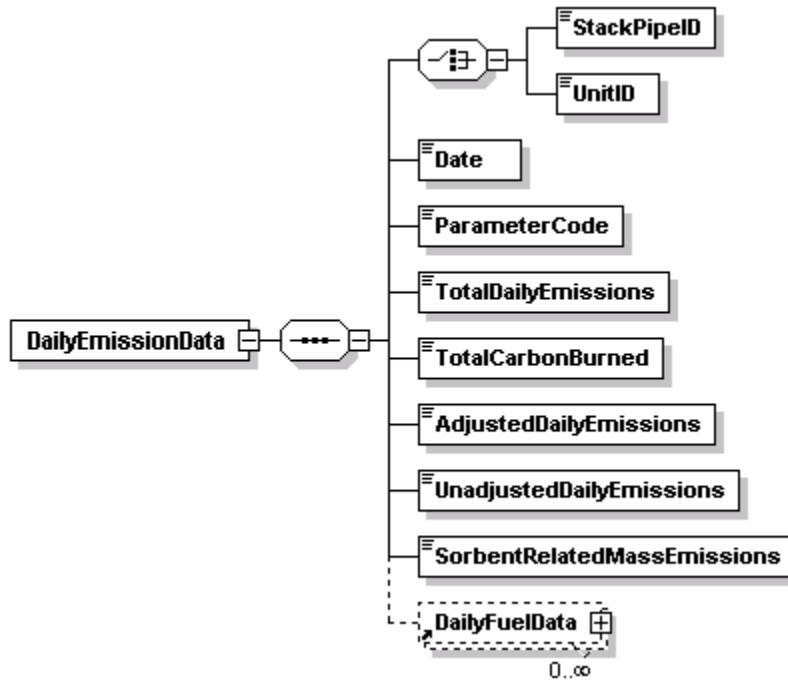


**Figure 5**  
**DailyCalibrationData XML Elements**

<b>XML Tag</b>	<b>Type</b>	<b>Definition</b>
OnLineOffLineIndicator	IndicatorType	Indicates whether the unit or stack is operating at the time of the test.
UpscaleGasCode	UpscaleGasCodeType	Code used to identify upscale gas level.
ZeroInjectionDate	OptionalDateType	Date of zero level injection.
ZeroInjectionHour	OptionalHourType	Hour of zero level injection.
ZeroInjectionMinute	OptionalMinuteType	Zero Injection Minute.
UpscaleInjectionDate	OptionalDateType	Date of upscale injection.
UpscaleInjectionHour	OptionalHourType	Hour of upscale injection.
UpscaleInjectionMinute	OptionalMinuteType	Upscale Injection Minute
ZeroMeasuredValue	CalibrationValueType	Zero level measured value.
UpscaleMeasuredValue	CalibrationValueType	Upscale measured value.
ZeroAPSIndicator	IndicatorType	Used to indicate if the alternative performance specification (APS) is used.
UpscaleAPSIndicator	IndicatorType	Used to indicate if the alternative performance specification (APS) is used.
ZeroCalibrationError	CalibrationErrorType	Reported zero level calibration error.
UpscaleCalibrationError	CalibrationErrorType	Reported upscale level calibration error.
ZeroReferenceValue	CalibrationValueType	Zero level reference value.
UpscaleReferenceValue	CalibrationValueType	Upscale reference value.
UpscaleGasTypeCode	GasTypeCodeType	Code used to identify the type of upscale gas.
CylinderIdentifier	CylinderIdentifierType	Vendor-assigned identification or serial number found on the cylinder.
VendorIdentifier	VendorIdentifierType	The EPA-assigned PGVP Vendor ID of the production site that supplied the cylinder.
ExpirationDate	OptionalDateType	Date on which the cylinder's gas expires.
InjectionProtocolCode	InjectionProtocolCode Type	Code used to identify the type of injection protocol.



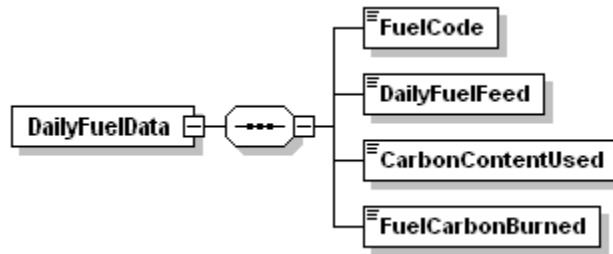
**Figure 6**  
**DailyEmissionData**



**Figure 7**  
**DailyEmissionData XML Elements**

XML Tag	Type	Definition
StackPipeID	RequiredStackPipeType	Three to six alphanumeric character code which is assigned by the source to identify a stack or pipe.
UnitID	RequiredUnitType	One to six alphanumeric character code assigned by the source to identify a unit.
Date	RequiredDateType	Date corresponding to the daily emissions.
ParameterCode	DailyEmissionParameterCodeType	Code used to identify the parameter.
TotalDailyEmissions	DailyEmissionsType	Total daily CO <sub>2</sub> mass emissions.
TotalCarbonBurned	TotalCarbonBurnedType	The total amount of carbon burned (in lbs) during the day.
AdjustedDailyEmissions	DailyEmissionsType	CO <sub>2</sub> mass emissions adjusted for CO <sub>2</sub> retained in fly ash.
UnadjustedDailyEmissions	DailyEmissionsType	CO <sub>2</sub> mass emissions
SorbentRelatedMass Emissions	DailyEmissionsType	Total daily sorbent-related CO <sub>2</sub> mass emissions.

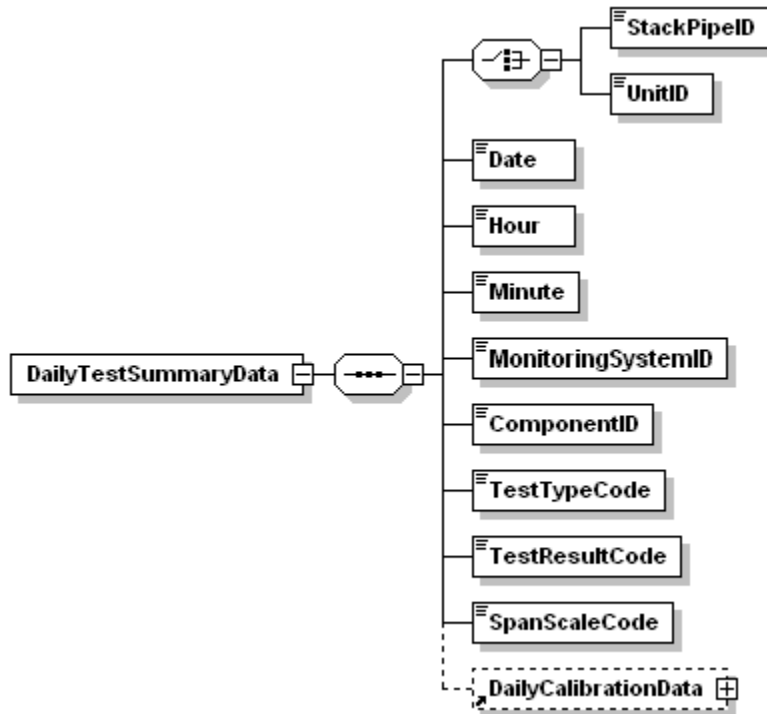
**Figure 8  
DailyFuelData**



**Figure 9  
DailyFuelData XML Elements**

XML Tag	Type	Definition
FuelCode	HourlyOperatingFuelCodeType	The fuel code of a specific fuel used during the day.
DailyFuelFeed	DailyFuelFeedType	The feed rate of a specific fuel (in lbs) used during the day.
CarbonContentUsed	CarbonContentUsedType	The amount of carbon burned as a percentage of the daily feed rate for a specific fuel.
FuelCarbonBurned	FuelCarbonBurnedType	The amount of carbon burned (in lbs) during the day for a specific fuel.

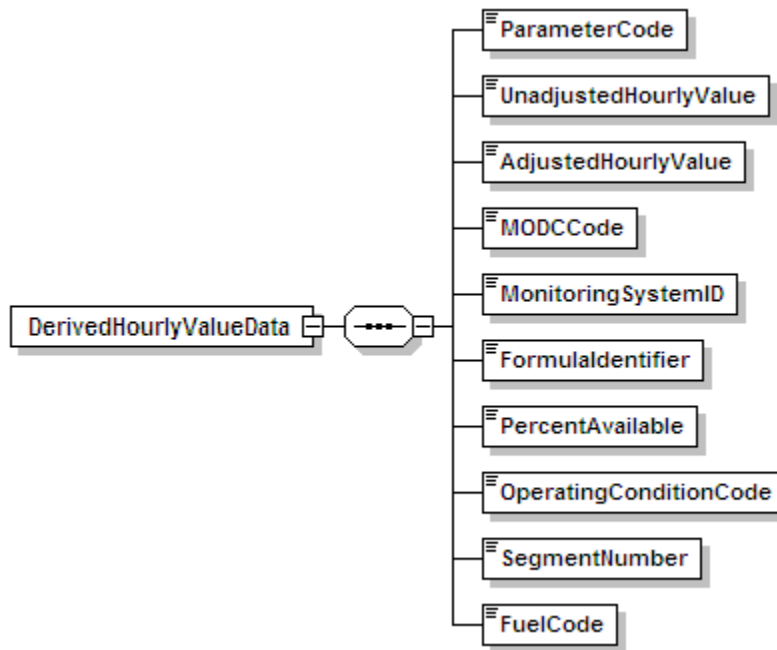
**Figure 10**  
**DailyTestSummaryData**



**Figure 11**  
**DailyTestSummaryData XML Elements**

XML Tag	Type	Definition
StackPipeID	RequiredStackPipeType	Three to six alphanumeric character code which is assigned by the source to identify a stack or pipe.
UnitID	RequiredUnitType	One to six alphanumeric character code assigned by the source to identify a unit.
Date	RequiredDateType	Date of the daily test.
Hour	RequiredHourType	Hour of the daily test.
Minute	OptionalMinuteType	Minute of the daily test.
MonitoringSystemID	OptionalIdentifierType	The three digit code used by the source to identify the monitoring system.
ComponentID	OptionalIdentifierType	The three digit code assigned by the source to identify the component.
TestTypeCode	TestTypeCodeType	Code used to identify test type.
TestResultCode	TestResultCodeType	Code used to identify reported test result.
SpanScaleCode	SpanScaleCodeType	Code used to identify the span scale.

**Figure 12**  
**DerivedHourlyValueData**



**Figure 13**  
**DerivedHourlyValueData XML Elements**

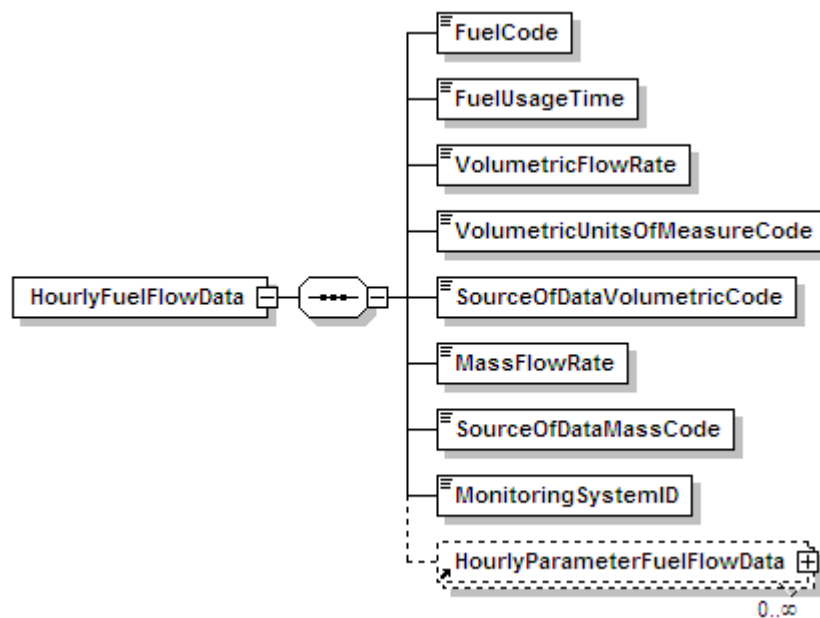
XML Tag	Type	Definition
ParameterCode	DerivedHourlyParameterCodeType	Code used to identify the parameter.
UnadjustedHourlyValue	HourlyValueType	Unadjusted value calculated from measured values for the hour.
AdjustedHourlyValue	HourlyValueType	Adjusted parameter value for the hour, as calculated from measured values and then adjusted for bias, or the substitute value for missing data hours.
MODCCode	MODCCodeType	Code used to identify the method of determination.
MonitoringSystemID	OptionalIdentifierType	The three digit code used by the source to identify the monitoring system.
FormulaIdentifier	OptionalFormulaIdentifierType	The three character formula ID assigned by the source.
PercentAvailable	PercentType	Percent monitor data availability.

(cont.).

**Figure 13**  
**DerivedHourlyValueData XML Elements (cont.)**

XML Tag	Type	Definition
OperatingCondition Code	OperatingCondition CodeType	Code used to identify the operating condition.
SegmentNumber	SegmentNumberType	Segment number of correlation curve. Rather than a user-assigned identifier, this is just an integer that indicates the segment number (assuming the first segment is number 1).
FuelCode	DerivedHourlyFuel CodeType	Code used to identify the type of fuel.

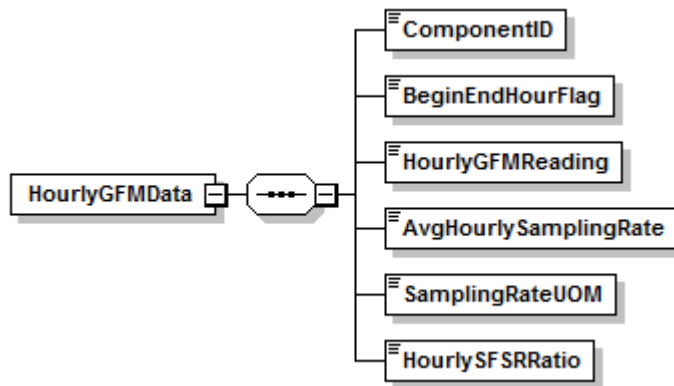
**Figure 14**  
**HourlyFuelFlowData**



**Figure 15  
HourlyFuelFlowData XML Elements**

XML Tag	Type	Definition
FuelCode	HourlyFuelFlowFuelCodeType	Code used to identify the type of fuel.
FuelUsageTime	FuelUsageTimeType	Fuel usage time.
VolumetricFlowRate	VolumetricFlowRateType	Volumetric flow rate during combustion.
VolumetricUnitsOfMeasureCode	VolumetricUnitsOfMeasureType	Code used to identify the units of measure for volumetric fuel flow.
SourceOfDataVolumetricCode	SODVolumetricCodeType	Code used to identify the source of volumetric flow rate.
MassFlowRate	MassFlowRateType	Mass flow rate during combustion.
SourceOfDataMassCode	SODMassCodeType	Code used to identify the source of mass flow rate.
MonitoringSystemID	OptionalIdentifierType	The three digit code used by the source to identify the monitoring system.

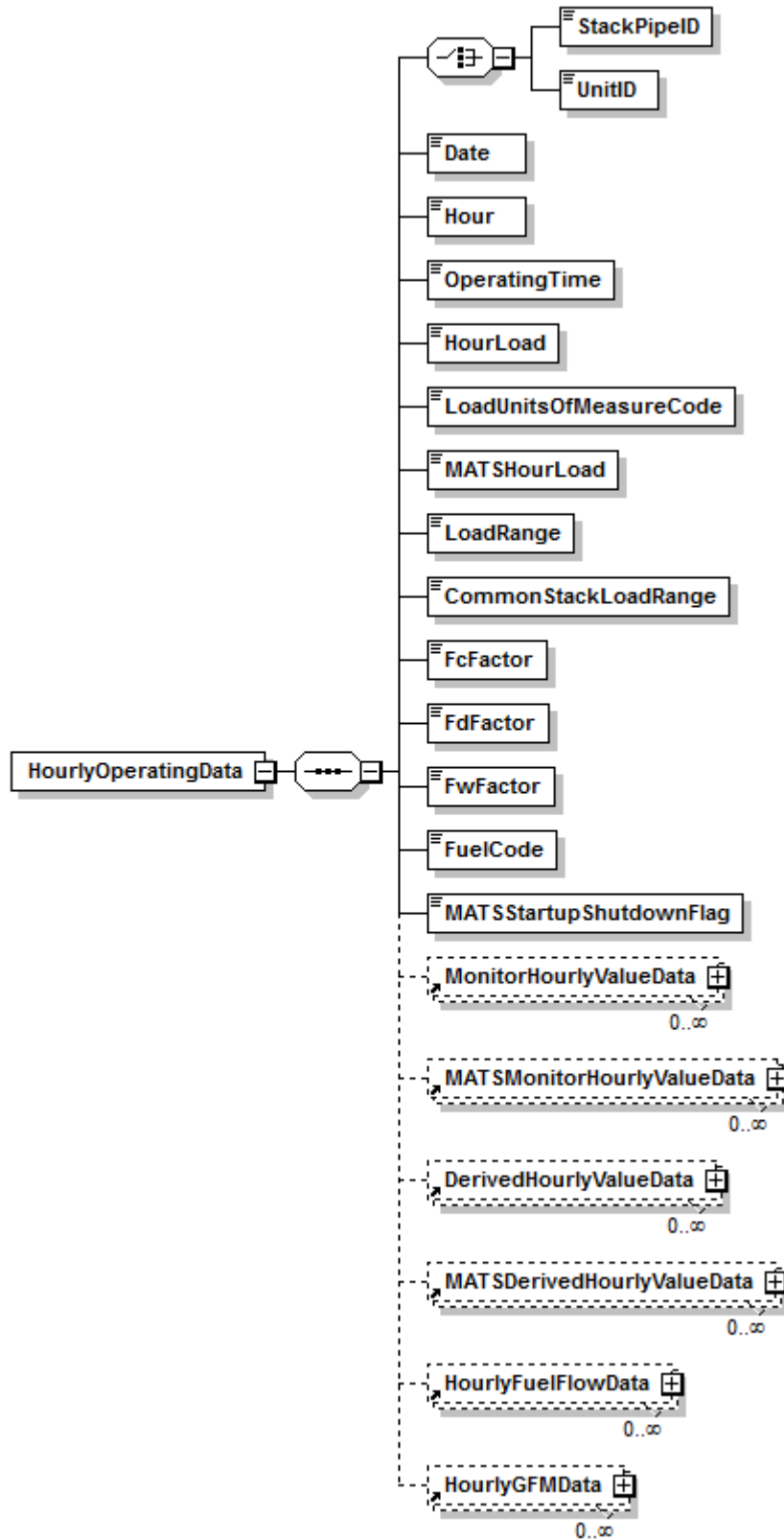
**Figure 16  
HourlyGFMDData**



**Figure 17**  
**HourlyGFMDData XML Elements**

<b>XML Tag</b>	<b>Type</b>	<b>Definition</b>
ComponentID	RequiredIdentifierType	The three digit code assigned by the source to identify the component.
BeginEndHourFlag	BeginEndHourFlagType	Flag marking the beginning and ending of the sample collection period.
HourlyGFMRReading	HourlyGFMRReadingType	Hourly sample flow meter volume reading.
AvgHourlySamplingRate	HourlySamplingRateType	Average sample flow rate for the hour.
SamplingRateUOM	SamplingRateUOMCode Type	Units of measure for the average hourly sampling rate.
HourlySFSRRatio	HourlySFSRRatioType	Ratio of the unadjusted hourly average stack gas flow rate to the average hourly sample flow rate.

**Figure 18**  
**HourlyOperatingData**

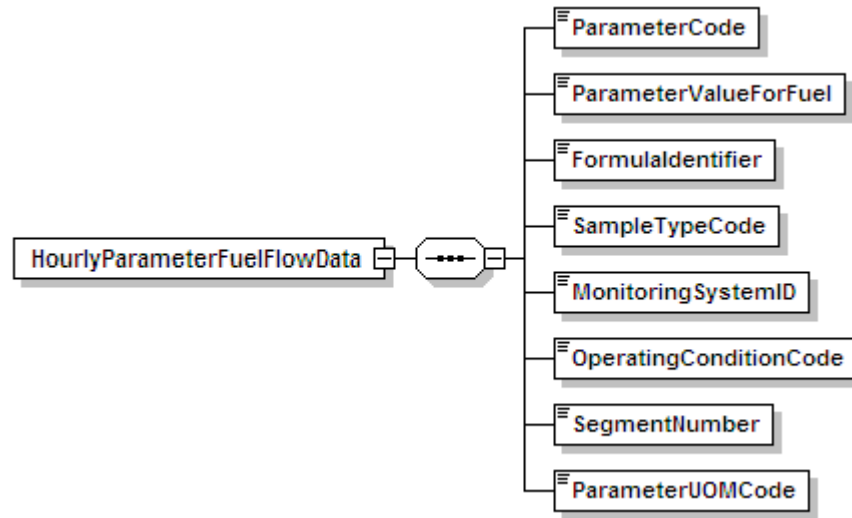




**Figure 19**  
**HourlyOperatingData XML Elements**

<b>XML Tag</b>	<b>Type</b>	<b>Definition</b>
StackPipeID	RequiredStackPipeType	Three to six alphanumeric character code which is assigned by the source to identify a stack or pipe.
UnitID	RequiredUnitType	One to six alphanumeric character code assigned by the source to identify a unit.
Date	RequiredDateType	Date of the hourly operating data.
Hour	RequiredHourType	Hour of the hourly operating data.
OperatingTime	OperatingTimeType	The fraction of the clock hour during which the unit (or any unit venting through the stack) combusted any fuel.
HourLoad	HourLoadType	Gross unit load or steam load value during unit operation.
LoadUnitsOfMeasure Code	LoadUnitsOfMeasure CodeType	Code used to identify the load units of measure.
MATSHourLoad	HourLoadType	Gross MATS unit load value during unit operation.
LoadRange	LoadRangeType	Operating load range or load bin number (1 to 10).
CommonStackLoad Range	CommonStackLoad RangeType	Load range for stack flow at a common stack (between 1 and 20). Optional alternative to standard load range.
FcFactor	FFactorType	Carbon based F-factor corresponding to fuel(s) burned during the hour.
FdFactor	FFactorType	Dry basis F-factor corresponding to fuel(s) burned during the hour.
FwFactor	FFactorType	Wet basis F-factor corresponding to fuel(s) burned during the hour.
FuelCode	HourlyOperatingFuel CodeType	Code used to identify the type of fuel.
MATSShutdownStartupFlag	MATSShutdownStartupFlagType	Flag used to identify a MATS unit startup or shutdown hour.

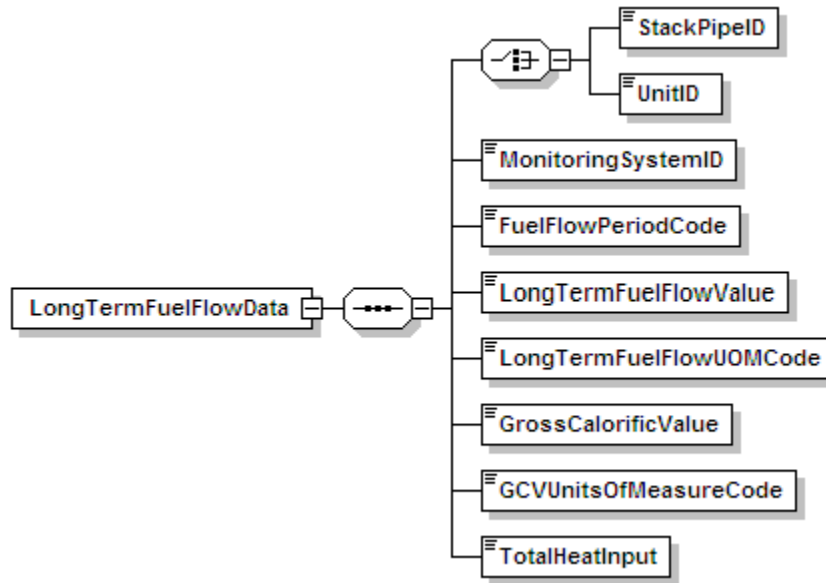
**Figure 20**  
**HourlyParameterFuelFlowData**



**Figure 21**  
**HourlyParameterFuelFlowData XML Elements**

XML Tag	Type	Definition
ParameterCode	HourlyParameterFuelFlowParameterCodeType	Code used to identify the parameter.
ParameterValueForFuel	ParameterValueForFuelType	Hourly parameter value for fuel. (Currently SO <sub>2</sub> mass rate, CO <sub>2</sub> mass rate, or heat input rate.)
FormulaIdentifier	OptionalFormulaIdentifierType	The three character formula ID assigned by the source.
SampleTypeCode	SulfurSampleTypeCodeType	Code used to identify the sample type.
MonitoringSystemID	OptionalIdentifierType	The three digit code used by the source to identify the monitoring system.
OperatingConditionCode	OperatingConditionCodeType	Code used to identify the operating condition.
SegmentNumber	SegmentNumberType	Segment number of correlation curve. Rather than a user-assigned identifier, this is just an integer that indicates the segment number (assuming the first segment is number 1).
ParameterUOMCode	HourlyParameterFuelFlowUnitsOfMeasureCodeType	Code used to identify the parameter units of measure.

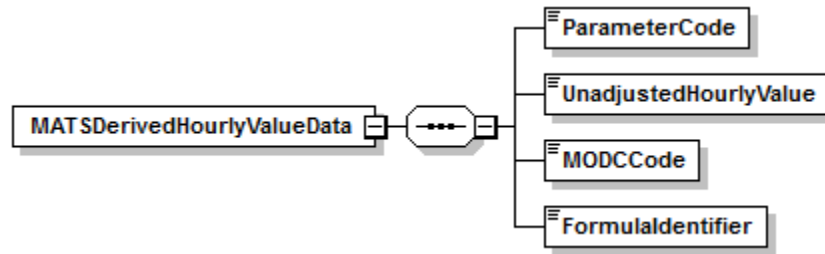
**Figure 22**  
**LongTermFuelFlowData**



**Figure 23**  
**LongTermFuelFlowData XML Elements**

XML Tag	Type	Definition
StackPipeID	RequiredStackPipeType	Three to six alphanumeric character code which is assigned by the source to identify a stack or pipe.
UnitID	RequiredUnitType	One to six alphanumeric character code assigned by the source to identify a unit.
MonitoringSystemID	RequiredIdentifierType	The three digit code used by the source to identify the monitoring system.
FuelFlowPeriodCode	FuelPeriodCodeType	Code used to identify the long term fuel flow period.
LongTermFuelFlow Value	LongTermFuelFlow ValueType	Long term fuel flow value
LongTermFuelFlow UOMCode	LongTermFuelFlowUOM CodeType	Code used to identify the units of measure for the long term fuel flow value.
GrossCalorificValue	GrossCalorificValueType	Gross Calorific Value.
GCVUnitsOfMeasure Code	GCVUnitsOfMeasure CodeType	Code used to identify the units of measure for the GCV.
TotalHeatInput	TotalHeatInputType	Total heat input from this long term fuel flow value.

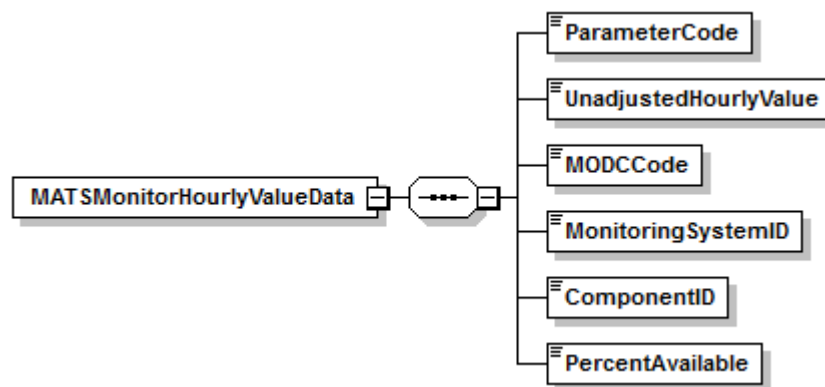
**Figure 24**  
**MATSDerivedHourlyValueData**



**Figure 25**  
**MATSDerivedHourlyValueData XML Elements**

XML Tag	Type	Definition
ParameterCode	MATSDerivedHourlyParameterCodeType	Code used to identify the parameter for MATS.
UnadjustedHourlyValue	ScientificNotationType	Unadjusted value calculated from measured values for the hour, in scientific notation.
MODCCode	MODCCodeType	Code used to identify the method of determination.
FormulaIdentifier	OptionalFormulaIdentifierType	The three character formula ID assigned by the source.

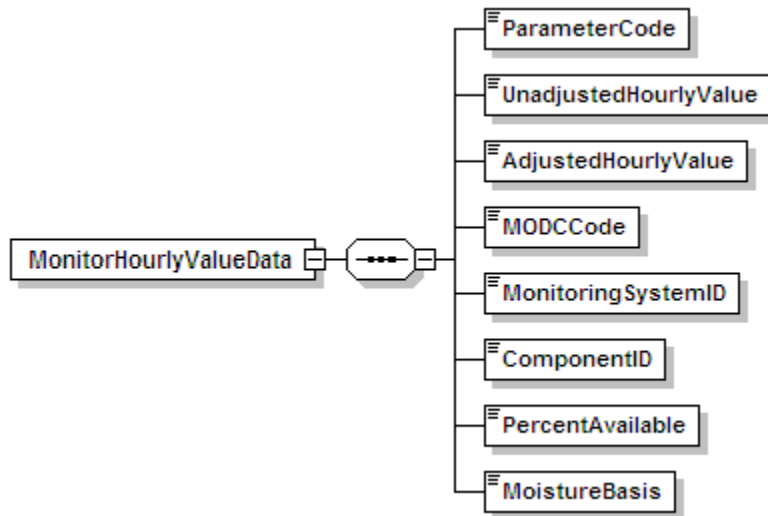
**Figure 26**  
**MATSMonitorHourlyValueData**



**Figure 27**  
**MATSMonitorHourlyValueData XML Elements**

XML Tag	Type	Definition
ParameterCode	MATSMonitorHourlyParameterCodeType	Code used to identify the parameter for MATS.
UnadjustedHourlyValue	ScientificNotationType	Unadjusted measured value in scientific notation.
MODCCode	MODCCodeType	Code used to identify the method of determination.
MonitoringSystemID	OptionalIdentifierType	The three digit code used by the source to identify the monitoring system.
ComponentID	OptionalIdentifierType	The three digit code assigned by the source to identify the component.
PercentAvailable	PercentType	Percent monitor data availability.

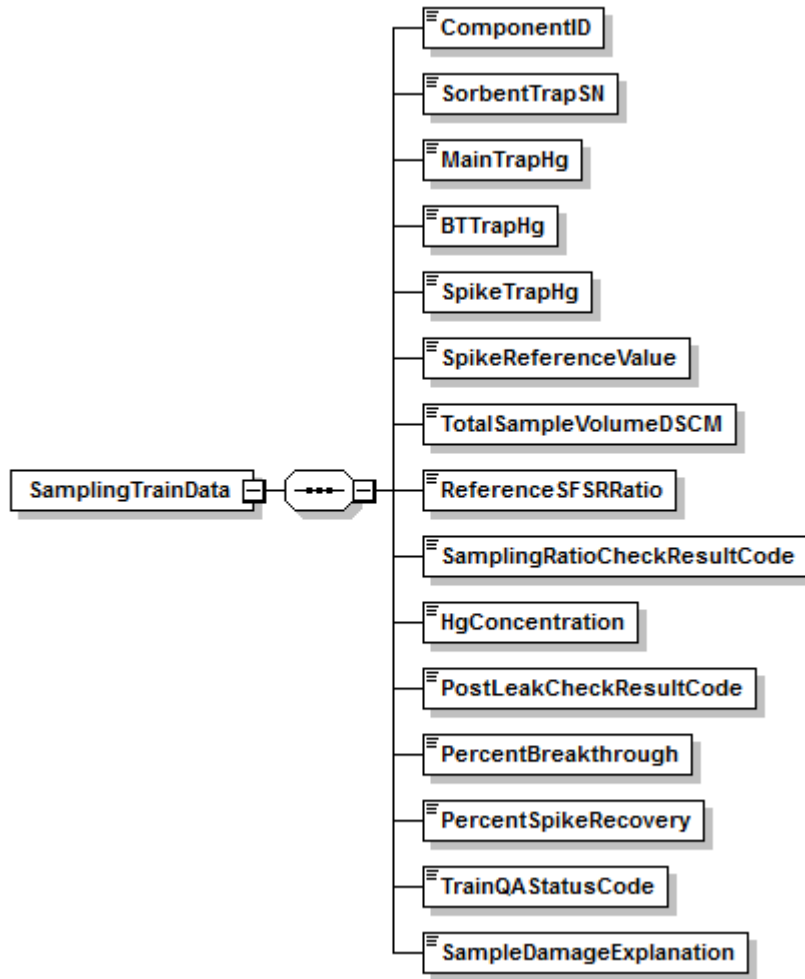
**Figure 28**  
**MonitorHourlyValueData**



**Figure 29**  
**MonitorHourlyValueData XML Elements**

<b>XML Tag</b>	<b>Type</b>	<b>Definition</b>
ParameterCode	MonitorHourlyParameterCodeType	Code used to identify the parameter.
UnadjustedHourlyValue	HourlyValueType	Unadjusted measured value.
AdjustedHourlyValue	HourlyValueType	Adjusted average concentration or flow for the hour.
MODCCode	MODCCodeType	Code used to identify the method of determination.
MonitoringSystemID	OptionalIdentifierType	The three digit code used by the source to identify the monitoring system.
ComponentID	OptionalIdentifierType	The three digit code assigned by the source to identify the component.
PercentAvailable	PercentType	Percent monitor data availability.
MoistureBasis	MoistureBasisType	Moisture basis for measured value.

**Figure 30**  
**SamplingTrainData**



**Figure 31**  
**SamplingTrainData XML Elements**

XML Tag	Type	Definition
ComponentID	RequiredIdentifierType	The three digit code assigned by the source to identify the component.
SorbentTrapSN	SorbentTrapSNType	Sorbent trap serial number.
MainTrapHg	ScientificNotationType	Mass of Hg from the main collection section in scientific notation.
BTTrapHg	ScientificNotationType	Mass of Hg from the breakthrough section in scientific notation.
SpikeTrapHg	ScientificNotationType	Mass of Hg from the spike section in scientific notation.

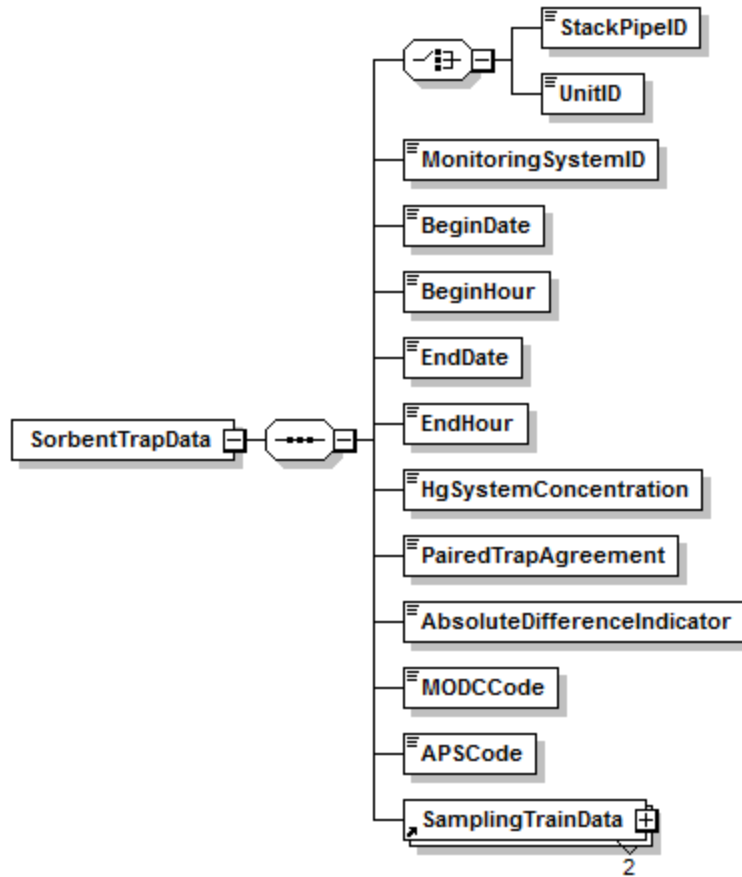
(cont.)

**Figure 31**  
**SamplingTrainData XML Elements (cont.)**

<b>XML Tag</b>	<b>Type</b>	<b>Definition</b>
SpikeReferenceValue	ScientificNotationType	Mass of the pre-sampling Hg spike in scientific notation.
TotalSampleVolumeDSCM	TotalSampleVolumeDSCMType	Total volume of dry gas metered.
ReferenceSFSRRatio	ReferenceSFSRRatioType	Reference ratio of the unadjusted hourly stack gas volumetric flow rate to the average sample flow rate.
SamplingRatioCheckResultCode	TestResultCodeType	Code indicating if the ratio was maintained within the required percentage.
HgConcentration	ScientificNotationType	Hg concentration determined from total Hg catch and total volume of dry gas metered.
PostLeakCheckResultCode	TestResultCodeType	Results of the post-test leak check.
PercentBreakthrough	PercentType	Calculated percent breakthrough.
PercentSpikeRecovery	PercentType	Calculated percent spike recovery.
TrainQAStatusCode	TrainQAStatusCodeType	Code indicating the QA status of the sampling train.
SampleDamageExplanation	ExplanationType	Explanation of why the sample could not be analyzed.



**Figure 32**  
**SorbentTrapData**



**Figure 33**  
**SorbentTrapData XML Elements**

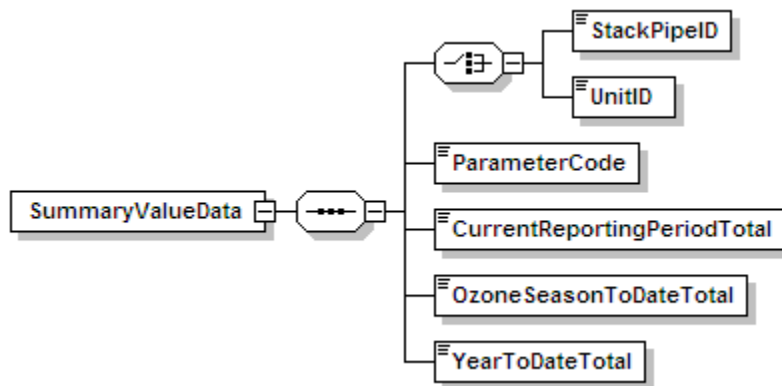
XML Tag	Type	Definition
StackPipeID	RequiredStackPipeType	Three to six alphanumeric character code which is assigned by the source to identify a stack or pipe.
UnitID	RequiredUnitType	One to six alphanumeric character code assigned by the source to identify a unit.
MonitoringSystemID	RequiredIdentifierType	The three digit code used by the source to identify the monitoring system.
BeginDate	RequiredDateType	Date the sample collection period began.
BeginHour	RequiredHourType	Hour the sample collection period began.
EndDate	RequiredDateType	Date the sample collection period ended.
EndHour	RequiredHourType	Hour the sample collection period ended.

(cont.)

**Figure 33**  
**SorbentTrapData XML Elements (cont.)**

XML Tag	Type	Definition
HgSystemConcentration	ScientificNotationType	Hg concentration for the monitoring system reported in scientific notation.
PairedTrapAgreement	PairedAgreementType	Relative deviation between two traps.
AbsoluteDifferenceIndicator	IndicatorType	Flag used to indicate how the paired trap difference was determined.
MODCCode	MODCCodeType	Code used to identify the method of determination.
APSCode	SorbentTrapAPSCodeType	Used to indicate if a pair of traps were used as part of a RATA run and meet the alternative performance specifications of PS12B.

**Figure 34**  
**SummaryValueData**



**Figure 35**  
**SummaryValueData XML Elements**

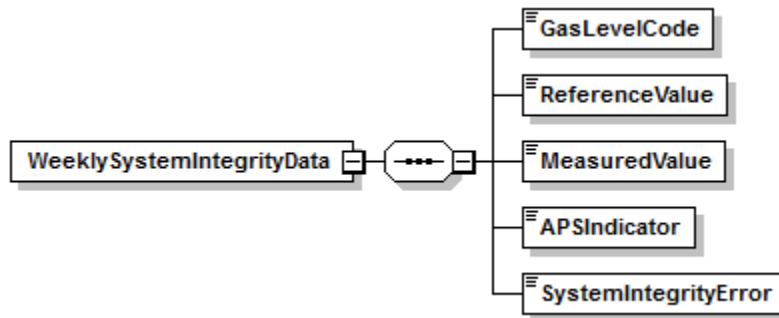
XML Tag	Type	Definition
StackPipeID	RequiredStackPipeType	Three to six alphanumeric character code which is assigned by the source to identify a stack or pipe.
UnitID	RequiredUnitType	One to six alphanumeric character code assigned by the source to identify a unit.
ParameterCode	SummaryValueParameterCodeType	Code used to identify the parameter.
CurrentReportingPeriodTotal	SummaryValueTotalType	Total value for current reporting period.

(cont.)

**Figure 35**  
**SummaryValueData XML Elements (cont.)**

XML Tag	Type	Definition
OzoneSeasonToDateTotal	SummaryValueTotalType	Ozone season year to date total.
YearToDateTotal	SummaryValueTotalType	Year to date total.

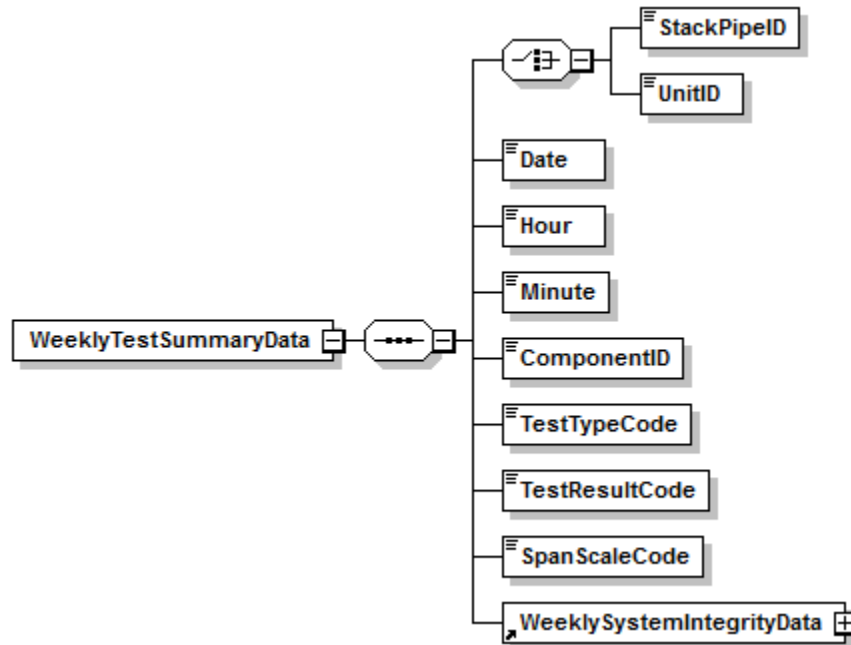
**Figure 36**  
**WeeklySystemIntegrityData**



**Figure 37**  
**WeeklySystemIntegrityData XML Elements**

XML Tag	Type	Definition
GasLevelCode	UpscaleGasCodeType	Code used to indicate the level of the gas used.
ReferenceValue	CalibrationValueType	Value of the calibration standard used for the injection.
MeasuredValue	CalibrationValueType	Value measured for the injection.
APSIndicator	IndicatorType	Used to indicate if the alternative performance specification (APS) is used.
SystemIntegrityError	SystemIntegrityError Type	Results of the system integrity check.

**Figure 38**  
**WeeklyTestSummaryData**



**Figure 39**  
**WeeklyTestSummaryData XML Elements**

XML Tag	Type	Definition
StackPipeID	RequiredStackPipeType	Three to six alphanumeric character code which is assigned by the source to identify a stack or pipe.
UnitID	RequiredUnitType	One to six alphanumeric character code assigned by the source to identify a unit.
Date	RequiredDateType	Date test was completed.
Hour	RequiredHourType	Hour test was completed.
Minute	RequiredMinuteType	Minute test was completed.
ComponentID	RequiredIdentifierType	The three digit code assigned by the source to identify the component.
TestTypeCode	TestTypeCodeType	Code used to identify test type.
TestResultCode	TestResultCodeType	Code used to identify reported test result.
SpanScaleCode	SpanScaleCodeType	Code used to identify the span scale.

**Figure 40**  
**Simple Types Used for Validation**

<b>SimpleType Name</b>	<b>Used By</b>	<b>Base</b>	<b>Allow Null Values</b>	<b>Validation Patterns, Restrictions, and Values</b>	<b>Notes</b>
BeginEndHourFlag Type	HourlyGFMDData/ BeginEndHourFlag	String	Yes	F I N T	
CalibrationError Type	DailyCalibrationData/ UpscaleCalibrationError  DailyCalibrationData/ ZeroCalibrationError	Decimal	Yes	Total Digits = 6, Decimal Places = 2	
CalibrationValue Type	DailyCalibrationData/ UpscaleMeasuredValue  DailyCalibrationData/ UpscaleReferenceValue  DailyCalibrationData/ ZeroMeasuredValue  DailyCalibrationData/ ZeroReferenceValue  WeeklySystemIntegrity Data/ MeasuredValue  WeeklySystemIntegrity Data/ ReferenceValue	Decimal	Yes	Total Digits = 13, Decimal Places = 3	
CarbonContentUsed Type	DailyFuelData/ CarbonContentUsed	Decimal	Yes	Total Digits = 6, Decimal Places = 1	
CommonStack LoadRangeType	HourlyOperatingData/ CommonStackLoad Range	Integer	Yes	Minimum Value (inclusive) = 1, Maximum Value (inclusive) = 20	
CylinderIdentifier Type	DailyCalibrationData/ CylinderIdentifier	String	No	Maximum Length = 25 characters	
DailyEmission ParameterCode Type	DailyEmissionData/ ParameterCode	String	No	CO2M	

(cont.)

**Figure 40**  
**Simple Types Used for Validation (cont.)**

<b>SimpleType Name</b>	<b>Used By</b>	<b>Base</b>	<b>Allow Null Values</b>	<b>Validation Patterns, Restrictions, and Values</b>	<b>Notes</b>
DailyEmissions Type	DailyEmissionData/ AdjustedDailyEmissions  DailyEmissionData/ SorbentRelatedMass Emissions  DailyEmissionData/ TotalDailyEmissions  DailyEmissionData/ UnadjustedDailyEmissions	Decimal	Yes	Total Digits = 10, Decimal Places = 1	
DailyFuelFeedType	DailyFuelData/ DailyFuelFeed	Decimal	Yes	Total Digits = 14, Decimal Places = 1	
DerivedHourlyFuel CodeType	DerivedHourlyValueData/ FuelCode	String	Yes	BFG BUT CDG COG DGG DSL LFG LPG MIX NNG OGS OIL OOL PDG PNG PRG PRP RFG SRG	
DerivedHourly ParameterCode Type	DerivedHourlyValueData/ ParameterCode	String	No	CO2 CO2C CO2M H2O HI HIT NOX NOXM NOXR SO2 SO2M	

(cont.)

**Figure 40**  
**Simple Types Used for Validation (cont.)**

<b>SimpleType Name</b>	<b>Used By</b>	<b>Base</b>	<b>Allow Null Values</b>	<b>Validation Patterns, Restrictions, and Values</b>	<b>Notes</b>
ExplanationType	SamplingTrainData/ SampleDamage Explanation	String	No	Minimum Length = 0 characters Maximum Length = 1000 characters	
FFactorType	HourlyOperatingData/ FcFactor  HourlyOperatingData/ FdFactor  HourlyOperatingData/ FwFactor	Decimal	Yes	Total Digits = 8, Decimal Places = 1	
FuelCarbonBurned Type	DailyFuelData/ FuelCarbonBurned	Decimal	Yes	Total Digits = 14, Decimal Places = 1	
FuelPeriodCode Type	LongTermFuelFlowData/ FuelFlowPeriodCode	String	Yes	A MJ	
FuelUsageTime Type	HourlyFuelFlowData/ FuelUsageTime	Decimal	No	Total Digits = 3, Decimal Places = 2	
GasTypeCodeType	DailyCalibrationData/ UpscaleGasTypeCode	String	No	Maximum Length = 255 characters	
GCVUnitsOf MeasureCodeType	LongTermFuelFlowData/ GCVUnitsOfMeasureCode	String	Yes	BTUGAL BTULB BTUSCF	
GrossCalorificValue Type	LongTermFuelFlowData/ GrossCalorificValue	Decimal	Yes	Total Digits = 10, Decimal Places = 1	
HourLoadType	HourlyOperatingData/ HourLoad  HourlyOperatingData/ MATSHourLoad	Integer	Yes	Total Digits = 6, Decimal Places = 0	
HourlyFuelFlow FuelCodeType	HourlyFuelFlowData/ FuelCode	String	No	BFG BUT CDG COG DGG DSL LFG LPG	

(cont.)

**Figure 40  
Simple Types Used for Validation (cont.)**

SimpleType Name	Used By	Base	Allow Null Values	Validation Patterns, Restrictions, and Values	Notes
HourlyFuelFlow FuelCodeType (cont.)		String (cont.)	No (cont.)	NNG OGS OIL OOL PDG PNG PRG PRP RFG SRG	
HourlyGFM ReadingType	HourlyGFMDData/ HourlyGFMReading	Decimal	Yes	Total Digits = 12, Decimal Places = 2	
HourlyOperating FuelCodeType	DailyFuelData/FuelCode  HourlyOperatingData/ FuelCode	String	Yes	BFG BUT C CDG COG CRF DGG DSL LFG LPG MIX NNG OGS OIL OOL OSF PDG PNG PRG PRP PRS PTC R RFG SRG TDF W WL	

(cont.)



**Figure 40**  
**Simple Types Used for Validation (cont.)**

<b>SimpleType Name</b>	<b>Used By</b>	<b>Base</b>	<b>Allow Null Values</b>	<b>Validation Patterns, Restrictions, and Values</b>	<b>Notes</b>
HourlyParameterFuelFlowParameterCodeType	HourlyParameterFuelFlowData/ParameterCode	String	No	CO2 DENSOIL FC GCV HI NOXR SO2 SO2R SULFUR	
HourlyParameterFuelFlowUnitsOfMeasureCodeType	HourlyParameterFuelFlowData/UnitsOfMeasureCode	String	Yes	BTUBBL BTUGAL BTUHSCF BTUKWH BTULB BTUM3 BTUSCF GRHSCF LBBBL LBGAL LBHR LBM3 LBMMBTU LBSCF MMBTUHR PCT SCFCBTU TNHR	
HourlySamplingRateType	HourlyGFMDData/AvgHourlySamplingRate	Decimal	Yes	Total Digits = 12, Decimal Places = 2	
HourlySFSRRatioType	HourlyGFMDData/HourlySFSRRatio	Decimal	Yes	Total Digits = 4, Decimal Places = 1	

(cont.)

**Figure 40**  
**Simple Types Used for Validation (cont.)**

SimpleType Name	Used By	Base	Allow Null Values	Validation Patterns, Restrictions, and Values	Notes
HourlyValueType	DerivedHourlyValue Data/AdjustedHourly Value  DerivedHourlyValue Data/UnadjustedHourly Value  MonitorHourlyValue Data/AdjustedHourly Value  MonitorHourlyValue Data/UnadjustedHourly Value	Decimal	Yes	Total Digits = 14, Decimal Places = 4	
IndicatorType	DailyCalibrationData/ OnLineOffLineIndicator  DailyCalibrationData/ UpscaleAPSIndicator  DailyCalibrationData/ ZeroAPSIndicator  SorbentTrapData/Absolute DifferenceIndicator  WeeklySystemIntegrity Data/ APSIndicator	String	Yes	0 1	
InjectionProtocol CodeType	DailyCalibrationData/ InjectionProtocolCode	String	Yes	HE HGO	
LoadRangeType	HourlyOperatingData/ LoadRange	Integer	Yes	Minimum Value (inclusive) = 0, Maximum Value (inclusive) = 20	
LoadUnitsOf MeasureCodeType	HourlyOperatingData/ LoadUnitsOfMeasureCode	String	Yes	KLBHR MMBTUHR MW	
LongTermFuelFlow UOMCodeType	LongTermFuelFlowData/ LongTermFuelFlow UOMCode	String	Yes	GAL LB SCF	
LongTermFuelFlow ValueType	LongTermFuelFlowData/ LongTermFuelFlowValue	Decimal	No	Total Digits = 10, Decimal Places = 0	

(cont.)

**Figure 40  
Simple Types Used for Validation (cont.)**

<b>SimpleType Name</b>	<b>Used By</b>	<b>Base</b>	<b>Allow Null Values</b>	<b>Validation Patterns, Restrictions, and Values</b>	<b>Notes</b>
MassFlowRateType	HourlyFuelFlowData/ MassFlowRate	Decimal	Yes	Total Digits = 11, Decimal Places = 1	
MATSDerived HourlyParameter CodeType	MATSDerivedHourly ValueData/ ParameterCode	String	No	HCLRE HCLRH HFRE HFRH HGRE HGRH SO2RE SO2RH	
MATSMonitor HourlyParameter CodeType	MATSMonitorHourly ValueData/ ParameterCode	String	No	HCLC HFC HGC	
MATSShutdown FlagType	HourlyOperatingData/ MATSShutdownFlag	String	Yes	D U	
MODCCodeType	DerivedHourlyValueData/ MODCCode  MATSDerivedHourly ValueData/ MODCCode  MATSMonitorHourly ValueData/ MODCCode  MonitorHourlyValueData/ MODCCode  SorbentTrapData/ MODCCode	String	Yes	01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26	

(cont.)

**Figure 40  
Simple Types Used for Validation (cont.)**

SimpleType Name	Used By	Base	Allow Null Values	Validation Patterns, Restrictions, and Values	Notes
MODCCodeType (cont.)		String (cont.)	Yes (cont.)	32 33 34 35 36 37 38 39 40 41 42 45 53 54 55	
MoistureBasisType	MonitorHourlyValueData/ MoistureBasis	String	Yes	D W	
MonitorHourlyParameterCodeType	MonitorHourlyValueData/ ParameterCode	String	No	CO2C FLOW H2O NOXC O2C SO2C	
OperatingConditionCodeType	DerivedHourlyValueData/ OperatingConditionCode  HourlyParameterFuelFlow Data/ OperatingConditionCode	String	Yes	A B C E M N P U W X Y Z	
OperatingTimeType	HourlyOperatingData/ OperatingTime	Decimal	No	Total Digits = 3, Decimal Places = 2	

(cont.)

**Figure 40**  
**Simple Types Used for Validation (cont.)**

<b>SimpleType Name</b>	<b>Used By</b>	<b>Base</b>	<b>Allow Null Values</b>	<b>Validation Patterns, Restrictions, and Values</b>	<b>Notes</b>
OptionalDateType	DailyCalibrationData/ ExpirationDate  DailyCalibrationData/ UpscaleInjectionDate  DailyCalibrationData/ ZeroInjectionDate	Date	Yes		Must be a date
OptionalFormula IdentifierType	DerivedHourlyValueData/ FormulaIdentifier  HourlyParameterFuelFlow Data/ FormulaIdentifier  MATSDerivedHourlyValu eData/ FormulaIdentifier	String	Yes	[A-Z0-9-]{1,3}	One to three character alphanumeric string; also allows hyphen (-)
OptionalHourType	DailyCalibrationData/ UpscaleInjectionHour  DailyCalibrationData/ ZeroInjectionHour	Integer	Yes	Minimum Value (inclusive) = 0, Maximum Value (inclusive) = 23	
OptionalIdentifier Type	DailyTestSummaryData/ ComponentID  DailyTestSummaryData/ MonitoringSystemID  DerivedHourlyValueData/ MonitoringSystemID  HourlyFuelFlowData/ MonitoringSystemID  HourlyParameterFuelFlow Data/MonitoringSystemID  MATSMonitorHourly ValueData/ ComponentID  MATSMonitorHourly ValueData/ MonitoringSystemID	String	Yes	[A-Z0-9]{1,3}	One to three character alphanumeric string

(cont.)

**Figure 40**  
**Simple Types Used for Validation (cont.)**

<b>SimpleType Name</b>	<b>Used By</b>	<b>Base</b>	<b>Allow Null Values</b>	<b>Validation Patterns, Restrictions, and Values</b>	<b>Notes</b>
OptionalIdentifier Type (cont.)	MonitorHourlyValueData/ ComponentID  MonitorHourlyValueData/ MonitoringSystemID	String (cont.)	Yes (cont.)	[A-Z0-9]{1,3} (cont.)	One to three character alphanumeric string (cont.)
OptionalMinute Type	DailyCalibrationData/ UpscaleInjectionMinute  DailyCalibrationData/ ZeroInjectionMinute  DailyTestSummaryData/ Minute	Integer	Yes	Minimum Value (inclusive) = 0, Maximum Value (inclusive) = 59	
ORISCodeType	Emissions/ ORISCode	Integer	No	Minimum Value (inclusive) = 1, Maximum Value (inclusive) = 999999	
PairedAgreement Type	SorbentTrapData/ PairedTrapAgreement	Decimal	Yes	Total Digits = 5, Decimal Places = 2	
ParameterValue ForFuelType	HourlyParameterFuelFlow Data/ParameterValueFor Fuel	Decimal	No	Total Digits = 13, Decimal Places = 5	
PercentType	DerivedHourlyValueData/ PercentAvailable  MATSMonitorHourly ValueData/ PercentAvailable  MonitorHourlyValueData/ PercentAvailable  SamplingTrainData/ PercentBreakthrough  SamplingTrainData/ PercentSpikeRecovery	Decimal	Yes	Total Digits = 4, Decimal Places = 1	
QuarterType	Emissions/ Quarter	String	No	1 2 3 4	

(cont.)

**Figure 40**  
**Simple Types Used for Validation (cont.)**

<b>SimpleType Name</b>	<b>Used By</b>	<b>Base</b>	<b>Allow Null Values</b>	<b>Validation Patterns, Restrictions, and Values</b>	<b>Notes</b>
ReferenceSFSR RatioType	SamplingTrainData/ ReferenceSFSRRatio	Decimal	Yes	Total Digits = 4, Decimal Places = 1	
ReportingYearType	Emissions/ Year	String	No	(20)\d\d	Year between 2000-2099 (inclusive)
RequiredDateType	DailyEmissionData/Date  DailyTestSummaryData/ Date  HourlyOperatingData/Date  SorbentTrapData/ BeginDate  SorbentTrapData/ EndDate  WeeklyTestSummaryData/ Date	Date	No		Must be a date
RequiredHourType	DailyTestSummaryData/ Hour  HourlyOperatingData/ Hour  SorbentTrapData/ BeginHour  SorbentTrapData/ EndHour  WeeklyTestSummaryData/ Hour	Integer	No	Minimum Value (inclusive) = 0, Maximum Value (inclusive) =23	

(cont.)

**Figure 40**  
**Simple Types Used for Validation (cont.)**

SimpleType Name	Used By	Base	Allow Null Values	Validation Patterns, Restrictions, and Values	Notes
RequiredIdentifier Type	HourlyGFMDData/ ComponentID  LongTermFuelFlowData/ MonitoringSystemID  SamplingTrainData/ ComponentID  SorbentTrapData/ MonitoringSystemID  WeeklyTestSummaryData/ ComponentID	String	No	[A-Z0-9]{1,3}	One to three character alphanumeric string
RequiredMinute Type	WeeklyTestSummaryData/ Minute	String	No	[A-Z0-9]{1,3}	One to three character alphanumeric string
RequiredStackPipe Type	DailyEmissionData/ StackPipeID  DailyTestSummaryData/ StackPipeID  HourlyOperatingData/ StackPipeID  LongTermFuelFlowData/ StackPipeID  SummaryValueData/ StackPipeID  SorbentTrapData/ StackPipeID  WeeklyTestSummaryData/ StackPipeID	String	No	(C c M m)(S s P p)[A-z0-9\-\]{1,4}	Three to six character string beginning with "CS," "CP," "MS," or "MP"; also allows hyphen (-)

(cont.)



**Figure 40**  
**Simple Types Used for Validation (cont.)**

SimpleType Name	Used By	Base	Allow Null Values	Validation Patterns, Restrictions, and Values	Notes
RequiredUnitType	DailyEmissionData/ UnitID  DailyTestSummaryData/ UnitID  HourlyOperatingData/ UnitID  LongTermFuelFlowData/ UnitID  SorbentTrapData/ UnitID  SummaryValueData/ UnitID  WeeklyTestSummaryData/ UnitID	String	No	[A-Z0-9 \-\*]{1,6}	One to six character alphanumeric string; also allows asterisk (*) and hyphen (-)
SamplingRateUOM CodeType	HourlyGFMDData/ SamplingRateUOM	String	Yes	CCHR CCMIN DSCMHR DSCMMIN LHR LMIN	
ScientificNotation Type	MATSDerivedHourly ValueData/ UnadjustedHourlyValue  MATSMonitorHourly ValueData/ UnadjustedHourlyValue  SamplingTrainData/ BTTrapHg  SamplingTrainData/ HgConcentration  SamplingTrainData/ MainTrapHg  SamplingTrainData/ SpikeReferenceValue	String	No	Minimum Length = 0 characters Maximum Length = 30 characters	

(cont.)

**Figure 40**  
**Simple Types Used for Validation (cont.)**

<b>SimpleType Name</b>	<b>Used By</b>	<b>Base</b>	<b>Allow Null Values</b>	<b>Validation Patterns, Restrictions, and Values</b>	<b>Notes</b>
ScientificNotation Type (cont.)	SamplingTrainData/ SpikeTrapHg  SorbentTrapData/ HgSystemConcentration	String (cont.)	No (cont.)	Minimum Length = 0 characters Maximum Length = 30 characters (cont.)	
SegmentNumber Type	DerivedHourlyValueData/ SegmentNumber  HourlyParameterFuelFlow Data/ SegmentNumber	Integer	Yes		Must be an integer
SODMassCode Type	HourlyFuelFlowData/ SourceOfDataMassCode	String	Yes	0 1 2 3 4 5 6 9	
SODVolumetric CodeType	HourlyFuelFlowData/ SourceOfDataVolumetric Code	String	Yes	0 1 3 4 5 6 9	
SorbentTrapAPS CodeType	SorbentTrapData/ APSCode	String	Yes	RATA	
SorbentTrapSN Type	SamplingTrainData/ SorbentTrapSN	String	No	Minimum Length = 1 character, Maximum Length = 20 characters	
SpanScaleCode Type	DailyTestSummaryData/ SpanScaleCode  WeeklyTestSummaryData/ SpanScaleCode	String	Yes	H L	
Submission CommentType	Emissions/ Submission Comment	String	No	Maximum Length = 3,500 characters	

(cont.)

**Figure 40**  
**Simple Types Used for Validation (cont.)**

<b>SimpleType Name</b>	<b>Used By</b>	<b>Base</b>	<b>Allow Null Values</b>	<b>Validation Patterns, Restrictions, and Values</b>	<b>Notes</b>
SulfurSampleType CodeType	HourlyParameterFuelFlow Data/ SampleTypeCode	String	Yes	0 1 2 3 4 5 6 7 8 10	
SummaryValue ParameterCode Type	SummaryValueData/ ParameterCode	String	No	BCO2 CO2M HIT NOXM NOXR OPHOURS OPTIME SO2M	
SummaryValue TotalType	SummaryValueData/ CurrentReportingPeriod Total  SummaryValueData/ OzoneSeasonToDate Total  SummaryValueData/ YearToDateTotal	Decimal	Yes	Total Digits = 13, Decimal Places = 3	
SystemIntegrity ErrorType	WeeklySystemIntegrity Data/ SystemIntegrityError	Decimal	Yes	Total Digits = 5, Decimal Places = 1	
TestResultCode Type	DailyTestSummaryData/ TestResultCode  SamplingTrainData/ PostLeakCheckResultCode  SamplingTrainData/ SamplingRatioCheck ResultCode  WeeklyTestSummaryData/ TestResultCode	String	Yes	ABORTED FAILED INC PASSAPS PASSED	

(cont.)

**Figure 40**  
**Simple Types Used for Validation (cont.)**

SimpleType Name	Used By	Base	Allow Null Values	Validation Patterns, Restrictions, and Values	Notes
TestTypeCodeType	DailyTestSummaryData/ TestTypeCode  WeeklyTestSummaryData/ TestTypeCode	String	No	DAYCAL HGSII INTCHK PEMSCAL	
TotalCarbonBurned Type	DailyEmissionData/ TotalCarbonBurned	Decimal	Yes	Total Digits = 14, Decimal Places = 1	
TotalHeatInput Type	LongTermFuelFlowData/ TotalHeatInput	Decimal	Yes	Total Digits = 10, Decimal Places = 0	
TotalSample VolumeDSCMType	SamplingTrainData/ TotalSampleVolume DSCM	Float	Yes	Integers = 1 to 10, Decimal Places = 2 to 4	
TrainQAStatusCode Type	SamplingTrainData/ TrainQAStatusCode	String	No	EXPIRED FAILED INC LOST PASSED UNCERTAIN	
UpscaleGasCode Type	DailyCalibrationData/ UpscaleGasCode  WeeklySystemIntegrity Data/ GasLevelCode	String	Yes	HIGH MID	
VendorIdentifier Type	DailyCalibrationData/ VendorIdentifier	String	No	([A-Z0-9]{1,8})*/	One to eight character alphanumeric string
VersionType	Emissions/ Version	String	Yes	Maximum Length = 10 characters	
VolumetricFlow RateType	HourlyFuelFlowData/ VolumetricFlowRate	Decimal	Yes	Total Digits = 11, Decimal Places = 1	
VolumetricUnits OfMeasureType	HourlyFuelFlowData/ VolumetricUnitsOf MeasureCode	String	Yes	BBLHR GALHR HSCF M3HR SCFH	