DRAFT
ECMPS
Check Specifications

United States Environmental Protection Agency
Office of Air and Radiation
Clean Air Markets Division
Ariel Rios Building
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September 14, 2016

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Check Category:

Air Emission Testing

Check Code: AETB-1

Check Name: QI Last Name Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the Air Emission Testing record.

If the QILastName is null,

return result A.

else if the first letter of QILastName is not an alphabetic character,

return result B.

else if any character of QILastName is not an alphabetic character, a period, a comma, a hyphen, or a space,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	The value [value] in the [fieldname] for [key] does not have the expected format. Please confirm that this value is reported correctly.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Air Emission Testing Evaluation
2	QA Test Evaluation Report --- Appendix E Air Emission Testing Data
3	QA Test Evaluation Report --- RATA Air Emission Testing Data
4	QA Test Evaluation Report --- Unit Default Air Emission Testing Data

Check Code: AETB-2

Check Name: QI First Name Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the Air Emission Testing record.

If the QIFirstName is null,

return result A.

else if the first letter of QIFirstName is not an alphabetic character,

return result B.

else if any character of QIFirstName is not an alphabetic character, a period, a comma, a hyphen, or a space,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	The value [value] in the [fieldname] for [key] does not have the expected format. Please confirm that this value is reported correctly.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Air Emission Testing Evaluation
2	QA Test Evaluation Report --- Appendix E Air Emission Testing Data
3	QA Test Evaluation Report --- RATA Air Emission Testing Data
4	QA Test Evaluation Report --- Unit Default Air Emission Testing Data

Check Code: AETB-3

Check Name: QI Middle Initial Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the Air Emission Testing record.

If the QIMiddleInitial is not null and is not an alphabetic character,

return result A.

Results:

Result	Description	Severity
A	The value [value] in the [fieldname] for [key] does not have the expected format. Please confirm that this value is reported correctly.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Air Emission Testing Evaluation
2	QA Test Evaluation Report --- Appendix E Air Emission Testing Data
3	QA Test Evaluation Report --- RATA Air Emission Testing Data
4	QA Test Evaluation Report --- Unit Default Air Emission Testing Data

Check Code: AETB-4

Check Name: AETB Name

Related Former Checks:

Applicability: General Check

Specifications:

For the Air Emission Testing record:

If AETBName is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Air Emission Testing Evaluation
2	QA Test Evaluation Report --- Appendix E Air Emission Testing Data
3	QA Test Evaluation Report --- RATA Air Emission Testing Data
4	QA Test Evaluation Report --- Unit Default Air Emission Testing Data

Check Code: AETB-5

Check Name: AETB Phone Number

Related Former Checks:

Applicability: General Check

Specifications:

For the Air Emission Testing record:

If AETBPhoneNumber is null,

return result A.

else if AETBPhoneNumber does not have the format 999-999-9999,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the [fieldname] for [key] does not have the expected format. Please confirm that this value is reported correctly.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Air Emission Testing Evaluation
2	QA Test Evaluation Report --- Appendix E Air Emission Testing Data
3	QA Test Evaluation Report --- RATA Air Emission Testing Data
4	QA Test Evaluation Report --- Unit Default Air Emission Testing Data

Check Code: AETB-6

Check Name: AETB Email Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the Air Emission Testing record:

If the AETBEmail is null,

return result A.

else if the AETBEmail does not conform to the format @.

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the [fieldname] for [key] does not have the expected format. Please confirm that this value is reported correctly.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Air Emission Testing Evaluation
2	QA Test Evaluation Report --- Appendix E Air Emission Testing Data
3	QA Test Evaluation Report --- RATA Air Emission Testing Data
4	QA Test Evaluation Report --- Unit Default Air Emission Testing Data

Check Code: AETB-7

Check Name: Provider Name

Related Former Checks:

Applicability: General Check

Specifications:

For the Air Emission Testing record:

If ProviderName is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Air Emission Testing Evaluation
2	QA Test Evaluation Report --- Appendix E Air Emission Testing Data
3	QA Test Evaluation Report --- RATA Air Emission Testing Data
4	QA Test Evaluation Report --- Unit Default Air Emission Testing Data

Check Code: AETB-8

Check Name: Provider Email Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the Air Emission Testing record:

If the ProviderEmail is null,

return result A.

else if the ProviderEmail does not conform to the format @.

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the [fieldname] for [key] does not have the expected format. Please confirm that this value is reported correctly.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Air Emission Testing Evaluation
2	QA Test Evaluation Report --- Appendix E Air Emission Testing Data
3	QA Test Evaluation Report --- RATA Air Emission Testing Data
4	QA Test Evaluation Report --- Unit Default Air Emission Testing Data

Check Code: AETB-9

Check Name: Exam Date Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the Air Emission Testing record:

If the ExamDate is null,

return result A.

else if the ExamDate is after the BeginDate of the current test,

return result B.

else if the ExamDate is more than 5 years prior to the BeginDate of the current test,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported an ExamDate that is after the date of the test for [key].	Critical Error Level 1
C	You reported an ExamDate that is more than five years prior to the date of the test for [key]. AETB exams expire in five years.	Critical Error Level 2

Usage:

1	QA and Certification Data Entry Screen Evaluation Air Emission Testing Evaluation
2	QA Test Evaluation Report --- Appendix E Air Emission Testing Data
3	QA Test Evaluation Report --- RATA Air Emission Testing Data
4	QA Test Evaluation Report --- Unit Default Air Emission Testing Data

Check Code: AETB-10

Check Name: Required Air Emission Testing Record Check

Related Former Checks:

Applicability: General Check

Specifications:

For the current test:

Locate an ***Air Emission Testing*** record for the test.

If Monitoring System Type Code is in the list ("HG", "HCL", "HF", and "ST")

If ***Air Emission Testing*** record is found,

return result B.

else

If ***Air Emission Testing*** record is not found,

Locate ***System Parameter*** lookup table record where Sys_Param_Name = 'PGVP_AETB_RULE_DATE'.

If the BeginDate of the current test is on or after the ***System Parameter*** .Param_Value1 + 1 year,

return result A.

Results:

Result	Description	Severity
A	You did not report any valid Air Emission Testing records for this test. This information is required by the Air Emission Testing reporting rule.	Critical Error Level 2
B	Air Emissions Testing Records are not required for Hg, HCl, HF, or ST tests.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Appendix E Test (Pass 2)
2	QA Test Evaluation Report RATA (Pass 2)
3	QA Test Evaluation Report Unit Default Test (Pass 2)

Check Category:

Appendix E Test

Check Code: APPE-1

Check Name: Initialize Appendix E Test Variables

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E test:

Set Last APPE Maximum HI Rate, APPE Maximum NOx Rate, APPE Level Count, and APPE Last Run Number to 0.

Set APPE HI Consistent with Operating Level to true.

Set APPE Gas and Oil Systems Consistent, APPE Run Sequence Valid, and Calculate APPE Segments to true.

Set APPE Run Sequence Consecutive to false.

Set APPE Run Sequence to null.

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Gas Evaluation
2	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Oil Evaluation
3	QA and Certification Data Entry Screen Evaluation Appendix E Test Run Evaluation
4	QA and Certification Data Entry Screen Evaluation Appendix E Test Summary Evaluation
5	QA Test Evaluation Report Appendix E Test (Pass 1)

Check Code: APPE-2

Check Name: System Type Valid

Related Former Checks: APPE-3

Applicability: Appendix E Check

Specifications:

For the Appendix E test:

If the MonitoringSystemID is null,

set APPE System Valid to false, and return result A.

Otherwise,

If the SystemTypeCode of the associated system is equal to "NOXE",

set APPE System Fuel Code to the FuelCode of the associated system, and set APPE System Valid to true.

Otherwise,

set APPE System Valid to false, and return result B.

If APPE System is invalid, do not perform checks in the other Appendix E categories. Set the calculated values in the associated Appendix E Summary, Appendix E Run, Appendix E Heat Input from Gas, and Appendix E Heat Input from Oil records to null.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	According to your monitoring plan, the Appendix E test was not conducted for a NOXE system.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Appendix E Test (Pass 1)

Check Code: APPE-3

Check Name: Appendix E Test Reason Code Valid

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E test:

If the TestReasonCode is null,

If EndDate is on or after ECMPS MP Begin Date,

return result A.

Otherwise,

return result B.

If the TestReasonCode is not equal to "INITIAL", "QA", or "RECERT",

Locate the TestReasonCode is not in the Test Reason Code Lookup table,

If not found,

return result C.

If found,

return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You did not provide [fieldname] for [key]. This information will be required for ECMPS submissions.	Non-Critical Error
C	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
D	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Evaluation
2	QA Test Evaluation Report Appendix E Test (Pass 1)
	Condition: APPE System Valid*Equals* true

Check Code: APPE-4

Check Name: Identification of Previously Reported Test or Test Number for Appendix E Test

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For an Appendix E test with valid end time and a non-null MonitoringSystemID:

Set Extra APPE Test to false.

Locate another Appendix E test for the system where the EndDate, EndHour, and EndMinute are equal to the EndDate, EndHour, and EndMinute of the current TestSummary record.

If found,

set Extra APPE Test to true, and return result A.

Otherwise,

Locate an unassociated QASupp record for the location where the TestType Code is equal to "APPE", and the MonitoringSystemID, EndDate, EndHour, and EndMinute is equal to MonitoringSystemID, EndDate, EndHour, and EndMinute of the current TestSummary record, and the TestNum is not equal to the TestNumber in the current TestSummary record,

If found,

set Extra APPE Test to true, and return result A.

Otherwise,

Locate a QASupp record for the location where the TestTypeCode is equal to "APPE" and the TestNum equal to the TestNumber in the current TestSummary record.

If found,

If CAN_SUBMIT in the QA Supp record is equal to "N",

If this is an unassociated QASupp record, and the MonitoringSystemID, EndDate, EndHour, and EndMinute in the QASupp record is not equal to MonitoringSystemID, EndDate, EndHour, or EndMinute of the current TestSummary record,

return result B.

Otherwise,

return result C.

Results:

Result	Description	Severity
A	Based on the information in this record, this test has already been submitted with a different test number, or the Client Tool database already contains the same test with a different test number. This test cannot be submitted.	Fatal
B	Another [testtype] with this test number has already been submitted for this location. This test cannot be submitted with this test number. If this is a different test, you should assign it a unique test number.	Fatal
C	This test has already been submitted and will not be resubmitted. If you wish to resubmit this test, please contact EPA for approval.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Evaluation *Condition:* Duplicate Appendix E Test *Equals* false
2	QA Test Evaluation Report Appendix E Test (Pass 1)

Check Code: APPE-5

Check Name: Determine Run Sequence

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E test:

If there are no Appendix E Run records,

Set APPE Run Times Valid to false.

Otherwise,

Set APPE Run Times Valid to true.

Set tempLevelList to null.

Proceed through the Appendix E Run records for the test in run BeginDate/Hour/Minute order.

If the associated OperatingLevelForRun is not in the list tempLevelList.

append OperatingLevelForRun to tempLevelList.

If this is the first run of the test,

Set Simultaneous APPE Runs to false.

If the BeginDate is null, or the BeginHour is null or not between 0 and 23, or the BeginMinute is null or not between 0 and 59,

set APPE Run Times Valid to false.

Otherwise,

Set the APPE Test Begin Date, Begin Hour, and Begin Minute to the BeginDate, BeginHour, and BeginMinute.

If the EndDate is null, or the EndHour is null or not between 0 and 23, or the EndMinute is null or not between 0 and 59,

set APPE Run Times Valid to false.

Otherwise,

Set the APPE Test End Date, End Hour, and End Minute to the EndDate, EndHour, and EndMinute.

Otherwise,

If APPE Run Times Valid is equal to true, the BeginDate is not null, the BeginHour is between 0 and 23, and the BeginMinute is between 0 and 59,

If the BeginDate, BeginHour, and BeginMinute is prior to the EndDate, EndHour, and EndMinute of the previous run,

set Simultaneous APPE Runs to true.

If the EndDate is null, or the EndHour is null or not between 0 and 23, or the EndMinute is null or not between 0 and 59,

set APPE Run Times Valid to false.

Otherwise,

Set the APPE Test End Date, End Hour, and End Minute to the EndDate, EndHour, and EndMinute.

Set APPE NOx Rate Array and APPE HI Rate Array as null decimal arrays with a dimension equal to the number of items in tempLevelList + 1.

.

Usage:

1 QA Test Evaluation Report Appendix E Test (Pass 1)

Condition: APPE System Valid*Equals* true

Check Code: APPE-6

Check Name: Fuel System Consistency Check

Related Former Checks: APPE-25

Applicability: Appendix E Check

Specifications:

For the Appendix E test:

Set APPE System List, and APPE Systems with Inconsistent UOM to null.

Sort Appendix E Heat Input for Oil records in fuelflow MonitoringSystemID order.

For each unique fuelflow MonitoringSystemID:

Append the MonitoringSystemID to the APPE System List

If the OilVolumeUnitsOfMeasure in all the records for the system are not equal,

append MonitoringSystemID to APPE Systems with Inconsistent UOM.

Sort Appendix E Heat Input for Gas records in fuelflow MonitoringSystemID order.

For each unique fuelflow MonitoringSystemID:

Append the MonitoringSystemID to the APPE System List.

If APPE Systems with Inconsistent UOM is not null,

return result A.

Results:

Result	Description	Severity
A	The OilVolumeUnitsOfMeasure in the oil flow records for MonitoringSystemID(s) [system] are inconsistent.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Appendix E Test (Pass 1) *Condition:* APPE System Valid*Equals* true

Check Code: APPE-7

Check Name: Simultaneous Runs

Related Former Checks: APPE-4

Applicability: Appendix E Check

Specifications:

For the Appendix E test with valid run times:

If Simultaneous APPE Runs is equal to true,

return result A.

Results:

Result	Description	Severity
A	One or more runs in this test have overlapping run times.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Appendix E Test (Pass 1)

Check Code: APPE-8

Check Name: Out of Sequence or Missing Runs

Related Former Checks: APPE-5

Applicability: Appendix E Check

Specifications:

For the Appendix E test with valid run times:

If APPE Run Sequence Valid is equal to true,

If APPE Run Sequence Consecutive is equal to true,

If the RunNumbers in the APPE Run Sequence do not begin with 1 or are not consecutive,

return result A.

Otherwise,

return result A.

Results:

Result	Description	Severity
A	There are missing or non-sequential OperatingLevelForRun and RunNumbers in this test. Run numbers must begin with 1 and be consecutive within the entire test or within each operating level. The lowest OperatingLevelForRun must be equal to 1.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Appendix E Test (Pass 2)

Check Code: APPE-9

Check Name: Concurrent Appendix E Tests

Related Former Checks: APPE-6

Applicability: Appendix E Check

Specifications:

For an Appendix E test with consistent dates:

Locate another Appendix E test for the system where the BeginDate, BeginHour, and BeginMinute is before the EndDate, EndHour, and EndMinute of the current test, and the EndDate, EndHour, and EndMinute is after the BeginDate, BeginHour, and BeginMinute of the current test.

If found,

return result A.

If not found,

Locate a n unassociated QA Supp record for the location where the TestTypeCode is equal to "APPE"; the MonitoringSystemID is equal to MonitoringSystemID of the current test; the BeginDate, BeginHour, and BeginMinute is before the EndDate, EndHour, and EndMinute of the current test, and the EndDate, EndHour, and EndMinute is after the BeginDate, BeginHour, and BeginMinute of the current record; and the TestNum is not equal to the TestNumber in the current test.

If found,

return result A.

Results:

Result	Description	Severity
A	The test was conducted at the same time as another Appendix E test for MonitoringSystemID [system].	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Appendix E Test (Pass 1)
	Condition: Extra APPE Test *Equals* false

Check Code: APPE-10

Check Name: Appendix E Test Begin Time Consistent with Run Times

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E test with valid begin time and run times:

If BeginDate, BeginHour, and BeginMinute does not equal the APPE Test Begin Date, Begin Hour, and Begin Minute,

return result A.

Results:

Result	Description	Severity
A	You reported a test BeginDate, BeginHour, and BeginMinute that is not the same as the BeginDate, BeginHour, and BeginMinute of the first run in the Appendix E test.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Appendix E Test (Pass 1)

Check Code: APPE-11

Check Name: Appendix E Test End Time Consistent with Run Times

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E test with valid end time and run times:

If EndDate, EndHour, and EndMinute does not equal the APPE Test End Date, End Hour, and End Minute,

return result A.

Results:

Result	Description	Severity
A	You reported an EndDate, EndHour, and EndMinute for the Appendix E test that is not the same as the EndDate, EndHour, and EndMinute of the last run in the test.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Appendix E Test (Pass 1)

Check Code: APPE-12

Check Name: Initialize Variables for Operating Level

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Test Summary record:

Set APPE Level Maximum HI Rate, APPE Level Sum HI Rate, APPE Level Sum Reference Value, and APPE Level Run Count to 0.

Add 1 to APPE Level Count.

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Gas Evaluation
2	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Oil Evaluation
3	QA and Certification Data Entry Screen Evaluation Appendix E Test Run Evaluation
4	QA and Certification Data Entry Screen Evaluation Appendix E Test Summary Evaluation
5	QA Test Evaluation Report --- Appendix E Test Summary (Pass 1)

Check Code: APPE-13

Check Name: Operating Level for Run Valid

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Test Summary record:

If the OperatingLevelforRun is null,

return result A.

If the OperatingLevelforRun is not between 1 and 99,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Gas Evaluation
2	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Oil Evaluation
3	QA and Certification Data Entry Screen Evaluation Appendix E Test Run Evaluation
4	QA and Certification Data Entry Screen Evaluation Appendix E Test Summary Evaluation
5	QA Test Evaluation Report --- Appendix E Test Summary (Pass 1)

Check Code: APPE-14

Check Name: Mean Reference Value for Level Valid

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Test summary record:

If the MeanReferenceValue is null,

set APPE Level Sum Reference Value to null, return result A.

If the MeanReferenceValue is less than 0,

set APPE Level Sum Reference Value to null, return result B.

Otherwise,

If MeanReferenceValue is greater than 3,

return result C.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Summary Evaluation
2	QA Test Evaluation Report --- Appendix E Test Summary (Pass 1)

Check Code: APPE-15

Check Name: F-Factor Valid

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Test summary record:

If FFactor is null,

return result A.

If FFactor is less than 1000 or greater than 22000,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Summary Evaluation
2	QA Test Evaluation Report --- Appendix E Test Summary (Pass 1)

Check Code: APPE-16

Check Name: Average Hourly Heat Input for Level Valid

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Test Summary record:

If the AverageHourlyHeatInputRate is null,

return result A.

If the AverageHourlyHeatInputRate is less than 0,

return result B.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Summary Evaluation
2	QA Test Evaluation Report --- Appendix E Test Summary (Pass 1)

Check Code: APPE-17

Check Name: Initialize Variables for Run

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Test Run:

Set APPE Calc Run Total HI and APPE Run System Count to 0.

Add 1 to APPE Level Run Count.

If RunNumber is not null,

If APPE Level Run Count is equal to 1,

If APPE Level Count is equal to 1, and the associated OperatingLevelForRun is not equal to 1,

set APPE Run Sequence Valid to false.

Otherwise,

If RunNumber is not equal to 1,

set APPE Run Sequence Consecutive to true.

Otherwise,

If RunNumber - APPE Last Run Number is not equal to 1,

set APPE Run Sequence Valid to false.

Set APPE Last Run Number to RunNumber.

Append RunNumber to APPE Run Sequence in numeric order.

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Gas Evaluation
2	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Oil Evaluation
3	QA Test Evaluation Report ------ Appendix E Test Run (Pass 1)

Check Code: APPE-18

Check Name: Run Number Valid

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Test Run record:

If the RunNumber is null,

return result A.

If the RunNumber is less than or equal to 0,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Gas Evaluation
2	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Oil Evaluation
3	QA and Certification Data Entry Screen Evaluation Appendix E Test Run Evaluation
4	QA Test Evaluation Report ------ Appendix E Test Run (Pass 1)

Check Code: APPE-19

Check Name: Run Begin Time Valid

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E run:

If the BeginDate is null, or the BeginHour is null or not between 0 and 23, or the BeginMinute is null or not between 0 and 59.

return result A.

Results:

Result	Description	Severity
A	The BeginDate, BeginHour, and/or BeginMinute for [key] is invalid.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Run Evaluation
2	QA Test Evaluation Report ------ Appendix E Test Run (Pass 1)

Check Code: APPE-20

Check Name: Run End Time Valid

Related Former Checks: APPE-13

Applicability: Appendix E Check

Specifications:

For the Appendix E run:

set APPE Run Length to null.

If the EndDate is null, or the EndHour is null or not between 0 and 23, or the EndMinute is null or not between 0 and 59,

return result A.

Otherwise,

If the BeginDate is not null, the BeginHour is between 0 and 23, and the BeginMinute is between 0 and 59.

If the BeginDate, BeginHour, and BeginMinute is on or after the EndDate, EndHour, and EndMinute,

return result B.

Otherwise,

Calculate APPE Run Length as the difference in minutes between the BeginDate/Hour/Minute and the EndDate/Hour/Minute.

If APPE Run Length is less than 8,

return result C.

Results:

Result	Description	Severity
A	The EndDate, EndHour, and/or EndMinute for [key] are invalid.	Critical Error Level 1
B	The begin time was later than the end time for [key].	Critical Error Level 1
C	According to the Begin and End times for [key], the run was less than 8 minutes. Each run must be at least 8 minutes in duration.	Non-Critical Error

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Run Evaluation
2	QA Test Evaluation Report ------ Appendix E Test Run (Pass 1)

Check Code: APPE-21

Check Name: Response Time Valid

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Test Run Data check:

If the ResponseTime is not null,

If the ResponseTime is not between 0 and 800,

return result A.

Results:

Result	Description	Severity
A	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Run Evaluation
2	QA Test Evaluation Report ------ Appendix E Test Run (Pass 1)

Check Code: APPE-22

Check Name: Reference Value for Run Valid

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Test Run Data check:

If the ReferenceValue is null,

set APPE Level Sum Reference Value to -1, and return result A.

If the ReferenceValue is less than 0,

set APPE Level Sum Reference Value to -1, and return result B.

Otherwise,

If APPE Level Sum Reference Value is greater than or equal to 0,

add ReferenceValue to APPE Level Sum Reference Value.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Run Evaluation
2	QA Test Evaluation Report ------ Appendix E Test Run (Pass 1)

Check Code: APPE-23

Check Name: Hourly Heat Input Rate for Run Valid

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Test run:

If the HourlyHeatInputRate is null,

return result A.

If the HourlyHeatInputRate is less than or equal to 0,

return result B.

If the HourlyHeatInputRate is greater than APPE Level Maximum HI Rate,

set APPE Level Maximum HI Rate to HourlyHeatInputRate.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Run Evaluation
2	QA Test Evaluation Report ------ Appendix E Test Run (Pass 1)

Check Code: APPE-24

Check Name: Total Heat Input for Run Valid

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Test Run Data check:

If the TotalHeatInput is null,

return result A.

If the TotalHeatInput is less than or equal to 0,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Run Evaluation
2	QA Test Evaluation Report ------ Appendix E Test Run (Pass 1)

Check Code: APPE-25

Check Name: Determine Oil System Type

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Oil record:

Set APPE Oil System Type to null.

Add 1 to APPE Run System Count.

If the MonitoringSystemID is null,

return result A.

Otherwise,

Locate the Monitor System record for the location where the MonitoringSystemID is equal to the MonitoringSystemID in the current record.

Set APPE Oil System Type to the SystemTypeCode in the retrieved record.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Oil Evaluation
2	QA Test Evaluation Report --------- Appendix E Heat Input from Oil

Check Code: APPE-26

Check Name: Volumetric Oil Flow Valid

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Oil record:

If OilVolume is null, and APPE Oil System Type is equal to "OILV",

return result A.

If APPE Oil System Type is equal to "OILM", and either OilVolume or OilVolumeUnitsOfMeasureCode is not null,

return result B.

If OilVolume is less than or equal to 0,

return result C.

Results:

Result	Description	Severity
A	You did not report a value for [fieldname] in the oil flow record for [key]. You must report a value in this field when you are using an OILV system.	Critical Error Level 1
B	You reported a value for [fieldnames] in the oil flow record for [key]. You must not report a value in this field if you are using an OILM system.	Critical Error Level 1
C	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Oil Evaluation
2	QA Test Evaluation Report --------- Appendix E Heat Input from Oil

Check Code: APPE-27

Check Name: Volumetric Oil Units of Measure Valid

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Oil record:

Set APPE Oil Density UOM and APPE Oil GCV UOM to null.

If OilVolumeUnitsOfMeasureCode is null,

If APPE Oil System Type is equal to "OILV",

return result A.

Otherwise,

Locate a record in the Oil Volume UOM to Density UOM to GCV UOM cross-check table where the OilVolumeUOM is equal to the OilVolumeUnitsOfMeasureCode in the current record.

If not found,

return result B.

Otherwise,

set APPE Oil Density UOM to the OilDensityUOM in the cross-check record.

set APPE Oil GCV UOM to the OilGCVUOM in the cross-check record.

Results:

Result	Description	Severity
A	You did not report a value for [fieldname] in the oil flow record for [key]. You must report a value in this field when you are using an OILV system.	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Oil Evaluation
2	QA Test Evaluation Report --------- Appendix E Heat Input from Oil

Check Code: APPE-28

Check Name: Oil Density Units of Measure Valid

Related Former Checks: APPE-30

Applicability: Appendix E Check

Specifications:

For the Appendix E Oil record:

Set APPE Oil Density Minimum Value and APPE Oil Density Maximum Value to null.

Set APPE Oil Density UOM Valid to false.

If OilDensityUnitsOfMeasureCode is null,

If APPE Oil System Type is equal to "OILV" and OilDensity is not null,

return result A.

Otherwise,

Locate a record in the Parameter to Units Of Measure Lookup Table where the ParameterCode is equal to "DENSOIL" and the UnitsOfMeasure is equal to the OilDensityUnitsOfMeasureCode in the current record.

If not found,

return result B.

Otherwise,

If APPE Oil Density UOM is not null,

If OilDensityUnitsOfMeasureCode is not equal to the APPE Oil Density UOM,

return result C.

Otherwise,

set APPE Oil Density UOM Valid to true.

set APPE Oil Density Minimum Value to Min Value in the lookup table record.

set APPE Oil Density Maximum Value to Max Value in the lookup table record.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1
C	The [fieldname] is inconsistent with the OilVolumeUnitsOfMeasureCode for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Oil Evaluation
2	QA Test Evaluation Report --------- Appendix E Heat Input from Oil

Check Code: APPE-29

Check Name: Oil Density Valid

Related Former Checks: APPE-31C

Applicability: Appendix E Check

Specifications:

For the Appendix E Oil record:

If APPE Oil System Type is equal to "OILM", and either OilDensity or OilDensityUnitsOfMeasureCode is not null,

return result A.

If OilDensity is null,

If APPE Oil System Type is "OILV" and OilMass is not null,

return result B.

If OilDensity is not null,

If OilDensity is less than or equal to 0,

return result C.

If APPE Oil Density Minimum Value is not null,

If the OilDensity is less than the APPE Oil Density Minimum Value,

return result D.

If APPE Oil Density Maximum Value is not null,

If the OilDensity is greater than the APPE Oil Density Maximum Value,

return result D.

Results:

Result	Description	Severity
A	You reported a value for [fieldnames] in the oil flow record for [key]. You must not report a value in this field if you are using an OILM system.	Critical Error Level 1
B	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
C	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
D	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Oil Evaluation
2	QA Test Evaluation Report --------- Appendix E Heat Input from Oil

Check Code: APPE-30

Check Name: Mass Oil Flow Valid

Related Former Checks: APPE-31B/D

Applicability: Appendix E Check

Specifications:

For the Appendix E Oil record:

Set APPE Calc Oil Mass to null.

If OilMass is null,

If APPE System Type is equal to "OILM",

return result A.

Otherwise,

If OilMass is less than or equal to 0,

return result B.

If APPE System Type is equal to "OILV", and APPE Oil Density UOM Valid is true,

If OilVolume and OilDensity are greater than 0,

Calculate APPE Calc Oil Mass = OilVolume * OilDensity, and round to 1 decimal place.

If OilMass is not equal to APPE Calc Oil Mass,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "APPE" and the FieldDescription is equal to "OilMass".

If the absolute value of the difference between OilMass and APPE Calc Oil Mass is greater than the Tolerance in the cross-check record,

return result C.

Otherwise,

set APPE Calc Oil Mass to OilMass.

Results:

Result	Description	Severity
A	You did not report a value for [fieldname] in the oil flow record for [key]. You must report a value for [fieldname] when you are using an OILM system.	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
C	The OilMass recalculated from the OilVolume and OilDensity reported in the oil flow record for [key] does not equal the reported value.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Oil Evaluation
2	QA Test Evaluation Report --------- Appendix E Heat Input from Oil

Check Code: APPE-31

Check Name: Oil GCV Units of Measure Valid

Related Former Checks: APPE-29

Applicability: Appendix E Check

Specifications:

For the Appendix E Oil record:

Set APPE Oil GCV Minimum Value and APPE Oil GCV Maximum Value to null.

Set APPE Oil GCV UOM Valid to false.

If OilGCVUnitsOfMeasureCode is null,

return result A.

Otherwise,

If OilMass is not null,

If OilGCVUnitsOfMeasureCode is not equal to "BTULB",

return result B.

Otherwise,

Locate the record in the Parameter to Units Of Measure Lookup Table where the ParameterCode is equal to "GCV" and the UnitsOfMeasure is equal to the "BTULB".

set APPE Oil GCV UOM Valid to true.

set APPE Oil GCV Minimum Value to Min Value in the lookup table record.

set APPE Oil GCV Maximum Value to Max Value in the lookup table record.

Otherwise,

Locate a record in the Parameter to Units Of Measure Lookup Table where the ParameterCode is equal to "GCV" and the UnitsOfMeasure is equal to the OilGCVUnitsOfMeasureCode in the current record.

If not found,

return result B.

Otherwise,

If APPE Oil GCV UOM is not null,

If OilGCVUnitsOfMeasureCode is not equal to the APPE Oil GCV UOM,

return result C.

Otherwise,

set APPE Oil GCV UOM Valid to true.

set APPE Oil GCV Minimum Value to Min Value in the lookup table record.

set APPE Oil GCV Maximum Value to Max Value in the lookup table record.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The OilGCVUnitsOfMeasureCode in the oil flow record for [key] is not valid. You must report GCV in BTULB when you report a value for OilMass.	Critical Error Level 1
C	The [fieldname] is inconsistent with the OilVolumeUnitsOfMeasureCode for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Oil Evaluation
2	QA Test Evaluation Report --------- Appendix E Heat Input from Oil

Check Code: APPE-32

Check Name: Oil GCV Valid

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Oil record:

If OilGCV is null,

return result A.

Otherwise,

If OilGCV is less than or equal to 0,

return result B.

If APPE Oil GCV Minimum Value is not null,

If the OilGCV is less than the APPE Oil GCV Minimum Value,

return result C.

If APPE Oil GCV Maximum Value is not null,

If the OilGCV is greater than the APPE Oil GCV Maximum Value,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
C	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Oil Evaluation
2	QA Test Evaluation Report --------- Appendix E Heat Input from Oil

Check Code: APPE-33

Check Name: Heat Input from Oil Valid

Related Former Checks: APPE-32

Applicability: Appendix E Check

Specifications:

For the Appendix E Oil record:

Set APPE Calc Oil Heat Input to null.

If APPE GCV UOM Valid is true and OilGCV is greater than 0,

If APPE Calc Oil Mass is not null,

Calculate APPE Calc Oil Heat Input = APPE Calc Oil Mass * OilGCV / 1000000, and round the result to 1 decimal place.

Otherwise,

If OilMass is greater than 0,

Calculate APPE Calc Oil Heat Input = OilMass * OilGCV / 1000000, and round the result to 1 decimal place.

Otherwise,

If OilVolume is greater than 0,

Calculate APPE Calc Oil Heat Input = OilVolume * OilGCV / 1000000, and round the result to 1 decimal place.

If OilHeatInput is null,

return result A.

If OilHeatInput is less than or equal to 0,

return result B.

If APPE Calc Oil Heat Input is null,

set APPE Calc Run Total HI to null.

Otherwise,

If APPE Calc Oil Heat Input is equal to OilHeatInput,

If APPE Calc Run Total HI is not null,

Add OilHeatInput to APPE Calc Run Total HI.

Otherwise,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "APPE" and the FieldDescription is equal to "HeatInputRate".

If the absolute value of the difference between OilHeatInput and APPE Calc Oil Heat Input is greater than the Tolerance in the cross-check record,

If APPE Calc Run Total HI is not null,

Add APPE Calc Oil Heat Input to APPE Calc Run Total HI, and return result C.

Otherwise,

return result C.

Otherwise,

If APPE Calc Run Total HI is not null,

Add OilHeatInput to APPE Calc Run Total HI.

In the QA Evaluation process, the APPE Calc Oil Heat Input will be stored in the Appendix E Oil record.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
C	The heat input recalculated from the values reported in the oil record for [key] does not equal the reported OilHeatInput.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Oil Evaluation
2	QA Test Evaluation Report --------- Appendix E Heat Input from Oil

Check Code: APPE-34

Check Name: Gas Volume Valid

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E gas record:

Add 1 to APPE Run System Count.

If GasVolume is null,

return result A.

If GasVolume is less than or equal to 0,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Gas Evaluation
2	QA Test Evaluation Report --------- Appendix E Heat Input from Gas

Check Code: APPE-35

Check Name: Gas GCV Valid

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Gas record:

If GasGCV is null,

return result A.

Otherwise,

If GasGCV is less than or equal to 0,

return result B.

Otherwise,

Locate the record in the Parameter to Units Of Measure Lookup Table where the ParameterCode is equal to "GCV" and the UnitsOfMeasure is equal to the "BTUHSCF".

Set APPE Gas GCV Minimum Value to Min Value in the retrieved record.

Set APPE Gas GCV Maximum Value to Max Value in the retrieved record.

If APPE Gas GCV Minimum Value is not null,

If the GasGCV is less than the APPE Gas GCV Minimum Value,

return result C.

If APPE Gas GCV Maximum Value is not null,

If the GasGCV is greater than the APPE Gas GCV Maximum Value,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
C	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Gas Evaluation
2	QA Test Evaluation Report --------- Appendix E Heat Input from Gas

Check Code: APPE-36

Check Name: Heat Input for Gas Valid

Related Former Checks: APPE-35

Applicability: Appendix E Check

Specifications:

For the Appendix E Gas record:

Set APPE Calc Gas Heat Input to null.

If GasGCV and GasVolume are both greater than 0,

Calculate APPE Calc Gas Heat Input = GasVolume * GasGCV / 1000000, and round the result to 1 decimal place.

If GasHeatInput is null,

return result A.

If GasHeatInput is less than or equal to 0,

return result B.

If APPE Calc Gas Heat Input is null,

set APPE Calc Run Total HI to null.

Otherwise,

If APPE Calc Gas Heat Input is equal to GasHeatInput,

If APPE Calc Run Total HI is not null,

Add GasHeatInput to APPE Calc Run Total HI.

Otherwise,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "APPE" and the FieldDescription is equal to "HeatInputRate".

If the absolute value of the difference between GasHeatInput and APPE Calc Gas Heat Input is greater than the Tolerance in the cross-check record,

If APPE Calc Run Total HI is not null,

Add APPE Calc Gas Heat Input to APPE Calc Run Total HI, and return result C.

Otherwise,

return result C.

Otherwise,

If APPE Calc Run Total HI is not null,

Add GasHeatInput to APPE Calc Run Total HI.

In the QA Evaluation process, the APPE Calc Gas Heat Input will be stored in the Appendix E Gas record.

Results:

Result	Description	Severity

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
C	The heat input recalculated from the values reported in the gas record for [key] is not equal to the GasHeatInput.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Gas Evaluation
2	QA Test Evaluation Report --------- Appendix E Heat Input from Gas

Check Code: APPE-37

Check Name: Reported Total HI for Run Consistent with Recalculated Value

Related Former Checks: APPE-16

Applicability: Appendix E Check

Specifications:

For the Appendix E run:

If APPE Run System Count is equal to the number of items in the APPE System List,

Set APPE Use Calculated Run HI to true.

If APPE Calc Run Total HI is not null, TotalHeatInput is greater than 0, and APPE Calc Run Total HI is not equal to TotalHeatInput,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "APPE" and the FieldDescription is equal to "HeatInput".

If the absolute value of the difference between TotalHeatInput and APPE Calc Run Total HI is greater than the Tolerance in the cross-check record,

return result A.

Otherwise,

Set APPE Use Calculated Run HI to false.

Otherwise,

set APPE Use Calculated Run HI to false.

set APPE Gas and Oil Systems Consistent to false.

set APPE Calc Run Total HI to null.

Results:

Result	Description	Severity
A	The reported TotalHeatInput is not consistent with the value recalculated from the Appendix E oil and gas records for [key].	Critical Error Level 1

Usage:

1	QA Test Evaluation Report ------ Appendix E Test Run (Pass 2)

Check Code: APPE-38

Check Name: Insufficient Number of Runs

Related Former Checks: APPE-7

Applicability: Appendix E Check

Specifications:

For the Appendix E summary record:

If APPE Level Run Count is less than 3,

return result A.

Results:

Result	Description	Severity
A	The Appendix E test contains fewer than three run records for [key]. A minimum of three runs are required at each operating level.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- Appendix E Test Summary (Pass 2)

Check Code: APPE-39

Check Name: Heat Input Rate for Run Consistent with Operating Level

Related Former Checks: APPE-36

Applicability: Appendix E Check

Specifications:

For the Appendix E Test summary record:

If APPE Heat Input Consistent with Operating Level is true,

If Last APPE Maximum HI Rate is greater than APPE Level Maximum HI Rate,

set Calculate APPE Segments and APPE Heat Input Consistent with Operating Level to false, and return result A.

Otherwise,

set Last APPE Maximum HI Rate to APPE Level Maximum HI Rate.

Results:

Result	Description	Severity
A	This test included one or more runs with an HourlyHeatInputRate which is greater than or equal to the HourlyHeatInputRate for a run for a higher operating level.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- Appendix E Test Summary (Pass 2)

Check Code: APPE-40

Check Name: Reported Arithmetic Mean of Reference Values for Level Consistent with Recalculated Value

Related Former Checks: APPE-21

Applicability: Appendix E Check

Specifications:

For the Appendix E Test summary record:

If APPE Level Sum Reference Value is greater than or equal to 0, and APPE Level Run Count is greater than or equal to 3,

Calculate APPE Calc Level Mean Reference Value = APPE Level Sum Reference Value / APPE Level Run Count, and round the result to 3 decimal places.

If MeanReferenceValue is greater than 0 and not equal to APPE Calc Level Mean Reference Value,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "APPE" and the FieldDescription is equal to "MeanReferenceValue".

If the absolute value of the difference between MeanReferenceValue and APPE Calc Level Mean Reference Value is greater than the Tolerance in the cross-check record,

set APPE NOx Rate Array (APPE Level Count) to APPE Calc Mean Reference Value, and return result A.

Otherwise,

set APPE NOx Rate Array (APPE Level Count) to MeanReferenceValue.

Otherwise,

set APPE NOx Rate Array (APPE Level Count) to APPE Calc Mean Reference Value.

If APPE Maximum NOx Rate is less than APPE NOx Rate Array (APPE Level Count),

set APPE Maximum NOx Rate to APPE NOx Rate Array (APPE Level Count).

Otherwise,

set APPE Calc Level Mean Reference Value to null, and Calculate APPE Segments to false.

Results:

Result	Description	Severity
A	The MeanReferenceValue reported for [key] is inconsistent with the value recalculated from the run data for the test.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- Appendix E Test Summary (Pass 2)

Check Code: APPE-41

Check Name: Reported Average Heat Input Rate for Level Consistent with Recalculated Value

Related Former Checks: APPE-22

Applicability: Appendix E Check

Specifications:

For the Appendix E Test summary record:

If APPE Level Sum HI Rate is not null, and APPE Level Run Count is greater than or equal to 3,

Calculate APPE Calc Level Average HI Rate = APPE Level Sum HI Rate / APPE Level Run Count, and round the result to 1 decimal place.

If AverageHourlyHeatInputRate is greater than 0 and not equal to APPE Calc Level Average HI Rate,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "APPE" and the FieldDescription is equal to "HeatInputRate".

If the absolute value of the difference between = AverageHourlyHeatInputRate and APPE Calc Level Average HI Rate is greater than the Tolerance in the cross-check record,

set APPE Heat Input Rate Array (APPE Level Count) to APPE Calc Level Average HI Rate, and return result A.

Otherwise,

set APPE Heat Input Rate Array (APPE Level Count) to AverageHourlyHeatInputRate.

Otherwise,

set APPE Heat Input Rate Array (APPE Level Count) to APPE Calc Level Average HI Rate.

Otherwise,

set APPE Calc Level Average HI Rate to null, and Calculate APPE Segments to false.

In the QA Evaluation process, the APPE Calc Level Average HI Rate and APPE Calc Level Mean Reference Value will be stored in the Appendix E Summary record.

Results:

Result	Description	Severity
A	The AverageHourlyHeatInputRate reported for [key] is inconsistent with the value recalculated from the run and fuel data for the operating level.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- Appendix E Test Summary (Pass 2)

Check Code: APPE-42

Check Name: Insufficient Number of Operating Levels

Related Former Checks: APPE-8

Applicability: Appendix E Check

Specifications:

For the Appendix E test:

Set APPE Level Count Validated to true.

If the APPE Level Count is less than 4,

set Calculate APPE Segments to false, and return result A.

Results:

Result	Description	Severity
A	You have included Appendix E runs at fewer than four operating levels. Appendix E tests for units subject to Part 75 must be performed at at least four operating levels.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Appendix E Test (Pass 2)

Check Code: APPE-43

Check Name: Appendix E Oil and Gas Records Consistent

Related Former Checks: APPE-10/11/12

Applicability: Appendix E Check

Specifications:

For the Appendix E test:

If Calculate APPE Segments is equal to false,

set APPE NOx Rate Array and APPE HI Rate Array to null.

If APPE Gas and Oil Systems Consistent is equal to false,

set APPE NOx Rate Array and APPE HI Rate Array to null, and return result A.

If the APPE System Fuel Code is null,

set APPE NOx Rate Array and APPE HI Rate Array to null, and return result B.

If the number of items in the APPE System List is equal to 1,

If the APPE System Fuel Code is equal to "MIX"

set APPE NOx Rate Array and APPE HI Rate Array to null, and return result C.

Otherwise,

Locate the Monitor System record for the location where the MonitoringSystemID is equal to the APPE System List.

If the FuelCode of the retrieved record is not equal to the APPE System Fuel Code,

set APPE NOx Rate Array and APPE HI Rate Array to null, and return result D.

Otherwise,

If the APPE System Fuel Code is not equal to "MIX",

set APPE NOx Rate Array and APPE HI Rate Array to null, and return result E.

In the QA Evaluation Process, for tests that have not yet been submitted or have been approved for resubmission) the appropriate values will be stored in the QA Supp Data and QA Supp Data Attribute records for the test.

Results:

Result	Description	Severity
A	You have defined an inconsistent number of fuel flow records for this test. There must be the same combination of supporting fuel flow records for each run.	Critical Error Level 1
B	The Monitoring System record for the fuel flow system used in this test did not contain a FuelCode. The Appendix E test could not be validated.	Critical Error Level 1
C	You reported only one fuel flow record for the test. You must define at least two fuel flow records for a NOXE system with a fuel code equal to MIX.	Critical Error Level 1
D	The FuelCode in the Monitor System record for the fuel flow system is not equal to the FuelCode associated with the NOXE system.	Critical Error Level 1
E	You reported fuel flow records for more than one fuel flow system. You are	Critical Error Level 1

only allowed to report fuel flow records for more than one fuel flow system when the NOXE system has a FuelCode equal to MIX.

Usage:

1	QA Test Evaluation Report Appendix E Test (Pass 2)

Check Code: APPE-44

Check Name: Hourly Heat Input Rate Consistent with Recalculated Value

Related Former Checks: APPE-15

Applicability: Appendix E Check

Specifications:

For the Appendix E Test run:

If APPE Calc Run Total HI and APPE Run Length are both not null,

If APPE Use Calculated Run HI is true,

Calculate APPE Calc Run HI Rate = APPE Calc Run Total HI / APPE Run Length * 60, and round the result to 1 decimal place.

Otherwise,

Calculate APPE Calc Run HI Rate = TotalHeatInput / APPE Run Length * 60, and round the result to 1 decimal place.

If HourlyHeatInputRate is greater than 0 and is not equal to APPE Calc Run HI Rate,

Calculate minrate = APPE Calc Run Total HI / (APPE Run Length + 1) * 60, and round the result to 1 decimal place.

If APPE Run Length is equal to 1,

set maxrate to 99999.9

Otherwise,

calculate maxrate = APPE Calc Run Total HI / (APPE Run Length - 1) * 60, and round the result to 1 decimal place.

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "APPE" and the FieldDescription is equal to "HeatInputRate".

Subtract the Tolerance in the cross-check record from minrate.

Add the Tolerance in the cross-check record to maxrate.

If the HourlyHeatInputRate is less than minrate or is greater than maxrate,

If APPE Level Sum HI Rate is not null,

add APPE Calc Run HI Rate to APPE Level Sum HI Rate, and return result A.

Otherwise,

return result A.

Otherwise,

If APPE Level Sum HI Rate is not null,

add HourlyHeatInputRate to APPE Level Sum HI Rate.

Otherwise,

If APPE Level Sum HI Rate is not null,

add APPE Calc Run HI Rate to APPE Level Sum HI Rate.

Otherwise,

set APPE Calc Run HI Rate and APPE Level Sum HI Rate to null.

In the QA Evaluation process, the APPE Calc Run HI Rate and APPE Calc Run Total HI will be stored in the Appendix E Run record.

Results:

Result	Description	Severity
A	The HourlyHeatInputRate for [key] does not correspond to the hourly heat input rate recalculated from the start and end times and heat input derived from the Appendix E gas and oil records.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report ------ Appendix E Test Run (Pass 2)

Check Code: APPE-45

Check Name: Gas Monitoring System ID Valid

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Gas record:

If MonitoringSystemID is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal

Usage:

1 QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Gas Evaluation

Check Code: APPE-46

Check Name: Duplicate Appendix E Test

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E test with a valid TestNumber:

Locate another TestSummary record for the location where the TestTypeCode is equal to "APPE" and the TestNumber is equal to the TestNumber in the current record.

If found,

return result A.

Otherwise,

Locate an unassociated QA Supp record for the location where the TestTypeCode is equal to " APPE " and the TestNumber is equal to the TestNumber in the current record.

If found,

return result B.

Results:

Result	Description	Severity
A	Another [testtype] with this test number already exists. You must assign a different test number.	Fatal
B	You cannot change the TestNumber to the value that you have entered, because a [testtype] with this TestNumber has already been submitted. If this is a different test, you should assign it a different TestNumber. If you are trying to resubmit this test, you should delete this test, and either reimport this test with its original TestNumber or retrieve the original test from the EPA host system.	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Evaluation

Check Code: APPE-47

Check Name: Appendix E Monitoring System ID Valid

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E test:

If MonitoringSystemID is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Evaluation

Check Code: APPE-48

Check Name: Duplicate Appendix E Summary

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Summary record with a non-null OperatingLevelforRun:

Locate another Appendix E Summary record for the test where the OperatingLevelforRun is equal to the OperatingLevelforRun in the current record.

If found,

return result A.

Results:

Result	Description	Severity
A	Another [recordtype] record already exists with the same [fieldnames].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Summary Evaluation

Check Code: APPE-49

Check Name: Duplicate Appendix E Run

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Run record with a OperatingLevelforRun and RunNumber that are not null.

Locate another Appendix E Run record for the test where the OperatingLevelforRun and RunNumber are equal to the OperatingLevelforRun and RunNumber in the current record.

If found,

return result A.

Results:

Result	Description	Severity
A	Another [recordtype] record already exists with the same [fieldnames].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Run Evaluation

Check Code: APPE-50

Check Name: Duplicate Appendix E Oil Record

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Oil record with a OperatingLevelforRun, RunNumber, and MonitoringSystemID that are not null.

Locate another Appendix E Oil record for the test where the OperatingLevelforRun, RunNumber, and MonitoringSystemID are equal to the OperatingLevelforRun, RunNumber, and MonitoringSystemID in the current record.

If found,

return result A.

Results:

Result	Description	Severity
A	Another [recordtype] record already exists with the same [fieldnames].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Oil Evaluation

Check Code: APPE-51

Check Name: Duplicate Appendix E Gas Record

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Gas record with a OperatingLevelforRun, RunNumber, and MonitoringSystemID that are not null.

Locate another Appendix E Gas record for the test where the OperatingLevelforRun, RunNumber, and MonitoringSystemID are equal to the OperatingLevelforRun, RunNumber, and MonitoringSystemID in the current record.

If found,

return result A.

Results:

Result	Description	Severity
A	Another [recordtype] record already exists with the same [fieldnames].	Fatal

Usage:

1 QA and Certification Data Entry Screen Evaluation Appendix E Test Heat Input from Gas Evaluation

Check Code: APPE-52

Check Name: Maximum NOx Rate Consistent with NORX Default

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the test with an APPE Maximum NOx Rate greater than 0 and a non-null APPE System Fuel Code:

Locate all Monitor Default records for the location where the ParameterCode is equal to "NORX", the PurposeCode is equal to "MD", the FuelCode is equal to the APPE System Fuel Code, the BeginDate and BeginHour is on or before the EndDate and Endhour in the current test, and the EndDate is null or the EndDate and EndHour is after the EndDate and EndHour in the current test.

If not found,

Locate the earliest Monitor Default record for the location where the ParameterCode is equal to "NORX", the PurposeCode is equal to "MD", the FuelCode is equal to the APPE System Fuel Code, and the EndDate is null or the EndDate and EndHour is after the EndDate and EndHour in the current test.

If not found,

return result A.

If found, and the DefaultValue is less than the APPE Maximum NOx Rate,

return result B.

If found, and the DefaultValue in any record is less than the APPE Maximum NOx Rate,

return result B.

Results:

Result	Description	Severity
A	You have not defined a maximum NOx emission rate default value for the fuel to be used for missing data purposes in the monitoring plan.	Critical Error Level 1
B	The maximum NOx emission rate calculated for this test exceeds the fuel-specific maximum NOx rate default value that was reported in the monitoring plan.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Appendix E Test (Pass 2)

Check Code: APPE-53

Check Name: Calculate Heat Input for Gas

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Gas record:

Set APPE Gas Calc HI to null.

If GasGCV is null or is less than or equal to 0; or GasVolume is null or is less than or equal to 0,

return result A.

Otherwise,

Calculate APPE Gas Calc HI = GasVolume * GasGCV / 1000000, and round the result to 1 decimal place.

Results:

Result	Description	Severity
A	The values in this record could not be calculated because of invalid data.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E HI from Gas Calculations

Check Code: APPE-54

Check Name: Calculate Heat Input for Oil

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Oil record:

Set APPE Oil Calc HI and APPE Oil Calc Oil Mass to null.

If OilGCVUnitsOfMeasureCode is null; or OilGCV is null or is less than or equal to 0; or OilVolume is not null and is less than or equal 0; or OilMass is not null and is less than or equal to 0,

return result A.

If both OilVolume and OilMass are null,

return result A.

If OilVolume is null or OilMassDensityUnitsOfMeasure is not null,

If OilGCVUnitsOfMeasureCode is not equal to "BTULB",

return result A.

If OilVolume is null,

Calculate APPE Oil Calc HI = OilMass * OilGCV / 1000000, and round the result to 1 decimal place

Otherwise,

If OilVolumeUnitsOfMeasureCode is null,

return result A.

Otherwise,

Locate a record in the Oil Volume UOM to Density UOM to GCV UOM cross-check table where the OilVolumeUOM is equal to the OilVolumeUnitsOfMeasureCode in the current record.

If not found,

return result A.

If found,

If the OilDensityUnitsOfMeasure is null,

If the OilGCVUnitsofMeasureCode is not equal to the OilGCVUOM in the cross check record,

return result A.

Otherwise,

Calculate APPE Oil Calc HI = OilVolume * OilGCV / 1000000, and round the result to 1 decimal place.

Otherwise,

If OilDensityUnitsOfMeasureCode is not equal to the OilDensityUOM in the cross check record,

return result A.

Otherwise,

Calculate APPE Oil Calc Mass Oil = OilVolume * OilDensity.

Calculate APPE Oil Calc HI = APPE Oil Calc Mass Oil * OilGCV / 1000000, and round the result to 1 decimal place.

Round APPE Oil Calc Mass Oil to 1 decimal place.

Results:

Result	Description	Severity
A	The values in this record could not be calculated because of invalid data.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E HI from Oil Calculations

Check Code: APPE-55

Check Name: Calculate Appendix E Run

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Test run:

Set APPE Run Calc HI and APPE Run Calc HI Rate to null.

If the EndDate is null, or the EndHour is null or not between 0 and 23, or the EndMinute is null or not between 0 and 59,

return result A.

If the BeginDate is null, the BeginHour is null or not between 0 and 23, or the BeginMinute is null or is not between 0 and 59,

return result A.

If the BeginDate, BeginHour, and BeginMinute is on or after the EndDate, EndHour, and EndMinute,

return result A.

Otherwise,

set tmpHI to 0.

For each Appendix E Oil record for the run.

If OilHeatInput is null or is less than or equal to 0,

return result A.

Otherwise,

add OilHeatInput to tmpHI.

For each Appendix E Gas record for the run.

If GasHeatInput is null or is less than or equal to 0,

return result A.

Otherwise,

add GasHeatInput to tmpHI.

If tmpHI is equal to 0,

return result B.

Otherwise,

Set APPE Run Calc HI to tmpHI.

Calculate APPE Run Calc HI Rate = tmpHI / (the difference in minutes between the BeginDate/Hour/Minute and the EndDate/Hour/Minute) * 60, and round the result to 1 decimal place.

Results:

Result	Description	Severity
A	The values in this record could not be calculated because of invalid data.	Critical Error Level 1
B	The values in this record could not be calculated because you did not report any gas or oil records.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Run Calculations

Check Code: APPE-56

Check Name: Calculate Appendix E Summary

Related Former Checks:

Applicability: Appendix E Check

Specifications:

For the Appendix E Test Summary record.:

Set APPE Calc Avg HI Rate and APPE Calc Mean RV to null.

If OperatingLevelforRun is null or is less than or equal to 0,

return result A.

Otherwise,

set tmpCt, tmpHI, and tmpRV to 0.

For each Appendix E run record for the operating level:

add 1 to tmpCt.

If HourlyHeatInputRate is null or is less than or equal to 0; or ReferenceValue is null or is less than or equal to 0,

return result A.

Otherwise,

add HourlyHeatInputRate to tmpHI.

add ReferenceValue to tmpRV.

If tmpCt is less than 3,

return result B.

Otherwise,

Calculate APPE Avg HI Rate = tmpHI / tmpCt, and round the result to 1 decimal place.

Calculate APPE Mean RV = tmpRV / tmpCt, and round the result to 3 decimal places.

Results:

Result	Description	Severity
A	The values in this record could not be calculated because of invalid data.	Critical Error Level 1
B	The Appendix E test contains fewer than three run records for [key]. A minimum of three runs are required at each operating level.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Appendix E Summary Calculations

Check Category:

Cycle Time Test

Check Code: CYCLE-1

Check Name: Initialize Cycle Time Test Variables

Related Former Checks:

Applicability: CEM Check

Specifications:

For the calibration test:

Set Cycle Time Zero Injection Count and Cycle Time High Injection Count to 0.

Set Cycle Time Calc Total Cycle Time to -1 .

Set Cycle Time Calc Test Result, Cycle Time Zero Reference Value, and Cycle Time High Reference Value to null.

Set Cycle Time Injection Times Valid to true.

Set Cycle Time Test Begin Date, Cycle Time Test Begin Hour, Cycle Time Test Begin Minute, Cycle Time Test End Date, Cycle Time Test End Hour, and Cycle Time Test End Minute to null.

Usage:

1	QA and Certification Data Entry Screen Evaluation Cycle Time Injection Evaluation
2	QA and Certification Data Entry Screen Evaluation Cycle Time Test Evaluation
3	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 1)

Check Code: CYCLE-2

Check Name: Component Type Valid

Related Former Checks: CYCL-2

Applicability: CEM Check

Specifications:

For the cycle time test:

If the ComponentID is null,

set Cycle Time Test Component Type Valid to false, and return result A.

Otherwise,

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

set Cycle Time Test Component Type Valid to true.

Otherwise,

set Cycle Time Test Component Type Valid to false, and return result B.

If Cycle Time Test Component is invalid, do not perform checks for Cycle Time Injection category. Set the calculated values in the associated Cycle Time Injection records to null.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	The component type code in the monitoring plan is [comptype]. This type of component is not appropriate for a cycle time test.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 1)

Check Code: CYCLE-3

Check Name: Aborted Cycle Time Test Not Evaluated

Related Former Checks:

Applicability: CEM Check

Specifications:

For the cycle time test:

If the TestResultCode is equal to "ABORTED",

set Cycle Time Test Aborted to true, Cycle Time Calc Test Result to "ABORTED", and return result A.

Do not perform checks for the Cycle Time Injection category.

Set all calculated values in associated Cycle Time Injection records to null.

Otherwise,

set Cycle Time Test Aborted to false.

Results:

Result	Description	Severity
A	The TestResultCode indicates that the test was aborted. [Children] records for this test will not be evaluated. If the test was aborted for a reason not related to monitor performance, you should not report the test.	Informational Message

Usage:

1	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 1)

Check Code: CYCLE-4

Check Name: Cycle Time Test Test Reason Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the cycle time test:

If the TestReasonCode is null,

return result A.

If the TestReasonCode is not equal to "INITIAL", "RECERT" or "DIAG",

Locate the TestReasonCode in the Test Reason Code Lookup table,

If not found,

return result B.

If found,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
C	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Cycle Time Test Evaluation
2	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 1)
	Condition: Cycle Time Test Component Type Valid *Equals* true

Check Code: CYCLE-5

Check Name: Identification of Previously Reported Test or Test Number for Cycle Time Test

Related Former Checks:

Applicability: CEM Check

Specifications:

For a cycle time test with valid Span Scale and End Times and a non-null ComponentID:

Set Cycle Time Test Supp Data ID to null.

Locate another cycle time test for the component where the SpanScale, EndDate, EndHour, and EndMinute are equal to the SpanScale, EndDate, EndHour, and EndMinute of the current TestSummary record.

If found,

return result A.

Otherwise,

Locate an unassociated QASupp record for the location where the TestType Code is equal to "CYCLE", and the ComponentID, SpanScale, EndDate, EndHour, and EndMinute is equal to ComponentID, SpanScale, EndDate, EndHour, and EndMinute of the current TestSummary record, and the TestNum is not equal to the TestNumber in the current TestSummary record,

If found,

return result A.

Otherwise,

Locate a QASupp record for the location where the TestTypeCode is equal to "CYCLE" and the TestNum equal to the TestNumber in the current TestSummary record.

If found,

Set Cycle Time Test Supp Data ID to the QA Supp Data ID in the QASupp record.

If CAN_SUBMIT in the QA Supp record is equal to "N",

If this is an unassociated QASupp record, and the ComponentID, SpanScale, EndDate, EndHour, and EndMinute in the QASupp record is not equal to ComponentID, SpanScale, EndDate, EndHour, or EndMinute of the current TestSummary record,

return result B.

Otherwise,

return result C.

Results:

Result	Description	Severity
A	Based on the information in this record, this test has already been submitted with a different test number, or the Client Tool database already contains the same test with a different test number. This test cannot be submitted.	Fatal
B	Another [testtype] with this test number has already been submitted for this location. This test cannot be submitted with this test number. If this is a different test, you should assign it a unique test number.	Fatal

C	This test has already been submitted and will not be resubmitted. If you wish to resubmit this test, please contact EPA for approval.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Cycle Time Test Evaluation *Condition:* Duplicate Cycle Time *Equals* false
2	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 1)

Check Code: CYCLE-6

Check Name: Cycle Time Injection Begin Time Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the cycle time injection:

If GasLevelCode is equal to "ZERO",

add 1 to Cycle Time Zero Injection Count.

If GasLevelCode is equal to "HIGH",

add 1 to Cycle Time High Injection Count.

If the BeginDate is null, or the BeginHour is null or not between 0 and 23, or the BeginMinute is null or not between 0 and 59.

set Cycle Time Injection Dates Consistent and Cycle Time Injection Times Valid to false, and return result A.

Otherwise,

set Cycle Time Injection Dates Consistent to true.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Cycle Time Injection Evaluation
2	QA Test Evaluation Report --- Cycle Time Test Injection Evaluation

Check Code: CYCLE-7

Check Name: Cycle Time Injection End Time Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the cycle time injection:

Set Cycle Time Calc Injection Cycle Time to null.

If the EndDate is null, or the EndHour is null or not between 0 and 23, or the EndMinute is null or not between 0 and 59.

set Cycle Time Injection Dates Consistent and Cycle Time Injection Times Valid to false, and return result A.

Otherwise,

If the BeginDate is not null, and the BeginHour is between 0 and 23, and the BeginMinute is between 0 and 59,

If the BeginDate/BeginHour/BeginMinute is after the EndDate/EndHour/EndMinute,

set Cycle Time Injection Dates Consistent and Cycle Time Injection Times Valid to false, and return result B.

Otherwise,

If the Cycle Time Test Begin Date/Begin Hour/Begin Minute is null or is later than the BeginDate, BeginHour, and BeginMinute,

set the Cycle Time Test Begin Date/Begin Hour/Begin Minute to the BeginDate, BeginHour, and BeginMinute.

If the Cycle Time Test End Date/End Hour/End Minute is null or is before the EndDate, EndHour, and EndMinute,

set the Cycle Time Test End Date/End Hour/End Minute to the EndDate, EndHour, and EndMinute.

Results:

Result	Description	Severity
A	The [type] date, hour, and/or minute for [key] is invalid.	Critical Error Level 1
B	You reported EndDate, EndHour, and EndMinute which is prior to or equal to BeginDate, BeginHour, and BeginMinute for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Cycle Time Injection Evaluation
2	QA Test Evaluation Report --- Cycle Time Test Injection Evaluation

Check Code: CYCLE-8

Check Name: Cycle Time Injection Calibration Gas Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the cycle time injection:

If CalibrationGasValue is null,

return result A.

If CalibrationGasValue is less than 0,

return result B.

If GasLevelCode is equal to "ZERO",

set Cycle Time Zero Reference Value to CalibrationGasValue.

If GasLevelCode is equal to "HIGH",

set Cycle Time High Reference Value to CalibrationGasValue.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Cycle Time Injection Evaluation
2	QA Test Evaluation Report --- Cycle Time Test Injection Evaluation

Check Code: CYCLE-9

Check Name: Calibration Gas Value Consistent with Span

Related Former Checks: CYCL-5

Applicability: CEM Check

Specifications:

For the cycle time injection with a CalibrationGasValue greater than or equal to 0 and a Test Span Value greater than 0:

Calculate Cycle Time Reference Percent of Span = CalibrationGasValue divided by the Test Span Value times 100 (rounded to the nearest tenth)

If the GasLevelCode is "ZERO",

If Cycle Time Reference Percent of Span is greater than 20.0,

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

If Cycle Time Reference Percent of Span is greater than 20.0 + Tolerance in the cross-check record,

return result A.

Otherwise,

return result B.

If the GasLevelCode is "HIGH",

If Cycle Time Reference Percent of Span is greater than 100.0,

return result C.

If Cycle Time Reference Percent of Span is less than 80.0,

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

If Cycle Time Reference Percent of Span is less than 80.0 - Tolerance in the cross-check record,

return result C.

Otherwise,

return result D.

Results:

Result	Description	Severity
A	The tag value of the 'ZERO' level calibration gas of the cycle time test data for [key] is [percent] % of span and does not meet the performance specifications of 40 CFR Part 75 (or Part 63 as applicable). The concentration of the 'zero' reference calibration gas must be less than or equal to 20.0% of the span value reported in the monitoring plan.	Critical Error Level 2
B	The tag value of the 'ZERO' level calibration gas of the cycle time test data for [key] is [percent] % of span and does not meet the performance specifications of 40 CFR Part 75 (or Part 63 as applicable). The concentration of the 'zero' reference calibration gas must be less than or equal to 20.0% of the span value reported in the monitoring plan.	Non-Critical Error

C	The tag value of the 'HIGH' level calibration gas of the cycle time test data for [key] is [percent] % of span and does not meet the performance specifications of 40 CFR Part 75 (or Part 63 as applicable). The concentration of the 'high' reference calibration gas must be between 80.0% and 100.0% of the span value reported in the monitoring plan.	Critical Error Level 2
D	The tag value of the 'HIGH' level calibration gas of the cycle time test data for [key] is [percent] % of span and does not meet the performance specifications of 40 CFR Part 75 (or Part 63 as applicable). The concentration of the 'high' reference calibration gas must be between 80.0% and 100.0% of the span value reported in the monitoring plan.	Non-Critical Error

Usage:

1	QA Test Evaluation Report --- Cycle Time Test Injection Evaluation

Check Code: CYCLE-10

Check Name: Cycle Time Injection Begin Monitor Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the cycle time injection:

If BeginMonitorValue is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Cycle Time Injection Evaluation
2	QA Test Evaluation Report --- Cycle Time Test Injection Evaluation

Check Code: CYCLE-11

Check Name: Cycle Time Injection End Monitor Value Valid

Related Former Checks: CYCL-6

Applicability: CEM Check

Specifications:

For the cycle time injection:

If EndMonitorValue is null,

return result A.

Otherwise,

If BeginMonitorValue is not null,

If End Date of the injection is before {01/24/2008},

If GasLevelCode is equal to "ZERO" and BeginMonitorValue is greater than or equal to EndMonitorValue,

return result B.

If GasLevelCode is equal to "HIGH" and BeginMonitorValue is less than or equal to EndMonitorValue,

return result C.

Otherwise,

If GasLevelCode is equal to "HIGH" and BeginMonitorValue is greater than or equal to EndMonitorValue,

return result D.

If GasLevelCode is equal to "ZERO" and BeginMonitorValue is less than or equal to EndMonitorValue,

return result E.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The BeginMonitorValue for [key] was greater than or equal to the EndMonitorValue. These values are unexpected for a 'zero' level gas injection.	Informational Message
C	The BeginMonitorValue for [key] was less than or equal to the EndMonitorValue. These values are unexpected for a 'high' level gas injection.	Informational Message
D	The BeginMonitorValue for [key] was greater than or equal to the EndMonitorValue. These values are unexpected for a 'high' level gas injection.	Informational Message
E	The BeginMonitorValue for [key] was less than or equal to the EndMonitorValue. These values are unexpected for a 'zero' level gas injection.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Cycle Time Injection Evaluation
2	QA Test Evaluation Report --- Cycle Time Test Injection Evaluation

Check Code: CYCLE-12

Check Name: Cycle Time Injection Injection Cycle Time Valid

Related Former Checks: CYCL-8B

Applicability: CEM Check

Specifications:

For the cycle time injection:

If Cycle Time Injection Dates Consistent is equal to true,

Calculate Cycle Time Calc Injection Cycle Time as the difference (in minutes) between the EndDate/EndHour/EndMinute and the BeginDate/BeginHour/BeginMinute, with a maximum value of 99.

If Cycle Time Calc Total Cycle Time is not null,

If InjectionCycleTime is not null and is one minute greater than the Cycle Time Calc Injection Cycle Time,

set Cycle Time Calc Injection Cycle Time to InjectionCycleTime .

If Cycle Time Calc Injection Cycle Time is greater than Cycle Time Calc Total Cycle Time,

set Cycle Time Calc Total Cycle Time to Cycle Time Calc Injection Cycle Time.

Otherwise,

Set Cycle Time Calc Total Cycle Time to null, and Cycle Time Calc Test Result to "INVALID".

In the QA Evaluation Process, the Cycle Time Calc Injection Cycle Time will be stored as a calculated value in the Cycle Time Injection record for the gas level.

If InjectionCycleTime is null,

return result A.

If InjectionCycleTime is less than 0,

return result B.

If Cycle Time Calc Injection Cycle Time is not null, and the absolute value of the difference between Cycle Time Calc Injection Cycle Time and InjectionCycleTime is greater than 1,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1
C	The reported ComponentCycleTime for [key] does not equal the value of the component cycle time recalculated from the reported starting and ending times.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Cycle Time Injection Evaluation
2	QA Test Evaluation Report --- Cycle Time Test Injection Evaluation

Check Code: CYCLE-13

Check Name: Cycle Time Test Begin Time Consistent with Injection Times

Related Former Checks:

Applicability: CEM Check

Specifications:

For a cycle time test with valid begin time and injection times and either the Cycle Time High Injection Count or Cycle Time Zero Injection Count greater than 0:

If BeginDate, BeginHour, and BeginMinute does not equal the BeginDate, BeginHour, and BeginMinute of the earliest injection,

return result A.

Results:

Result	Description	Severity
A	You reported a test Begin Date, Hour, and Minute that is not the same as the Begin Date, Hour, and Minute of the first injection in the cycle time test.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 2)
	Condition: Cycle Time Test Aborted*Equals* false

Check Code: CYCLE-14

Check Name: Cycle Time Test End Time Consistent with Injection Times

Related Former Checks:

Applicability: CEM Check

Specifications:

For a cycle time test with valid end time and injection times and either the Cycle Time High Injection Count or Cycle Time Zero Injection Count greater than 0:

If EndDate, EndHour, and EndMinute does not equal the EndDate, EndHour, and EndMinute of the last injection,

return result A.

Results:

Result	Description	Severity
A	You reported a test End Date, Hour, and Minute that is not the same as the End Date, Hour, and Minute of the last injection in the cycle time test.	Critical Error Level 1

Usage:

1 QA Test Evaluation Report Cycle Time Test Evaluation (Pass 2)

Condition: Cycle Time Test Aborted*Equals* false

Check Code: CYCLE-15

Check Name: Calibration Gas Value Consistent with Gas Level

Related Former Checks: CYCL-3

Applicability: CEM Check

Specifications:

For the cycle time test:

If the Cycle Time Zero Reference Value and Cycle Time High Reference Value are not null,

If Cycle Time Zero Reference Value is greater than or equal to the Cycle Time High Reference Value,

set Cycle Time Calc Test Result to "INVALID", and return result A.

Otherwise,

set Cycle Time Calc Test Result to "INVALID".

Results:

Result	Description	Severity
A	The calibration gas values were not consistent with the calibration gas levels reported. The reference value of the zero-level gas injection must be less than that of the high-level gas injection.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 2) *Condition:* Cycle Time Test Aborted*Equals* false

Check Code: CYCLE-16

Check Name: Correct Number of Cycle Time Injections

Related Former Checks: CYCL-7B

Applicability: CEM Check

Specifications:

For the cycle time test:

Set Cycle Time Test Validity Determined to true.

If the Cycle Time Zero Injection Count is not equal to 1, or the Cycle Time High Injection Count is not equal to 1,

set Cycle Time Calc Test Result to "INVALID", and return result A.

Results:

Result	Description	Severity
A	The cycle time test did not contain the correct number of injection records. There must be two records: one HIGH level gas injection and one ZERO level gas injection.	Critical Error Level 1

Usage:

1 QA Test Evaluation Report Cycle Time Test Evaluation (Pass 2)

Condition: Cycle Time Test Aborted*Equals* false

Check Code: CYCLE-17

Check Name: Cycle Time Test Total Cycle Time Valid

Related Former Checks: CYCL-9

Applicability: CEM Check

Specifications:

For the cycle time test:

If Cycle Time Calc Test Result is not equal to "INVALID", and Cycle Time Calc Total Cycle Time is greater than or equal to 0,

If TotalTime is greater than Cycle Time Calc Total Cycle Time,

set Cycle Time Calc Total Cycle Time to TotalTime .

If Cycle Time Calc Total Cycle Time is less than or equal to 15,

set Cycle Time Calc Test Result to "PASSED".

Otherwise,

set Cycle Time Calc Test Result to "FAILED".

Otherwise,

set Cycle Time Calc Total Cycle Time to null.

Set Cycle Time Test Total Time Calculated to true.

If TotalTime is null,

return result A.

If TotalTime is less than 0,

return result B.

If Cycle Time Calc Total Cycle Time is not null and is greater than the TotalTime,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1
C	The recalculated total cycle time does not equal the reported TotalCycleTime for the test.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Cycle Time Test Evaluation
2	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 2)
	Condition: Cycle Time Test Aborted*Equals* false

Check Code: CYCLE-18

Check Name: Cycle Time Test Test Result Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the cycle time test:

If Cycle Time Calc Test Result is equal to "INVALID" or Cycle Time Calc Total Cycle Time is less than 0,

set Cycle Time Calc Test Result to null.

If TestResultCode is null,

return result A.

If TestResultCode is not equal to "ABORTED", "PASSED", or "FAILED",

Locate the TestResultCode in the Test Result Code Lookup table,

If not found,

return result B.

If found,

return result C.

If the Cycle Time Calc Test Result is equal to "FAILED", and TestResultCode is equal to "PASSED",

return result D.

If the Cycle Time Calc Test Result is equal to "PASSED", and TestResultCode is equal to "FAILED",

return result E.

In the QA Evaluation Process, the Cycle Time Calc Test Result, Test Span Value, and Cycle Time Calc Total Cycle Time wil be stored as calculated values in the Test Summary and Cycle Time Summary records for the test, and (for tests that have not yet been submitted or have been approved for resubmission) the appropriate values will be stored in the QA Supp Data record for the test.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
C	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1
D	The TestResultCode indicates a passing test, but the result recalculated from the cycle time injection records indicates a failing test.	Critical Error Level 1
E	You reported a TestResultCode of "FAILED", but the results recalculated or determined from the other reported values indicate that the test passed.	Non-Critical Error

Usage:

1	QA and Certification Data Entry Screen Evaluation Cycle Time Test Evaluation

2	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 2)

Check Code: CYCLE-19

Check Name: Duplicate Cycle Time Test

Related Former Checks:

Applicability: CEM Check

Specifications:

For the cycle time test with a valid TestNumber:

Locate another TestSummary record for the location where the TestTypeCode is equal to "CYCLE" and the TestNumber is equal to the TestNumber in the current record.

If found,

return result A.

Otherwise,

Locate an unassociated QA Supp record for the location where the TestTypeCode is equal to " CYCLE " and the TestNumber is equal to the TestNumber in the current record.

If found,

return result B.

Results:

Result	Description	Severity
A	Another [testtype] with this test number already exists. You must assign a different test number.	Fatal
B	You cannot change the TestNumber to the value that you have entered, because a [testtype] with this TestNumber has already been submitted. If this is a different test, you should assign it a different TestNumber. If you are trying to resubmit this test, you should delete this test, and either reimport this test with its original TestNumber or retrieve the original test from the EPA host system.	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Cycle Time Test Evaluation

Check Code: CYCLE-20

Check Name: Duplicate Cycle Time Injection

Related Former Checks:

Applicability: CEM Check

Specifications:

For the cycle time injection with a valid GasLevelCode:

Locate another CycleTimeInjection record for the test where the GasLevelCode is equal to the GasLevelCode in the current record.

If found,

return result A.

Results:

Result	Description	Severity
A	Another [recordtype] record already exists with the same [fieldnames].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Cycle Time Injection Evaluation

Check Code: CYCLE-21

Check Name: Cycle Time Injection Gas Level Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Cycle Time Injection Data record:

If GasLevelCode is null,

return result A.

If GasLevelCode is not equal to either "ZERO" or "HIGH",

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Cycle Time Injection Evaluation

Check Code: CYCLE-22

Check Name: Component ID Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the cycle time test:

If the ComponentID is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Cycle Time Test Evaluation

Check Category:

Test Extension/Exemption

Check Code: EXTEXEM-1

Check Name: Test Extension/Exemption Year and Quarter Valid

Related Former Checks: FFEXT-4E

Applicability: General Check

Specifications:

For the Test Extension/Exemption record:

If Reporting Period ID is null,

return result A.

Otherwise,

Locate the Reporting Period ID in the Reporting Period table.

Set Test Extension Exemption Begin Date to the first day of the Calendar Year and Quarter in the retrieved record.

Set Test Extension Exemption End Date to the last day of the Calendar Year and Quarter in the retrieved record.

If the Calendar Year and Quarter in the retrieved record is later than the current quarter,

return result B.

If the ExtensionOrExemptionCode is equal to "NONQAOS", and the Quarter of the TEE record is equal to 3,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You reported a Year/Quarter which is outside the range of acceptable values for this record.	Critical Error Level 1
C	You reported [key], but this test extension exemption record is not required for the third quarter.	Non-Critical Error

Usage:

1	Other QA Evaluation Report Test Extension Exemption Evaluation
2	QA and Certification Data Entry Screen Evaluation Test Extension Exemption Evaluation

Check Code: EXTEXEM-2

Check Name: Test Extension/Exemption Extension or Exemption Code Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the Test Extension/Exemption record:

If the ExtensionOrExemptionCode is null,

return result A.

If the ExtensionOrExemptionCode is equal to "NONQAOS", and the Test Extension Exemption Begin Date is not null,

Locate a Reporting Frequency record for the location where the ReportingFrequency is equal to "Q", the BeginQuarter is on or before the Calendar Year and Quarter of the current TEE record, and the EndQuarter is null or is on or after the Calendar Year and Quarter of the current TEE record.

If found,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You reported [key] indicating that the unit is an ozone-season-only reporter, but according to your Reporting Frequency records, the unit reports on an annual basis.	Critical Error Level 1

Usage:

1	Other QA Evaluation Report Test Extension Exemption Evaluation
2	QA and Certification Data Entry Screen Evaluation Test Extension Exemption Evaluation

Check Code: EXTEXEM-3

Check Name: Test Extension/Exemption System Valid

Related Former Checks: RTEXT-1, QEXP-1, FFEXT-1

Applicability: General Check

Specifications:

For the Test Extension/Exemption record:

If MonitoringSystemID is null,

If ExtensionOrExemptionCode is equal to "LOWSYTD", "LOWSQTR", "NRB720", "NONQAPB", "FLOWEXP" or "F2LEXP",

return result A.

Otherwise,

If ExtensionOrExemptionCode is equal to "LOWSYTD", "LOWSQTR", "NRB720", "NONQAPB", "FLOWEXP" or "F2LEXP",

Locate the Monitor System record for the location where the MonitorSystemID is equal to the MonitorSystemID in the current test extension exemption record.

If ExtensionOrExemptionCode is equal to "LOWSYTD" or "LOWSQTR", and the SystemTypeCode in the retrieved record is not equal to "SO2" or "SO2R",

return result B.

If ExtensionOrExemptionCode is equal to "NRB720" and the SystemDesignationCode in the retrieved record is not equal to "B",

return result C.

If ExtensionOrExemptionCode is equal to " FLOWEXP " or "F2LEXP" and the System Type Code in the retrieved record is not equal to " FLOW ",

return result G .

If the Test Extension Exemption Begin Date is not null,

If the BeginDate of the retrieved record is after the Test Extension Exemption End Date, or if the EndDate is not null and is prior to the Test Extension Exemption Begin Date,

return result D.

Otherwise,

return result E.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	This test extension exemption should only be reported for an SO2 or SO2R system. According to the monitoring system record, the system defined in this record is not an SO2 or SO2R system.	Critical Error Level 1
C	According to the monitoring system record, the SystemDesignationCode for the system reported in this record is not equal to "B". This test extension	Critical Error Level 1

	exemption is only valid for regular non-redundant backup systems.	
D	According to the monitoring plan data, the [item] defined in this test extension exemption record was not active during the quarter.	Critical Error Level 1
E	You reported a [fieldname], which is not appropriate for this type of test extension exemption.	Critical Error Level 1
F	According to the monitoring system record, the SystemDesignationCode for the system reported in this record is not equal to "PB". This test extension exemption is only valid for primary bypass systems.	Critical Error Level 1
G	This test extension exemption should only be reported for a FLOW system. According to the monitoring system record, the system defined in this record is not a FLOW system.	Critical Error Level 1

Usage:

1	Other QA Evaluation Report Test Extension Exemption Evaluation
2	QA and Certification Data Entry Screen Evaluation Test Extension Exemption Evaluation

Check Code: EXTEXEM-4

Check Name: Test Extension/Exemption Component Valid

Related Former Checks: QEXP-2

Applicability: General Check

Specifications:

For the Test Extension/Exemption record:

If the ComponentID is null,

If ExtensionOrExemptionCode is equal to "RANGENU" , "NONQAPB" , "NONQADB", or "FLOWEXP",

return result A.

Otherwise,

If ExtensionOrExemptionCode is equal to "RANGENU" or "NONQAPB" ,

If the Test Extension Exemption Begin Date is not null,

Locate the Analyzer Range record for the location where the ComponentID is equal to the ComponentID in the current test extension exemption record, the BeginDate is on or before the Test Extension Exemption End Date, and the EndDate is null or is on or after the Test Extension Exemption Begin Date.

If not found,

Locate the Component record for the location where the ComponentID is equal to the ComponentID in the current test extension exemption record.

If the ExtensionOrExemptionCode is equal to " RANGENU " ,

If not found, or the ComponentTypeCode is not equal to "NOX", "SO2", "CO2", or "O2",

return result B.

Otherwise,

return result C.

Otherwise,

If not found, or the ComponentTypeCode is not equal to "NOX",

return result F .

Otherwise,

return result C.

If found,

If the ExtensionOrExemptionCode is equal to "RANGENU" , and the DualRangeIndicator is not equal to 1,

return result D.

else i f ExtensionOrExemptionCode is equal to "NONQADB" ,

Locate the Component record for the location where the ComponentID is equal to the ComponentID in the current test extension exemption record.

If not found, or the ComponentTypeCode is not equal to " OFFM " or " GFFM ",

return result G .

else i f ExtensionOrExemptionCode is equal to "FLOWEXP" ,

Locate the Component record for the location where the ComponentID is equal to the ComponentID in the current test extension exemption record.

If not found, or the ComponentTypeCode is not equal to "FLOW",

return result H.

Otherwise,

Locate a Sysem Component record for the location where the ComponentID is equal to the ComponentID in the current test extension exemption record , the BeginDate is on or prior to the last day of the year/quarter in the test extension exemption record, the EndDate is null or is on or after the first day of the year/quarter in th test extension exemption record, and the MonitoringSystemID is not equal to the MonitoringSystemID in the test extenstion exemption recod,

If not found,

return result I.

Otherwise,

return result E.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The ComponentTypeCode of the component reported for [key] is not appropriate. A RANGENU extension exemption only applies to dual-range continuous emission monitors.	Critical Error Level 1
C	According to the monitoring plan data, the [item] defined in this test extension exemption record was not active during the quarter.	Critical Error Level 1
D	According to the analyzer range records, the component reported in this test extension exemption record is not a dual-range analyzer. A RANGENU extension exemption only applies to dual-range analyzer.	Critical Error Level 1
E	You reported a [fieldname], which is not appropriate for this type of test extension exemption.	Critical Error Level 1
F	The ComponentTypeCode of the component reported for [key] is not appropriate. A NONQAPB extension exemption only applies to NOX continuous emission monitors.	Critical Error Level 1
G	The ComponentTypeCode of the component reported for [key] is not appropriate. A NONQADB extension exemption only applies to GFFM and OFFM monitors.	Critical Error Level 1
H	The ComponentTypeCode of the component reported for [key] is not appropriate. A FLOWEXP extension exemption only applies to FLOW monitors.	Critical Error Level 1
I	The FLOW component reported in the test extension exemption record for [key] does not actively belong to more than FLOW system. A FLOWEXP exemption only applies to FLOW components that belong to multiple FLOW systems.	Critical Error Level 1

Usage:

1	Other QA Evaluation Report Test Extension Exemption Evaluation
2	QA and Certification Data Entry Screen Evaluation Test Extension Exemption Evaluation

Check Code: EXTEXEM-5

Check Name: Test Extension/Exemption Span Scale Valid

Related Former Checks: QEXP-3

Applicability: General Check

Specifications:

For the Test Extension/Exemption record:

If the SpanScaleCode is null,

If ExtensionOrExemptionCode is equal to "RANGENU",

return result A.

Otherwise,

If ExtensionOrExemptionCode is not equal to "RANGENU",

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported a [fieldname], which is not appropriate for this type of test extension exemption.	Critical Error Level 1

Usage:

1	Other QA Evaluation Report Test Extension Exemption Evaluation
2	QA and Certification Data Entry Screen Evaluation Test Extension Exemption Evaluation

Check Code: EXTEXEM-6

Check Name: Test Extension/Exemption Fuel Code Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the Test Extension/Exemption record:

If the FuelCode is null,

If ExtensionOrExemptionCode is equal to "NONQAOS",

return result A.

Otherwise,

If ExtensionOrExemptionCode is equal to "NONQAOS",

Locate a Monitor System record for the location where the SystemTypeCode is equal to "OILV", "OILM", "GAS", "LTOL", or "LTGS" and the FuelCode is equal to the FuelCode in the current test extension exemption record.

If not found,

return result B.

If the Test Exemption Extension Begin Date is not null,

If the BeginDate of the retrieved record is after the Test Extension Exemption End Date, or the EndDate is not null and is prior to the Test Extension Exemption Begin Date,

return result C.

Otherwise,

return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	This test extension exemption should only be reported for a location with a fuelflow system with a FuelCode equal to [value]. According to the monitoring plan, there are no such systems defined at this location.	Critical Error Level 1
C	This test extension exemption should only be reported for a location with an active fuelflow system with a FuelCode equal to [value]. According to the monitoring plan, there are no such systems defined at this location which are active during the quarter.	Critical Error Level 1
D	You reported a [fieldname], which is not appropriate for this type of test extension exemption.	Critical Error Level 1

Usage:

1	Other QA Evaluation Report Test Extension Exemption Evaluation
2	QA and Certification Data Entry Screen Evaluation Test Extension Exemption Evaluation

Check Code: EXTEXEM-7

Check Name: Test Extension/Exemption Hours Used Valid

Related Former Checks: FFEXT-4D, RTEXT-4, 5

Applicability: General Check

Specifications:

For the Test Extension/Exemption record:

If HoursUsed is not null and is less than 0,

return result A.

If the ExtensionOrExemptionCode is equal to "RANGENU" or "LOWSQTR",

If HoursUsed is greater than 0,

return result B.

else i f the ExtensionOrExemptionCode is not equal to " FLOWEXP " or "F2LEXP" ,

If HoursUsed is null,

If ExtensionOrExemptionCode is equal to "NONQAOS" and the Test Extension Exemption Begin Date is before ECMPS MP Begin Date,

return result C.

Otherwise,

return result D.

If the ExtensionOrExemptionCode is equal to "LOWSYTD" and HoursUsed is greater than 480,

return result E.

If the ExtensionOrExemptionCode is equal to "NRB720" and HoursUsed is greater than 720,

return result E.

If the ExtensionOrExemptionCode is equal to "NONQAOS" , "NONQAPB", or "NONQADB", and HoursUsed is greater than 168,

return result E.

Results:

Result	Description	Severity
A	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1
B	You reported a HoursUsed of [value] in this record. The HoursUsed must be zero to qualify for this test extension exemption.	Critical Error Level 1
C	You did not provide [fieldname] for [key]. This information will be required for ECMPS submissions.	Non-Critical Error
D	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
E	Based on the HoursUsed, this system does not qualify for this test extension exemption.	Critical Error Level 1

Usage:

1	Other QA Evaluation Report Test Extension Exemption Evaluation
2	QA and Certification Data Entry Screen Evaluation Test Extension Exemption Evaluation

Check Code: EXTEXEM-8

Check Name: Duplicate Test Extension/Exemption

Related Former Checks:

Applicability: General Check

Specifications:

For the Test Extension Exemption record with an ExtensionOrExemptionCode and Reporting Period ID that are both not null:

Locate another Test Extension Exemption record for the location with an ExtensionOrExemptionCode, Reporting Period ID, MonitoringSystemID, ComponentID, and FuelCode that are equal to the corresponding fields in the current record.

If found,

return result A.

Results:

Result	Description	Severity
A	Another [recordtype] record already exists with the same [fieldnames].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Test Extension Exemption Evaluation

Check Code: EXTEXEM-9

Check Name: Monitor Plan Evaluation Check

Related Former Checks:

Applicability: General Check

Specifications:

For the Test Extension/Exemption record:

Locate all Monitoring Plan Location records for the location where the SeverityLevelCd of the associated Monitoring Plan is equal to "CRIT1" or "FATAL", and the End Quarter of the associated Monitoring Plan is null or is on or after the Year/Quarter of the extension/exemption.

If found,

return result A.

Otherwise,

Locate all Monitoring Plan Location records for the location where the MustSubmitFlag and NeedsEvalFlag of the associated Monitoring Plan is equal to "Y", and the End Quarter of the associated Monitoring Plan is null or is on or after the Year/Quarter of the extension/exemption.

If found,

return result B.

Results:

Result	Description	Severity
A	A Monitoring Plan associated with this [entity] has critical errors. You must correct all active and future Monitoring Plans containing the location in this [entity] in order to submit this [entity] to be loaded on EPA's host system.	Critical Error Level 1
B	A Monitoring Plan associated with this [entity] has not been evaluated. You must evaluate all active and future Monitoring Plans containing the location in this [entity] in order to complete the evaluation of this [entity].	Critical Error Level 1

Usage:

1	Other QA Evaluation Report Test Extension Exemption Evaluation

Check Category:

Flow-to-Load Check

Check Code: F2LCHK-1

Check Name: System Type Valid

Related Former Checks: FTLCK-1

Applicability: CEM Check

Specifications:

For the flow-to-load check:

If the MonitoringSystemID is null,

set Flow to Load Check System Valid to false, and return result A.

Otherwise,

If the SystemTypeCode of the associated system is equal to "FLOW",

set Flow to Load Check System Valid to true.

Otherwise,

set Flow to Load Check System Valid to false, and return result B.

If Flow To Load Check System is invalid, do not perform other checks. In the QA Evaluation Process, all calculated values will be set to null, and (for tests that have not yet been submitted or have been approved for resubmission) the appropriate values will be stored in the QA Supp Data record for the test.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	According to the monitoring system record, the monitoring system in this flow-to-load check was not a flow system.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Flow-to-Load Check Evaluation

Check Code: F2LCHK-2

Check Name: Flow to Load Check Test Reason Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Flow to Load check:

If the TestReasonCode is null,

If the Test Reporting Period Begin Date is on or after ECMPS MP Begin Date,

return result A.

Otherwise,

return result B.

If the TestReasonCode is not equal to "QA",

Locate the TestReasonCode is not in the Test Reason Code Lookup table,

If not found,

return result C.

If found,

return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You did not provide [fieldname] for [key]. This information will be required for ECMPS submissions.	Non-Critical Error
C	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
D	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation
2	QA Test Evaluation Report Flow-to-Load Check Evaluation
	Condition: Flow to Load Check System Valid *Equals* true

Check Code: F2LCHK-3

Check Name: Flow to Load Check Operating Level Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Flow to Load check:

If the OperatingLevelCode is null,

return result A.

If the OperatingLevelCode is not in the OperatingLevelCode lookup table,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation
2	QA Test Evaluation Report Flow-to-Load Check Evaluation
	Condition: Flow to Load Check System Valid *Equals* true

Check Code: F2LCHK-4

Check Name: Flow to Load Check Data Test Basis Valid

Related Former Checks: FTLCK-3A

Applicability: CEM Check

Specifications:

For a flow-to-load check:

If TestBasisCode is null,

If TestResultCode is equal to "PASSED" or "FAILED",

return result A.

If TestBasisCode is not in the TestBasisCode lookup table,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation
2	QA Test Evaluation Report Flow-to-Load Check Evaluation
	Condition: Flow to Load Check System Valid *Equals* true

Check Code: F2LCHK-5

Check Name: Flow to Load Check Data Bias Adjusted Indicator Valid

Related Former Checks: FTLCK-3A

Applicability: CEM Check

Specifications:

For a flow-to-load check:

If BiasAdjustedIndicator is null,

If TestResultCode is equal to "PASSED" or "FAILED",

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation
2	QA Test Evaluation Report Flow-to-Load Check Evaluation
	Condition: Flow to Load Check System Valid *Equals* true

Check Code: F2LCHK-6

Check Name: Flow to Load Check Data Number of Hours Valid

Related Former Checks: FTLCK-3B, 5

Applicability: CEM Check

Specifications:

For the flow-to-load check:

If TestResultCode is equal to "PASSED" or "FAILED",

If NumberOfHours is null,

return result A.

If NumberOf Hours is less than 168,

return result B.

If TestResultCode is equal to "FEW168H" or "EXC168H",

If NumberOfHours is greater than or equal to 168,

return result C.

If NumberOfHours is not null,

return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The NumberOfHours of quality assured flow data for the quarter is less than 168 hours. A TestResultCode of 'PASSED' or 'FAILED' indicates that there were at least 168 hours of data and the test was performed. Report a code of 'EXC168H' or 'FEW168H' for the quarter if 168 hours are not available.	Critical Error Level 1
C	The NumberOfHours of quality assured flow data exceeds or equals 168 hours. A Flow-to-load analysis or GHR analysis is required for the quarter. Do not report a TestResultCode of 'EXC168H' or 'FEW168H' for this quarter.	Critical Error Level 1
D	You should not report a value for [fieldname] when the TestResultCode is equal to "EXC168H" or "FEW168H".	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation
2	QA Test Evaluation Report Flow-to-Load Check Evaluation
	Condition: Flow to Load Check System Valid *Equals* true

Check Code: F2LCHK-7

Check Name: Flow to Load Check Data Number of Hours Excluded for Fuel Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a flow-to-load check:

If NumberOfHoursExcludedForFuel is not null and is less than 0,

return result A.

Results:

Result	Description	Severity
A	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation
2	QA Test Evaluation Report Flow-to-Load Check Evaluation
	Condition: Flow to Load Check System Valid *Equals* true

Check Code: F2LCHK-8

Check Name: Flow to Load Check Data Number of Hours Excluded for Ramping Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a flow-to-load check:

If NumberOfHoursExcludedRamping is not null and is less than 0,

return result A.

Results:

Result	Description	Severity
A	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation
2	QA Test Evaluation Report Flow-to-Load Check Evaluation
	Condition: Flow to Load Check System Valid *Equals* true

Check Code: F2LCHK-9

Check Name: Flow to Load Check Data Number of Hours Excluded for Bypass Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a flow-to-load check:

If NumberOfHoursExcludedBypass is not null and is less than 0,

return result A.

Results:

Result	Description	Severity
A	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation
2	QA Test Evaluation Report Flow-to-Load Check Evaluation
	Condition: Flow to Load Check System Valid *Equals* true

Check Code: F2LCHK-10

Check Name: Flow to Load Check Data Number of Hours Excluded Pre RATA Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a flow-to-load check:

If NumberOfHoursExcludedPreRATA is not null and is less than 0,

return result A.

Results:

Result	Description	Severity
A	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation
2	QA Test Evaluation Report Flow-to-Load Check Evaluation
	Condition: Flow to Load Check System Valid *Equals* true

Check Code: F2LCHK-11

Check Name: Flow to Load Check Data Number of Hours Excluded Test Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a flow-to-load check:

If NumberOfHoursExcludedTest is not null and is less than 0,

return result A.

Results:

Result	Description	Severity
A	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation
2	QA Test Evaluation Report Flow-to-Load Check Evaluation
	Condition: Flow to Load Check System Valid *Equals* true

Check Code: F2LCHK-12

Check Name: Flow to Load Check Data Number of Hours Excluded for Main and Bypass Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a flow-to-load check:

If NumberOfHoursExcMainBypass is not null and is less than 0,

return result A.

Results:

Result	Description	Severity
A	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation
2	QA Test Evaluation Report Flow-to-Load Check Evaluation
	Condition: Flow to Load Check System Valid *Equals* true

Check Code: F2LCHK-13

Check Name: Flow to Load Check Total Hours Valid

Related Former Checks: FTLCK-2

Applicability: CEM Check

Specifications:

For the flow-to-load check:

If the sum of NumberOfHours (if greater than 0), NumberOfHoursExcludedForFuel (if greater than 0), NumberOfHoursExcludedRamping (if greater than 0), NumberOfHoursExcludedBypass (if greater than 0), NumberOfHoursExcludedPreRATA (if greater than 0), NumberOfHoursExcludedTest (if greater than 0), and NumberOfHoursExcMainBypass (if greater than 0) is greater than 2209,

return result A.

Results:

Result	Description	Severity
A	The total number of hours used in the flow-to-load or GHR analysis plus the number of hours excluded exceed the total number of hours in the quarter.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation
2	QA Test Evaluation Report Flow-to-Load Check Evaluation
	Condition: Flow to Load Check System Valid *Equals* true

Check Code: F2LCHK-14

Check Name: Identification of Previously Reported Test or Test Number for Flow to Load Check

Related Former Checks:

Applicability: CEM Check

Specifications:

For Flow-to-load Check with valid reporting period and operating level and a non-null MonitoringSystemID:

Set Flow to Load Check Supp Data ID to null.

Locate another flow-to-load check for the system where the OperatingLevelCode is equal to the OperatingLevelCode in the current flow-to-load check and the reporting period is equal to the reporting period of the current flow-to-load check.

If found,

return result A.

Otherwise,

Locate an unassociated QASupp record for the location where the TestType Code is equal to "F2LCHK", and the MonitoringSystemID, OperatingLevelCode, and reporting period are equal to MonitoringSystemID, OperatingLevelCode, and reporting period of the current flow-to-load check, and the TestNum is not equal to the TestNumber in the current flow-to-load check.

If found,

return result A.

Otherwise,

Locate a QASupp record for the location where the TestTypeCode is equal to "F2LCHK" and the TestNum equal to the TestNumber in the current TestSummary record.

If found,

Set Flow to Load Check Supp Data ID to the QA Supp Data ID in the QASupp record.

If CAN_SUBMIT in the QA Supp record is equal to "N",

If this is an unassociated QASupp record, and the MonitoringSystemID, OperatingLevelCode, and ReportingPeriod in the QASupp record is not equal to MonitoringSystemID, OperatingLevelCode, and reporting period of the current flow-to-load check,

return result B.

Otherwise,

return result C.

Results:

Result	Description	Severity
A	Based on the information in this record, this test has already been submitted with a different test number, or the Client Tool database already contains the same test with a different test number. This test cannot be submitted.	Fatal
B	Another [testtype] with this test number has already been submitted for this location. This test cannot be submitted with this test number. If this is a different test, you should assign it a unique test number.	Fatal

C	This test has already been submitted and will not be resubmitted. If you wish to resubmit this test, please contact EPA for approval.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation
	Condition: Duplicate Flow to Load Check *Equals* false
2	QA Test Evaluation Report Flow-to-Load Check Evaluation

Check Code: F2LCHK-15

Check Name: Required Flow to Load Reference Data for Flow to Load Check

Related Former Checks: FTLCK-4A, B

Applicability: CEM Check

Specifications:

For the flow-to-load check with a valid reporting period, operating level, and a TestResultCode equal to "PASSED" or "FAILED":

Set Flow to Load Check Average Gross Unit Load and Flow to Load Check Load Units of Measure to null.

If the TestBasisCode in the flow-to-load check is equal to "Q",

Locate the latest QA Supp Attribute record for the location where the associated TestTypeCode is equal to "F2LREF", CAN_SUBMIT is equal to "N", the MonitoringSystemID and OperatingLevelCode is equal to the MonitoringSystemID and OperatingLevelCode of the flow-to-load check, the EndDate is on or prior to the last day of the reporting period in the flow-to-load check, and the Attribute_Name is equal to "REF_FLOW_LOAD_RATIO ".

else i f the TestBasisCode in the flow-to-load check is equal to " H ",

Locate the latest QA Supp Attribute record for the location where the associated TestTypeCode is equal to "F2LREF", CAN_SUBMIT is equal to "N", the MonitoringSystemID and OperatingLevelCode is equal to the MonitoringSystemID and OperatingLevelCode of the flow-to-load check, the EndDate is on or prior to the last day of the reporting period in the flow-to-load check, and the Attribute_Name is equal to "REF_ GHR".

If not found , or Attribute_Value is null,

If the TestBasisCode in the flow-to-load check is equal to "Q",

Locate the latest Flow-to-Load Reference data for the system where the OperatingLevelCode is equal to OperatingLevelCode in the flow-to-load check and the EndDate is on or prior to the last day of the reporting period in the flow-to-load check , and the ReferenceFlowLoadRatio is not null .

else i f the TestBasisCode in the flow-to-load check is equal to " H ",

Locate the latest Flow-to-Load Reference data for the system where the OperatingLevelCode is equal to OperatingLevelCode in the flow-to-load check and the EndDate is on or prior to the last day of the reporting period in the flow-to-load check , and the Reference GrossHeatRate is not null .

If not found,

return result A.

If found,

If AvgAbsolutePercentDiff is greater than 10 and less than or equal to 20,

If AverageGrossUnitLoad is greater than 0,

set Flow to Load Check Average Gross Unit Load to the AverageGrossUnitLoad.

Otherwise,

return result C.

Locate the latest Load record for the location where the BeginDate is on or before the EndDate in the flow-to-load reference data and the EndDate is null or is on or after the EndDate in the flow-to-load reference data.

If found, and the MaximumLoadUnitsOfMeasureCode is equal to "MW", "KLBHR", or "MMBTUHR",

set Flow to Load Check Load Units of Measure to the MaximumLoadUnitsOfMeasureCode.

Otherwise,

return result D.

Otherwise,

If AvgAbsolutePercentDiff is greater than 10 and less than or equal to 20,

Locate the QA Supp Attribute record for the location where the QA Supp Data ID is equal to the QA Supp Data ID in the retrieved QA Supp Attribute record and the Attribute_Name is equal to "AV G _GROSS_UNIT_LOAD".

If found, and Attribute_Value is greater than 0,

set Flow to Load Check Average Gross Unit Load to the Attribute_Value.

Otherwise,

return result C.

Locate the latest Load record for the location where the BeginDate is on or before the EndDate in the QA Supp record and the EndDate is null or is on or after the EndDate in the QA Supp record.

If found, and the MaximumLoadUnitsOfMeasureCode is equal to "MW", "KLBHR", or "MMBTUHR",

set Flow to Load Check Load Units of Measure to the MaximumLoadUnitsOfMeasureCode.

Otherwise,

return result D.

Results:

Result	Description	Severity
A	You reported a TestBasisCode of [test basis indicator] in the flow-to-load check, but the software could not find a prior flow-to-load reference data record based on the same criterion.	Critical Error Level 1
C	The software could not evaluate the flow-to-load check result, because the average gross unit load in the associated flow-to-load reference data was invalid.	Critical Error Level 1
D	The software could not evaluate the flow-to-load check result, because the load units of measure could not be determined.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Flow-to-Load Check Evaluation

Check Code: F2LCHK-16

Check Name: Flow to Load Check Data Average Absolute Percentage Difference Valid

Related Former Checks: FTLCK-4

Applicability: CEM Check

Specifications:

For the flow-to-load check:

Set Flow to Load Check Calc Test Result to null.

If the TestResultCode is equal to "PASSED" or "FAILED",

If AvgAbsolutePercentDiff is null,

return result A.

If AvgAbsolutePercentDiff is less than 0,

return result B.

If BiasAdjustedIndicator is equal to 1, and AvgAbsolutePercentDiff is greater than 15,

Set Flow to Load Check Calc Test Result to "FAILED".

If BiasAdjustedIndicator is equal to 1, and AvgAbsolutePercentDiff is less than or equal to 10,

Set Flow to Load Check Calc Test Result to "PASSED".

If BiasAdjustedIndicator is equal to 0, and AvgAbsolutePercentDiff is greater than 20,

Set Flow to Load Check Calc Test Result to "FAILED".

If BiasAdjustedIndicator is equal to 0, and AvgAbsolutePercentDiff is less than or equal to 15,

Set Flow to Load Check Calc Test Result to "PASSED".

If BiasAdjustedIndicator is null, and AvgAbsolutePercentDiff is greater than 20,

Set Flow to Load Check Calc Test Result to "FAILED".

If BiasAdjustedIndicator is null, and AvgAbsolutePercentDiff is less than or equal to 10,

Set Flow to Load Check Calc Test Result to "PASSED".

Otherwise,

If Flow to Load Check Average Gross Unit Load, Flow to Load Check Units of Measure, and BiasAdjustedIndicator are not null,

If the Flow to Load Check Units of Measure is equal to "MW" and Flow to Load Check Average Gross Unit Load is less than 60, or Flow to Load Check Units of Measure is equal to "KLBHR" and Flow to Load Check Average Gross Unit Load is less than 500, or Flow to Load Check Units of Measure is equal to "MMBTUHR" and Flow to Load Check Average Gross Unit Load is less than 600,

If BiasAdjustedIndicator is equal to 1,

If AvgAbsolutePercentDiff is greater than 15,

Set Flow to Load Check Calc Test Result to "FAILED".

If AvgAbsolutePercentDiff is less than or equal to 15,

Set Flow to Load Check Calc Test Result to "PASSED".

Otherwise,

If AvgAbsolutePercentDiff is greater than 20,

Set Flow to Load Check Calc Test Result to "FAILED".

If AvgAbsolutePercentDiff is less than or equal to 20,

Set Flow to Load Check Calc Test Result to "PASSED".

Otherwise,

If BiasAdjustedIndicator is equal to 1,

If AvgAbsolutePercentDiff is greater than 10,

Set Flow to Load Check Calc Test Result to "FAILED".

If AvgAbsolutePercentDiff is less than or equal to 10,

Set Flow to Load Check Calc Test Result to "PASSED".

Otherwise,

If AvgAbsolutePercentDiff is greater than 15,

Set Flow to Load Check Calc Test Result to "FAILED".

If AvgAbsolutePercentDiff is less than or equal to 15,

Set Flow to Load Check Calc Test Result to "PASSED".

Else

Set Flow to Load Check Calc Test Result to TestResultCode

If the TestResultCode is equal to "FEW168H" or "EXC168H", and AvgAbsolutePercentDiff is not null,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1
C	You should not report a value for [fieldname] when the TestResultCode is equal to "EXC168H" or "FEW168H".	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation
2	QA Test Evaluation Report Flow-to-Load Check Evaluation

Check Code: F2LCHK-17

Check Name: Flow to Load Check Test Result Code Valid

Related Former Checks: FTLCK-4 C/D, 6

Applicability: CEM Check

Specifications:

For the Flow to Load check:

In the QA Evaluation Process, the Flow to Load Check Calc Test Result will be stored as calculated values in the Test Summary record for the test, and (for tests that have not yet been submitted or have been approved for resubmission) the appropriate values will be stored in the QA Supp Data record for the test.

If the TestResultCode is null,

return result A.

If the TestResultCode is not equal to "PASSED", "FAILED", "EXC168H", or "FEW168H",

Locate the TestResultCode in the Test Result Code Lookup table,

If not found,

return result B.

If found,

return result C.

If TestResultCode is equal to "EXC168H",

If NumberOfHoursExcludedForFuel, NumberOfHoursExcludedRamping, NumberOfHoursExcludedBypass, NumberOfHoursExcludedPreRATA, NumberOfHoursExcludedTest, NumberOfHoursExcMainBypass are all null or equal to 0,

return result D.

If Flow to Load Check Calc Test Result is not null,

If TestResultCode is equal to "PASSED" and Flow to Load Check Calc Test Result is equal to "FAILED",

return result E.

If TestResultCode is equal to "FAILED" and Flow to Load Check Calc Test Result is equal to "PASSED",

return result F.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
C	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1
D	The TestResultCode was reported as "EXC168H" to indicate that fewer than 168 hours of quality-assured flow rate data remain after excluding certain hours, but all the fields for excluded hours were blank or zero.	Critical Error Level 1

E	The TestResultCode is equal to "PASSED", but the AvgAbsolutePercentDiff indicates that the test failed the applicable standard based on the RATA load level reported in the flow to load reference record and the use of bias adjusted or non-adjusted values.	Critical Error Level 1
F	The TestResultCode is equal to "FAILED", but the AvgAbsolutePercentDiff indicates that the test passed the applicable standard based on the RATA load level reported in the flow to load reference record and the use of bias adjusted or non-adjusted values.	Non-Critical Error

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation
2	QA Test Evaluation Report Flow-to-Load Check Evaluation

Check Code: F2LCHK-18

Check Name: Duplicate Flow to Load Check

Related Former Checks:

Applicability: CEM Check

Specifications:

For the flow-to-load check with a valid TestNumber:

Locate another TestSummary record for the location where the TestTypeCode is equal to "F2LCHK" and the TestNumber is equal to the TestNumber in the current record.

If found,

return result A.

Otherwise,

Locate an unassociated QA Supp record for the location where the TestTypeCode is equal to " F2LCHK " and the TestNumber is equal to the TestNumber in the current record.

If found,

return result B.

Results:

Result	Description	Severity
A	Another [testtype] with this test number already exists. You must assign a different test number.	Fatal
B	You cannot change the TestNumber to the value that you have entered, because a [testtype] with this TestNumber has already been submitted. If this is a different test, you should assign it a different TestNumber. If you are trying to resubmit this test, you should delete this test, and either reimport this test with its original TestNumber or retrieve the original test from the EPA host system.	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation

Check Code: F2LCHK-19

Check Name: System ID Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the flow-to-load check:

If the MonitoringSystemID is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation

Check Category:

Flow-to-Load Reference Data

Check Code: F2LREF-1

Check Name: System Type Valid

Related Former Checks: FTLRF-1

Applicability: CEM Check

Specifications:

For the flow-to-load reference data:

If the MonitoringSystemID is null,

set Flow to Load Reference System Valid to false, and return result A.

Otherwise,

If the SystemTypeCode of the associated system is equal to "FLOW",

set Flow to Load Reference System Valid to true.

Otherwise,

set Flow to Load Reference System Valid to false, and return result B.

If Flow to Load Reference System is invalid, do not perform other checks. In the QA Evaluation Process, all calculated values will be set to null, and (for tests that have not yet been submitted or have been approved for resubmission) the appropriate values will be stored in the QA Supp Data record for the test.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	According to the monitoring system record, the Flow-to-load reference data was not for a flow system.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation

Check Code: F2LREF-2

Check Name: Identification of Previously Reported Test or Test Number for Flow to Load Reference Data

Related Former Checks:

Applicability: CEM Check

Specifications:

For Flow-to-load Reference Data with valid End Times and a non-null MonitoringSystemID:

Set Flow to Load Reference Supp Data ID to null.

If ReferenceFlowToLoadRatio is not null,

Locate another flow-to-load reference data record for the system where the EndDate, EndHour, and EndMinute are equal to EndDate, EndHour, and EndMinute of the current TestSummary record and the ReferenceFlowToLoadRatio is not null,

If found,

return result A.

Otherwise,

Locate an unassociated QASupp Attribute record for the location where the associated TestType Code is equal to "F2LREF", and the MonitoringSystemID, EndDate, EndHour, and EndMinute is equal to MonitoringSystemID, EndDate, EndHour, and EndMinute of the current TestSummary record, and the TestNum is not equal to the TestNumber in the current TestSummary record, and the AttributeName is equal to "REF_FLOW_LOAD_RATIO"

If found,

Locate a QASuppAttribute record with a QASuppDataID equal to the QASuppDataID in the retrieved record and an AttributeName equal to "REF_GHR"

If the first QASuppAttribute record was found and the second QASuppAttribute record was not found,

return result A. .

Otherwise,

Locate a QASupp record for the location where the TestTypeCode is equal to "F2LREF" and the TestNum equal to the TestNumber in the current TestSummary record.

If found,

Set Flow to Load Reference Supp Data ID to the QA Supp Data ID in the QASupp record.

If CAN_SUBMIT in the QA Supp record is equal to "N",

If this is an unassociated QASupp record, and the MonitoringSystemID, EndDate, EndHour, and EndMinute in the QASupp record is not equal to MonitoringSystemID, EndDate, EndHour, or EndMinute of the current TestSummary record ,

return result B.

Otherwise,

Locate a QASuppAttribute record where the QASuppDataID is equal to the QASuppDataID in the retrieved QASupp record and the AttributeName is equal to "REF_FLOW_LOAD_RATIO".

If found,

return result C.

Otherwise,

return result D .

else If Reference GrossHeatRate is not null,

Locate another flow-to-load reference data record for the system where the EndDate, EndHour, and EndMinute are equal to EndDate, EndHour, and EndMinute of the current TestSummary record and the ReferenceGrossHeatRate is not null,

If found,

return result A.

Otherwise,

Locate an unassociated QASupp Attribute record for the location where the associated TestType Code is equal to "F2LREF", and the MonitoringSystemID, EndDate, EndHour, and EndMinute is equal to MonitoringSystemID, EndDate, EndHour, and EndMinute of the current TestSummary record, and the TestNum is not equal to the TestNumber in the current TestSummary record, and the AttributeName is equal to "REF_GHR".

If found,

Locate a QASuppAttribute record with a QASuppDataID equal to the QASuppDataID in the retrieved record and an AttributeName equal to "REF_FLOW_LOAD_RATIO".

If the first QASuppAttribute record was found and the second QASuppAttribute record was not found,

return result A.

Otherwise,

Locate a QASupp record for the location where the TestTypeCode is equal to "F2LREF" and the TestNum equal to the TestNumber in the current TestSummary record.

If found,

Set Flow to Load Reference Supp Data ID to the QA Supp Data ID in the QASupp record.

If CAN_SUBMIT in the QA Supp record is equal to "N",

If this is an unassociated QASupp record, and the MonitoringSystemID, EndDate, EndHour, and EndMinute in the QASupp record is not equal to MonitoringSystemID, EndDate, EndHour, or EndMinute of the current TestSummary record ,

return result B.

Otherwise,

Locate a QASuppAttribute record where the QASuppDataID is equal to the QASuppDataID in the retrieved QASupp record and the AttributeName is equal to "REF_GHR".

If found,

return result C.

Otherwise,

return result D .

Results:

Result	Description	Severity
A	Based on the information in this record, this test has already been submitted with a different test number, or the Client Tool database already contains the same test with a different test number. This test cannot be submitted.	Fatal
B	Another [testtype] with this test number has already been submitted for this location. This test cannot be submitted with this test number. If this is a different test, you should assign it a unique test number.	Fatal
C	This test has already been submitted and will not be resubmitted. If you wish to resubmit this test, please contact EPA for approval.	Informational Message
D	Another Certification Test record with this test number has already been submitted for this location. If this is a different test, you must assign it a unique test number. If you wish to edit the existing test, you should import or download the test.	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Data Evaluation
	Condition: Duplicate Flow to Load Reference *Equals* false
2	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation

Check Code: F2LREF-3

Check Name: Flow to Load Reference Data RATA Test Number Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Flow to Load Reference data:

If the RATATestNumber is null,

set Flow to Load Reference RATA Test Number to false, and return result A.

Otherwise,

set Flow to Load Reference RATA Test Number to true.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Data Evaluation
2	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation
	Condition: Flow to Load Reference System Valid *Equals* true

Check Code: F2LREF-4

Check Name: Flow to Load Reference Data Operating Level Code Valid

Related Former Checks: FTLRF-2B, C

Applicability: CEM Check

Specifications:

For the Flow to Load Reference data:

If the OperatingLevelCode is null,

return result A.

If the OperatingLevelCode is not in the OperatingLevelCode lookup table,

return result B.

If the OperatingLevelCode is not equal to "N", Test End Date Valid and Test End Hour Valid are true,

Locate the latest Monitor Load record for the location where the BeginDate and BeginHour is on or before the EndDate and EndHour in the TestSummary record and the EndDate is null or the EndDate and EndHour is on or after the EndDate and EndHour in the TestSummary record.

If not found,

return result C.

If the NormalLevelCode in the retrieved record is not equal to the OperatingLevelCode, and either the SecondLevelCode in the retrieved record is not equal to the OperatingLevelCode or the SecondNormalIndicator is not equal to 1,

return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
C	There is no MonitorLoad record for this unit or stack that was active during the RATA. The software cannot validate whether the OperatingLevelCode in this record was a normal load level.	Critical Error Level 1
D	The OperatingLevelCode is not designated as a normal load level in the active MonitorLoad record. Flow-to-load reference data must be based on the RATA for the normal operating level.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Data Evaluation
2	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation
	Condition: Flow to Load Reference System Valid *Equals* true

Check Code: F2LREF-5

Check Name: Flow to Load Reference Data Methodology Valid

Related Former Checks: FTLRF-5A, C, D

Applicability: CEM Check

Specifications:

For the flow-to-load reference data:

Set Flow to Load Reference Methodology Valid to true.

If ReferenceFlowToLoadRatio is not null and ReferenceGrossHeatRate is not null,

set Flow to Load Reference Methodology Valid to false, and return result A.

If ReferenceFlowLoadRatio and ReferenceGrossHeatRate are both null,

set Flow to Load Reference Methodology Valid to false, and return result B.

If ReferenceGrossHeatRate is not null and the AverageHourlyHeatInputRate is null,

set Flow to Load Reference Methodology Valid to false, and return result C.

Results:

Result	Description	Severity
A	You reported both a ReferenceFlowLoadRatio and a ReferenceGrossHeatRate. If you need to use both methodologies for the quarterly flow-to-load evaluations, you must report two separate flow-to-load reference data records, one reporting the flow-to-load ratio and one reporting the gross heat rate.	Fatal
B	You did not report a ReferenceFlowLoadRatio or a ReferenceGrossHeatRate value.	Fatal
C	You reported a ReferenceGrossHeatRate value but did not provide the AverageHourlyHeatInputRate.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Data Evaluation
2	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation
	Condition: Flow to Load Reference System Valid *Equals* true

Check Code: F2LREF-6

2016

Check Name: Flow to Load Reference Data Calc Separate Reference Indicator Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the flow-to-load reference data:

Locate the Monitor Location record for the location.

If the UnitStackPipeID begins with "MS",

If the CalcSeparateReferenceIndicator is null,

return result A.

Otherwise,

If the CalcSeparateReferenceIndicator is equal to 1,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported a value of "1" as the CalcSeparateReferenceIndicator, but this is value is only appropriate for a multiple stack.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Data Evaluation
2	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation
	Condition: Flow to Load Reference System Valid *Equals* true

Check Code: F2LREF-7

2016

Check Name: Flow to Load Reference Data Average Hourly Heat Input Rate Valid

Related Former Checks: FTLRF-5B

Applicability: CEM Check

Specifications:

For flow-to-load reference data with a valid methodology:

If AverageHourlyHeatInputRate is not null,

If ReferenceGrossHeatRate is null,

return result A.

If AverageHourlyHeatInputRate is less than or equal to 0,

return result B.

Results:

Result	Description	Severity
A	You reported an AverageHourlyHeatInputRate but did not determine the ReferenceGrossHeatRate value. The hourly heat input rate is only needed if you use the GHR methodology.	Non-Critical Error
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Data Evaluation
2	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation

Check Code:	F2LREF-8	2016
Check Name:	Flow to Load Reference Data Reference RATA Valid	
Related Former Checks:	FTLRF-2A/E	
Applicability:	CEM Check	
Specifications:		

For flow-to-load reference data:

Set Flow to Load Reference RATA Test ID and Flow to Load Reference RATA Supp ID to null.

If RATATestNumber and OperatingLevelCode are valid,

Locate a QA Supp Data record for the location where the TestTypeCode is equal to "RATA", the MonitoringSystemID is equal to the MonitoringSystemID of the flow-to-load reference data, the TestNumber is equal to the RATATestNumber of the flow-to-load reference data.

If not found,

Locate all RATA Summary records for the system where the TestNumber of the associated TestSummary record is equal to the RATATestNumber of the flow-to-load reference data.

If not found,

return result A.

If found,

If the OperatingLevelCode in any retrieved record is equal to the OperatingLevelCode of the flow-to-load reference data,

return result D.

Otherwise,

r eturn result C.

If found,

If CAN_SUBMIT is equal to " Y ",

Locate all RATA Summary records for the system where the TestNumber of the associated TestSummary record is equal to the RATATestNumber of the flow-to-load reference data.

If found and the associated NeedsEvalFlag is equal to "Y",

return result D .

//If no result

If TestResultCode in the retrieved QA Supp Data record is not null,

Locate the QA Supp Attribute record for the location where the QA Supp Data ID is equal to the QA Supp Data ID in the retrieved QA Supp Data record and the Attribute_Name is equal to "OP_LEVEL_CD_LIST".

If the Attribute_Value does not contain the OperatingLevelCode of the flow-to-load reference data,

return result C.

Otherwise,

If the Test End Date Valid, Test End Hour Valid, and Test End Minute Valid are true,

If the EndDate/Hour/Minute of the flow-to-load reference data is after the BeginDate/Hour/Minute and on or before the EndDate/Hour/Minute of the QA Supp Data record, 2016

set Flow to Load Reference RATA Supp ID to the QA Supp Data ID of the retrieved record.

Otherwise,

return result B.

Otherwise,

return result D.

Results:

Result	Description	Severity
A	The software could not find the reference RATA reported in the flow-to-load reference data.	Critical Error Level 1
B	The reference RATA was performed at different time from the end time reported in the flow-to-load reference data.	Critical Error Level 1
C	The reference RATA was not performed at the OperatingLevelCode [level] reported in the flow-to-load reference data.	Critical Error Level 1
D	The flow-to-load-reference data cannot be evaluated, because the reference RATA has not yet been evaluated or has critical errors.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation

Check Code: F2LREF-9

Check Name: Calculate Flow to Load Reference Data Values 2016

Related Former Checks:

Applicability: CEM Check

Specifications:

For flow-to-load reference data:

Set Flow to Load Reference Calc Average Gross Unit Load and Flow to Load Reference Calc Average Reference Method Flow to null.

If either the Flow to Load Reference RATA Supp ID and Flow to Load Reference RATA Summary ID is not null,

Set variables RunUsedCount, SumGrossUnitLoad, SumReferenceMethodFlow to 0.

If Flow to Load Reference RATA Supp ID is not null,

If the OperatingLevelCode in the flow-to-load reference data is equal to "H" or "N",

Locate a QASuppAttribute record where the QASuppDataID is equal to Flow to Load Reference RATA Supp ID and Attribute_Name is equal to "HIGH_RUN_USED_COUNT"

If found,

set RunUsedCount to Attribute_Value.

Locate a QASuppAttribute record where the QASuppDataID is equal to Flow to Load Reference RATA Supp ID and Attribute_Name is equal to "HIGH_SUM_GROSS_UNIT_LOAD"

If found,

set SumGrossUnitLoad to Attribute_Value.

Locate a QASuppAttribute record where the QASuppDataID is equal to Flow to Load Reference RATA Supp ID and Attribute_Name is equal to "HIGH_SUM_RATA_REF_VALUE"

If found,

set SumReferenceMethodFlow to Attribute_Value.

Otherwise,

return result A.

Otherwise,

return result A.

Otherwise,

return result A.

If the OperatingLevelCode in the flow-to-load reference data is equal to "M",

Locate a QASuppAttribute record where the QASuppDataID is equal to Flow to Load Reference RATA Supp ID and Attribute_Name is equal to "MID_RUN_USED_COUNT"

If found,

set RunUsedCount to Attribute_Value.

Locate a QASuppAttribute record where the QASuppDataID is equal to Flow to Load Reference RATA Supp ID and Attribute_Name is equal to "MID_SUM_GROSS_UNIT_LOAD"

2016

If found,

set SumGrossUnitLoad to Attribute_Value.

Locate a QASuppAttribute record where the QASuppDataID is equal to Flow to Load Reference RATA Supp ID and Attribute_Name is equal to "MID_SUM_RATA_REF_VALUE"

If found,

set SumReferenceMethodFlow to Attribute_Value.

Otherwise,

return result A.

Otherwise,

return result A.

Otherwise,

return result A.

If the OperatingLevelCode in the flow-to-load reference data is equal to "L",

Locate a QASuppAttribute record where the QASuppDataID is equal to Flow to Load Reference RATA Supp ID and Attribute_Name is equal to "LOW_RUN_USED_COUNT"

If found,

set RunUsedCount to Attribute_Value.

Locate a QASuppAttribute record where the QASuppDataID is equal to Flow to Load Reference RATA Supp ID and Attribute_Name is equal to "LOW_SUM_GROSS_UNIT_LOAD"

If found,

set SumGrossUnitLoad to Attribute_Value.

Locate a QASuppAttribute record where the QASuppDataID is equal to Flow to Load Reference RATA Supp ID and Attribute_Name is equal to "LOW_SUM_RATA_REF_VALUE"

If found,

set SumReferenceMethodFlow to Attribute_Value.

Otherwise,

return result A.

Otherwise,

return result A.

Otherwise,

return result A.

If Flow to Load Reference RATA Summary ID is not null:

Locate all RATA Run records where the associated RATASummaryID is equal to Flow to Load Reference RATA

Summary ID and the RunStatusFlag is equal to "RUNUSED".

For each retrieved RATA Run record: 2016

If GrossUnitLoad is greater than 0 and either the CalculatedRATAReferenceValue is not null or RATAReferenceValue is greater than 0,

Add 1 to RunUsedCount.

Add GrossUnitLoad to SumGrossUnitLoad.

If CalculatedRATAReferenceValue is not null,

add CalculatedRATAReferenceValue to SumReferenceMethodFlow.

Otherwise,

add RATAReferenceValue to SumReferenceMethodFlow.

Otherwise,

return result A.

If RunUsedCount is less than 9,

return result A.

Calculate SumReferenceMethodFlow = SumReferenceMethodFlow / RunUsedCount.

If UnitStackPipeID begins with "MS" and the CalcSeparateReferenceIndicator is not equal to 1,

Locate the UnitStackConfiguration record where the stack/pipe location is the location in the flow-to-load reference data.

Locate all UnitStackConfiguration records where the unit location is the unit location in the retrieved UnitStackConfiguration record, the associated StackPipeID begins with "MS" but is not equal to the UnitStackPipeID in the flow-to-load reference data.

For each retrieved UnitStackConfiguration record,

Set OtherReferenceMethodFlow and OtherRunUsedCount to 0.

Locate all QA Supp Data records where the location is the stack/pipe location in the retrieved UnitStackConfiguration record, the TestTypeCode is equal to "RATA", CAN_SUBMIT is equal to "N", the associated SystemTypeCode is equal to "FLOW", the EndDate is within 30 days of the EndDate in the flow-to-load reference data, the TestResultCode begins with "PASS".

If more than one record is found,

return result B.

If one record is found,

Locate a QASuppAttribute record where the QASuppDataID is equal to the QASuppDataID of the retrieved QA Supp Data record, the Attribute_Name is equal to "OP_LEVEL_CD_LIST", and Attribute_Value contains the OperatingLevelCode in the flow-to-load reference data.

If not found,

return result B.

Otherwise,

If the OperatingLevelCode in the flow-to-load reference data is equal to "H" or "N",

Locate a QASuppAttribute record where the QASuppDataID is equal to the QASuppDataID of the retrieved QA Supp Data record and the Attribute_Name is equal to 2016
"HIGH_RUN_USED_COUNT".

If found,

add Attribute_Value to OtherRunUsedCount.

Locate a QASuppAttribute record where the QASuppDataID is equal to the QASuppDataID of the retrieved QA Supp Data record and the Attribute_Name is equal to "HIGH_SUM_GROSS_UNIT_LOAD"

If found,

add Attribute_Value to SumGrossUnitLoad

Locate a QASuppAttribute record where the QASuppDataID is equal to the QASuppDataID of the retrieved QA Supp Data record and the Attribute_Name is equal to "HIGH_SUM_RATA_REF_VALUE".

If found,

add Attribute_Value to OtherSumReferenceMethodFlow.

Otherwise,

return result A.

Otherwise,

return result A.

Otherwise,

return result A.

If the OperatingLevelCode in the flow-to-load reference data is equal to "M",

Locate a QASuppAttribute record where the QASuppDataID is equal to the QASuppDataID of the retrieved QA Supp Data record and the Attribute_Name is equal to "MID_RUN_USED_COUNT".

If found,

add Attribute_Value to OtherRunUsedCount.

Locate a QASuppAttribute record where the QASuppDataID is equal to the QASuppDataID of the retrieved QA Supp Data record and the Attribute_Name is equal to "MID_SUM_GROSS_UNIT_LOAD"

If found,

add Attribute_Value to SumGrossUnitLoad

Locate a QASuppAttribute record where the QASuppDataID is equal to the QASuppDataID of the retrieved QA Supp Data record and the Attribute_Name is equal to "MID_SUM_RATA_REF_VALUE".

If found,

add Attribute_Value to OtherSumReferenceMethodFlow.

Otherwise,

return result A.

2016

Otherwise,

return result A.

Otherwise,

return result A.

If the OperatingLevelCode in the flow-to-load reference data is equal to "L",

Locate a QASuppAttribute record where the QASuppDataID is equal to the QASuppDataID of the retrieved QA Supp Data record and the Attribute_Name is equal to "LOW_RUN_USED_COUNT".

If found,

add Attribute_Value to OtherRunUsedCount.

Locate a QASuppAttribute record where the QASuppDataID is equal to the QASuppDataID of the retrieved QA Supp Data record and the Attribute_Name is equal to "LOW_SUM_GROSS_UNIT_LOAD"

If found,

add Attribute_Value to SumGrossUnitLoad

Locate a QASuppAttribute record where the QASuppDataID is equal to the QASuppDataID of the retrieved QA Supp Data record and the Attribute_Name is equal to "LOW_SUM_RATA_REF_VALUE".

If found,

add Attribute_Value to OtherSumReferenceMethodFlow.

Otherwise,

return result A.

Otherwise,

return result A.

Otherwise,

return result A.

If not found,

Locate all RATA Summary where the location is the stack/pipe location in the retrieved UnitStackConfiguration record, the associated SystemTypeCode is equal to "FLOW", the associated EndDate is within 30 days of the EndDate in the flow-to-load reference data, the associated TestResultCode begins with "PASS", and the OperatingLevelCode is equal to the OperatingLevelCode in the flow-to-load reference data.

If one record is found,

Locate all RATA Run records where the associated RATASummaryID is equal to RATASummaryID of the retrieved record and the RunStatusFlag = "RUNUSED".

For each retrieved RATA Run record:

If GrossUnitLoad is greater than 0 and either the CalculatedRATAReferenceValue is not null or RATAReferenceValue is greater than 0,

2016

Add 1 to OtherRunUsedCount.

Add GrossUnitLoad to SumGrossUnitLoad.

If CalculatedRATAReferenceValue is not null,

add CalculatedRATAReferenceValue to OtherSumReferenceMethodFlow.

Otherwise,

add RATAReferenceValue to OtherSumReferenceMethodFlow.

Otherwise,

return result A.

If OtherRunUsedCount is less than 9,

return result A.

Otherwise,

return result B.

Calculate RunUsedCount = RunUsedCount + OtherRunUsedCount.

Calculate SumReferenceMethodFlow = SumReferenceMethodFlow + (OtherSumReferenceMethodFlow / OtherRunUsedCount).

Calculate Flow to Load Reference Calc Average Gross Unit Load = SumGrossUnitLoad / RunUsedCount, rounded to the nearest integer.

Set Flow to Load Reference Calc Average Reference Method Flow to SumReferenceMethodFlow, rounded to the nearest integer .

Results:

Result	Description	Severity
A	The AverageGrossUnitLoad and AverageReferenceMethodFlow could not be recalculated because of invalid data in the reported reference RATA(s).	Critical Error Level 1
B	The AverageGrossUnitLoad and AverageReferenceMethodFlow could not be recalculated because the software could not identify the reference RATA(s) at the other multiple stack(s) linked to the unit.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation

Check Code: F2LREF-10

Check Name: Flow to Load Reference Data Average Reference Method Flow Valid 2016

Related Former Checks: FTLRF-4

Applicability: CEM Check

Specifications:

For the flow-to-load reference data:

If the AverageReferenceMethodFlow is null,

return result A.

If the AverageReferenceMethodFlow is less than or equal to 0,

return result B.

Otherwise,

If the Flow to Load Reference Calc Average Reference Method Flow is not null,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "F2LREF" and the FieldDescription is equal to "AverageReferenceMethodFlow".

If the absolute value of the difference between the Flow to Load Reference Calc Average Reference Method Flow and the AverageReferenceMethodFlow is greater than the Tolerance in the cross-check record,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
C	The reported AverageReferenceMethodFlow is inconsistent with the recalculated arithmetic mean of the reference method values in the run records of the reference RATA(s).	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Data Evaluation
2	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation

Check Code: F2LREF-11

Check Name: Flow to Load Reference Data Average Gross Unit Load Valid

Related Former Checks: FTLRF-3 2016

Applicability: CEM Check

Specifications:

For the flow-to-load reference data:

Set Flow to Load Reference Calc GHR and Flow to Load Reference Calc Flow to Load Ratio to null.

If the AverageGrossUnitLoad is null,

return result A.

If the AverageGrossUnitLoad is less than or equal to 0,

return result B.

Otherwise,

If Flow to Load Reference Methodology Valid is true,

If AverageHourlyHeatInputRate is greater than 0,

calculate Flow to Load Reference Calc GHR = AverageHourlyHeatInputRate / AverageGrossUnitLoad * 1000, and round to the nearest integer.

If AverageReferenceMethodFlow is greater than 0,

calculate Flow to Load Reference Calc Flow to Load Ratio = AverageReferenceMethodFlow / AverageGrossUnitLoad / 100000, and round to two decimal places.

If the Flow to Load Reference Calc Average Gross Unit Load is not null,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "F2LREF" and the FieldDescription is equal to "AverageGrossUnitLoad".

If found, and the absolute value of the difference between the Flow to Load Reference Calc Average Gross Unit Load and the AverageGrossUnitLoad is greater than the Tolerance in the cross-check record,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
C	The reported AverageGrossUnitLoad is inconsistent with the recalculated average of the GrossUnitLoad reported in the run records of the reference RATA(s).	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Data Evaluation
2	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation

Check Code: F2LREF-12

Check Name: Flow to Load Reference Data Reference Flow to Load Ratio Valid 2016

Related Former Checks: FTLRF-6

Applicability: CEM Check

Specifications:

For flow-to-load reference data with a valid methodology:

If ReferenceFlowToLoadRatio is not null,

If ReferenceFlowToLoadRatio is less than or equal to 0,

return result A.

Otherwise,

If Flow to Load Reference Calc Flow to Load Ratio is not null,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "F2LREF" and the FieldDescription is equal to "ReferenceFlowLoadRatio".

If the absolute value of the difference between the Flow to Load Reference Calc Flow To Load Ratio and the ReferenceFlowLoadRatio is greater than the Tolerance in the cross-check record,

return result B.

Results:

Result	Description	Severity
A	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
B	The ReferenceFlowLoadRatio does not equal the recalculated ratio based on the reported values for AverageReferenceMethodFlow and AverageGrossUnitLoad.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Data Evaluation
2	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation
	Condition: Flow to Load Reference System Valid *Equals* true

Check Code: F2LREF-13

Check Name: Flow to Load Reference Data Reference Gross Heat Rate Valid

Related Former Checks: FTLRF-7 2016

Applicability: CEM Check

Specifications:

For flow-to-load reference data with a valid methodology:

In the QA Evaluation Process, the Flow to Load Reference Calc Average Gross Unit Load, Flow to Load Reference Calc Average Reference Method Flow, Flow to Load Reference Calc Flow to Load Ratio, and Flow to Load Reference Calc GHR will be stored as calculated values in the FlowToLoadReference record for the test, and (for tests that have not yet been submitted or have been approved for resubmission) the appropriate values will be stored in the QA Supp Data and QA Supp Attribute records for the test.

If ReferenceGrossHeatRate is not null,

If ReferenceGrossHeatRate is less than or equal to 0,

return result A.

Otherwise,

If Flow to Load Reference Calc GHR is not null,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "F2LREF" and the FieldDescription is equal to "ReferenceGHR".

If the absolute value of the difference between the Flow to Load Reference Calc GHR and the ReferenceGrossHeatRate is greater than the Tolerance in the cross-check record,

return result B.

Results:

Result	Description	Severity
A	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
B	The ReferenceGrossHeatRate does not equal the recalculated value based on the reported values for AverageHourlyHeatInputRate and the AverageGrossUnitLoad.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Data Evaluation
2	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation
	Condition: Flow to Load Reference System Valid *Equals* true

Check Code: F2LREF-14

Check Name: Duplicate Flow to Load Reference Data 2016

Related Former Checks:

Applicability: CEM Check

Specifications:

For flow-to-load reference data with a valid TestNumber:

Locate another TestSummary record for the location where the TestTypeCode is equal to "F2LREF" and the TestNumber is equal to the TestNumber in the current record.

If found,

return result A.

Otherwise,

Locate an unassociated QA Supp record for the location where the TestTypeCode is equal to " F2LREF " and the TestNumber is equal to the TestNumber in the current record.

If found,

return result B.

Results:

Result	Description	Severity
A	Another [testtype] with this test number already exists. You must assign a different test number.	Fatal
B	You cannot change the TestNumber to the value that you have entered, because a [testtype] with this TestNumber has already been submitted. If this is a different test, you should assign it a different TestNumber. If you are trying to resubmit this test, you should delete this test, and either reimport this test with its original TestNumber or retrieve the original test from the EPA host system.	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Data Evaluation

Check Code: F2LREF-15

2016

Check Name: System ID Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the flow-to-load reference data:

If the MonitoringSystemID is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal

Usage:

1 QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Data Evaluation

Check Code:	F2LREF-16	2016
Check Name:	Calculate Flow-to-Load Reference Data	
Related Former Checks:		
Applicability:	CEM Check	
Specifications:		

For the Flow-to-load Reference Data:

Set F2L Calc GUL, F2L Calc Flow, F2L Calc Ratio, and F2L Calc GHR to null.

If MonitoringSystemID is null, RATATestNumber is null, or OperatingLevelCode is not equal to "H", "L", "M",

return result A.

If the EndDate is null, or is before 1/1/1993, or is after the current date, or the EndHour is not between 0 and 23, or the EndMinute is not between 0 and 59,

return result A.

If ReferenceFlowToLoadRatio and ReferenceGrossHeatRate are both null or are both not null,

return result A.

If ReferenceGrossHeatRate is not null and the AverageHourlyHeatInputRate is null or is less than or equal to 0,

return result A.

Otherwise,

Locate all RATA Summary records where the MonitoringSystemID, OperatingLevelCode , and the TestNumber of associated TestSummary record is equal to the MonitoringSystemID, OperatingLevelCode and RATATestNumber of the flow-to-load reference data.

If not found,

return result B.

If found, and the EndDate/Hour/Minute of the flow-to-load reference data is on or before the BeginDate/Hour/Minute or is after the EndDate/Hour/Minute of the TestSummary record associated with the retrieved RATA Summary record,

return result E .

Otherwise,

Set variables RunUsedCount, SumGrossUnitLoad, SumReferenceMethodFlow to 0.

Locate all RATA Run records for the retrieved RATA Summary record where the RunStatusFlag is equal to "RUNUSED".

For each retrieved RATA Run record:

I f GrossUnitLoad is greater than 0 and RATAReferenceValue is greater than 0,

Add 1 to RunUsedCount.

Add GrossUnitLoad to SumGrossUnitLoad.

Add RATAReferenceValue to SumReferenceMethodFlow.

Otherwise,

return result C.

If RunUsedCount is less than 9, 2016

return result C.

Calculate SumReferenceMethodFlow = SumReferenceMethodFlow / RunUsedCount.

If UnitStackPipeID begins with "MS" and the CalcSeparateReferenceIndicator is not equal to 1,

Locate the UnitStackConfiguration record where the stack/pipe location is the location in the flow-to-load reference data.

Locate all UnitStackConfiguration records where the unit location is the unit location in the retrieved UnitStackConfiguration record, the associated StackPipeID begins with "MS" but is not equal to the associated UnitStackPipeID in the flow-to-load reference data.

For each retrieved UnitStackConfiguration record,

Set OtherReferenceMethodFlow and OtherRunUsedCount to 0.

Locate all RATA Summary where the location is the stack/pipe location in the retrieved UnitStackConfiguration record, the associated SystemTypeCode is equal to "FLOW", the associated EndDate is within 30 days of the EndDate in the flow-to-load reference data, the associated TestResultCode begins with "PASS", and the OperatingLevelCode is equal to the OperatingLevelCode in the flow-to-load reference data.

If exactly one record is found,

Locate all RATA Run records for the retrieved RATA Summary record where the RunStatusFlag = "RUNUSED".

For each retrieved RATA Run record:

If GrossUnitLoad is greater than 0 and RATAReferenceValue is greater than 0,

Add 1 to OtherRunUsedCount.

Add GrossUnitLoad to SumGrossUnitLoad.

Add RATAReferenceValue to OtherSumReferenceMethodFlow.

Otherwise,

return result C.

If OtherRunUsedCount is less than 9,

return result C.

Otherwise,

Calculate RunUsedCount = RunUsedCount + OtherRunUsedCount.

Calculate SumReferenceMethodFlow = SumReferenceMethodFlow + OtherSumReferenceMethodFlow / OtherRunUsedCount).

Otherwise,

return result D.

Calculate F2L Calc GUL = SumGrossUnitLoad / RunUsedCount, rounded to the nearest integer.

Set F2L Calc Flow to SumReferenceMethodFlow, rounded to the nearest integer .

If ReferenceGHR is not null, 2016

Calculate F2L Calc GHR = AverageHourlyHeatInputRate / F2L Calc GUL * 1000, and round to the nearest integer.

Otherwise,

Calculate F2L Calc Ratio = F2L Calc Flow / F2L Calc GUL / 100000, and round to two decimal places.

Results:

Result	Description	Severity
A	The values in this record could not be calculated because of invalid data.	Critical Error Level 1
B	The software could not find the reference RATA reported in the flow-to-load reference data. You should retrieve the RATA from the EPA host database if you wish to calculate the values in this flow-to-load reference data record.	Critical Error Level 1
C	The values could not be recalculated because of invalid data in the reported reference RATA(s).	Critical Error Level 1
D	The values could not be recalculated because the software could not identify the reference RATA(s) at the other multiple stack(s) linked to the unit.	Critical Error Level 1
E	The reference RATA was performed at different time from the end time reported in the flow-to-load reference data.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Calculations

Check Category:

Fuelflow-to-Load Baseline Data

Check Code: FF2LBAS-1

Check Name: FuelFlow to Load Baseline System Type Valid 2016

Related Former Checks: FFLRF-1

Applicability: Appendix D Check

Specifications:

For the fuel-flow-to-load baseline data:

If the MonitoringSystemID is null,

set FF2LBAS System Valid to false, and return result A.

Otherwise,

If the SystemTypeCode of the associated system is equal to "OILV", "OILM", "GAS", "LTOL", or "LTGS",

set FF2LBAS System Valid to true.

Otherwise,

set FF2LBAS System Valid to false, and return result B.

If FF2LBAS System is invalid, do not perform other checks. In the QA Evaluation Process, (for tests that have not yet been submitted or have been approved for resubmission) the appropriate values will be stored in the QA Supp Data record for the test.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	According to the monitoring system record, the monitoring system for this [testtype] was not a fuel flow system.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Fuelflow-to-Load Baseline Data

Check Code: FF2LBAS-2

Check Name: Identification of Previously Reported Test or Test Number for FuelFlow to Load Baseline Data 2016

Related Former Checks:

Applicability: CEM Check

Specifications:

For fuel flow-to-load baseline data with valid end time and a non-null MonitoringSystemID:

Locate another fuel flow-to-load baseline data record for the system where the EndDate and EndHour are equal to EndDate and EndHour of the current TestSummary record.

If found,

return result A.

Otherwise,

Locate an unassociated QASupp record for the location where the TestType Code is equal to "FF2LBAS", and the MonitoringSystemID, EndDate, and EndHour is equal to MonitoringSystemID, EndDate, and EndHour of the current TestSummary record, and the TestNum is not equal to the TestNumber in the current TestSummary record,

If found,

return result A.

Otherwise,

Locate a QASupp record for the location where the TestTypeCode is equal to "FF2LBAS" and the TestNum equal to the TestNumber in the current TestSummary record.

If found,

If CAN_SUBMIT in the QA Supp record is equal to "N",

If this is an unassociated QASupp record, and the MonitoringSystemID, EndDate, and EndHour in the QASupp record is not equal to MonitoringSystemID, EndDate, and EndHour of the current TestSummary record,

return result B.

Otherwise,

return result C.

Results:

Result	Description	Severity
A	Based on the information in this record, this test has already been submitted with a different test number, or the Client Tool database already contains the same test with a different test number. This test cannot be submitted.	Fatal
B	Another [testtype] with this test number has already been submitted for this location. This test cannot be submitted with this test number. If this is a different test, you should assign it a unique test number.	Fatal
C	This test has already been submitted and will not be resubmitted. If you wish to resubmit this test, please contact EPA for approval.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation *Condition:* Duplicate Fuel Flow to Load Baseline *Equals* false	2016
2	QA Test Evaluation Report Fuelflow-to-Load Baseline Data	

Check Code: FF2LBAS-3

Check Name: FuelFlow to Load Baseline Accuracy Test Number Valid 2016

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For fuelflow-to-load baseline data:

Set FF2LBAS Accuracy Test Baseline Start Date and FF2LBAS Accuracy Test Baseline Start Hour to null.

Set FF2LBAS PEI Required to false.

If AccuracyTestNumber is null,

return result A.

Otherwise,

Locate a QASupp record for the location where the TestType Code is equal to "FFACC" or "FFACCTT", the TestNumber is equal to the AccuracyTestNumber in the baseline data, and CAN_SUBMIT is equal to "N".

If not found,

Locate a Test Summary record for the location where the TestType Code is equal to "FFACC" or "FFACCTT" and the TestNumber is equal to the AccuracyTestNumber in the baseline data.

If not found,

return result B.

If either a QA Supp record or Test Summary record was found,

Locate a System Component record for the system in the baseline data where the ComponentIdentifier is equal to the ComponentIdentifier in the retrieved QA Supp or Test Summary record.

If not found,

return result C.

Otherwise,

If the TestTypeCode in the retrieved QA Supp or Test Summary record is equal to "FFACCTT" or the associated SampleAcquisitionMethodCode of the component in the System Component record is equal to " NOZ ", "ORF", or "VEN",

set FF2LBAS PEI Required to true.

If the associated ReinstallationDate in the retrieved QA Supp or Test Summary record is null,

Set FF2LBAS Accuracy Test Baseline Start Date to the EndDate in the retrieved QA Supp or Test Summary record.

Set FF2LBAS Accuracy Test Baseline Start Hour to the EndHour in the retrieved QA Supp or Test Summary record.

Otherwise,

Set FF2LBAS Accuracy Test Baseline Start Date to the associated ReinstallationDate in the retrieved QA Supp or Test Summary record.

Set FF2LBAS Accuracy Test Baseline Start Hour to the associated ReinstallationHour in the retrieved QA

Supp or Test Summary record.

2016

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The test identified by the [fieldname] in the fuel flow-to-load baseline data cannot be found.	Critical Error Level 1
C	The test identified by the [fieldname] in the fuel flow-to-load baseline data was conducted for a flowmeter component that does not belong to this monitoring system.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Baseline Data
	Condition: FF2LBAS System Valid *Equals* true

Check Code: FF2LBAS-4

Check Name: FuelFlow to Load Baseline Method Valid 2016

Related Former Checks: FFLRF-5

Applicability: Appendix D Check

Specifications:

For fuelflow-to-load baseline data:

If both the BaselineFuelFlowToLoadRatio and the BaselineGHR are not null,

set FF2LBAS Method Valid to false, and return result A.

If both the BaselineFuelFlowToLoadRatio and the BaselineGHR are null,

set FF2LBAS Method Valid to false, and return result B.

Otherwise,

set FF2LBAS Method Valid to true.

Results:

Result	Description	Severity
A	You reported both a Fuel flow-to-load ratio and a GHR value. Since only one methodology can be used, this record is invalid.	Critical Error Level 1
B	You did not report either a Fuel flow-to-load ratio or a GHR value.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Baseline Data
	Condition: FF2LBAS System Valid *Equals* true

Check Code: FF2LBAS-5

Check Name: FuelFlow to Load Baseline Duration Valid 2016

Related Former Checks: FFLRF-3

Applicability: Appendix D Check

Specifications:

For fuelflow-to-load baseline data:

Set FF2LBAS Collection Period Hours to null.

If Test Dates Consistent is true,

If the calendar year/quarter of the EndDate is more than 4 quarters after the calendar year/quarter of the BeginDate,

return result A.

Otherwise,

set FF2LBAS Collection Period Hours to the number of hours between the BeginDate/BeginHour and the EndDate/EndHour (inclusive).

Results:

Result	Description	Severity
A	The baseline period exceeds the 4 quarters allowed for the collection of fuel flow-to-load baseline data.	Critical Error Level 2

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Baseline Data

Check Code:	FF2LBAS-6	
Check Name:	FuelFlow to Load Baseline PEI Test Number Valid	2016
Related Former Checks:		
Applicability:	Appendix D Check	
Specifications:		

For fuelflow-to-load baseline data:

If PEITestNumber is null,

Set FF2LBAS Baseline Start Date to the FF2LBAS Accuracy Test Baseline Start Date.

Set FF2LBAS Baseline Start Hour to the FF2LBAS Accuracy Test Baseline Start Hour.

If FF2LBAS PEI Required is equal to true,

return result A.

Otherwise,

Set FF2LBAS Baseline Start Date and FF2LBAS Baseline Start Hour to null.

Locate a QASupp record for the location where the TestType Code is equal to "PEI", the TestNumber is equal to the PEITestNumber in the baseline data, and CAN_SUBMIT is equal to "N".

If not found,

Locate a Test Summary record for the location where the TestType Code is equal to "PEI" and the TestNumber is equal to the PEITestNumber in the baseline data.

If not found,

return result B.

If either a QA Supp record or Test Summary record was found,

Locate a System Component record for the system in the baseline data where the ComponentIdentifier is equal to the ComponentIdentifier in the retrieved QA Supp or Test Summary record.

If not found,

return result C.

Otherwise,

If the FF2LBAS Accuracy Test Baseline Start Date and FF2L Accuracy Test Baseline Start Hour is later EndDate and EndHour in the retrieved QA Supp or Test Summary record,

Set FF2LBAS Baseline Start Date to the FF2LBAS Accuracy Test Baseline Start Date.

Set FF2LBAS Baseline Start Hour to the FF2LBAS Accuracy Test Baseline Start Hour.

Otherwise,

Set FF2LBAS Baseline Start Date to the EndDate in the retrieved QA Supp or Test Summary record.

Set FF2LBAS Baseline Start Hour to the EndHour in the retrieved QA Supp or Test Summary record.

If the BeginDate and BeginHour in the retrieved SystemComponent record is later than the FF2LBAS Baseline Start Date and FF2LBAS Baseline Start Hour,

return result D.

Results:

Result	Description	Severity
A	You have not reported a PEITestNumber in the fuel flow-to-load baseline data, even though this type of flowmeter generally requires a primary element visual inspection.	Critical Error Level 2
B	The test identified by the [fieldname] in the fuel flow-to-load baseline data cannot be found.	Critical Error Level 1
C	The test identified by the [fieldname] in the fuel flow-to-load baseline data was conducted for a flowmeter component that does not belong to this monitoring system.	Critical Error Level 1
D	The BeginDate and BeginHour of the System Component record associated with the flowmeter in this system is later than the begin date and hour of the baseline data collection period, or the associated PEI or Accuracy Test.	Non-Critical Error

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Baseline Data

Check Code: FF2LBAS-7

Check Name: FuelFlow to Load Baseline Average Load Valid 2016

Related Former Checks: FFLRF-4 and 7B

Applicability:

Specifications:

For fuelflow-to-load baseline data:

Set FF2LBAS Load UOM Code to null.

If AverageLoad is null,

return result A.

If AverageLoad is less than or equal to 0,

return result B.

If Test Dates Consistent is equal to true,

Locate the Load record for the location with the highest MaximumLoad where the BeginDate and BeginHour is on or before the EndDate and EndHour of the baseline data and the EndDate is null or the EndDate and EndHour is on or after the BeginDate and BeginHour of the baseline data.

If not found,

return result C.

Otherwise,

Set FF2LBAS Load UOM Code to the MaximumLoadUnitsOfMeasureCode in the retrieved record.

If AverageLoad is greater than the MaximumLoadValue in the retrieved record,

return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
C	There is no MonitorLoad record for this unit or pipe that was active during the baseline data collection period.	Critical Error Level 1
D	The AverageLoad reported for the baseline period exceeds the MaximumLoadValue reported in the monitoring plan.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Baseline Data

Check Code:	FF2LBAS-8	2016
Check Name:	FuelFlow to Load Baseline Avg Hourly Heat Input Rate Valid	
Related Former Checks:	FFLRF-6C	
Applicability:	Appendix D Check	
Specifications:		

For fuelflow-to-load baseline data with valid method and a non-null AverageHourlyHeatInputRate:

If AverageHourlyHeatInputRate is less than or equal to 0,

return result A.

Results:

Result	Description	Severity
A	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Baseline Data

Check Code:	FF2LBAS-9	
Check Name:	FuelFlow to Load Baseline Heat Input Rate Consistent with Maximum Heat Input	2016
Related Former Checks:	FFLRF-9	
Applicability:	Appendix D Check	
Specifications:		

For fuelflow-to-load baseline data with a valid method, consistent dates, and AverageHourlyHeatInputRate greater than 0:

If the LocationID begins with "MP",

Locate the Unit Stack Configuration record for the pipe location where the BeginDate is on or before the EndDate of the baseline data and the EndDate is null or is on or after the BeginDate of the baseline data.

Locate the Unit Capacity record with the highest MaximumHeatInputCapacity where the location is the unit in the Unit Stack Configuration record, the BeginDate is on or before the EndDate of the baseline data, and the EndDate is null or is on or before the BeginDate of the baseline data.

If not found,

return result A.

If found,

If the AverageHourlyHeatInputRate is greater than the MaximumHeatInputCapacity in the retrieved record,

return result B.

If the LocationID begins with "CP",

Locate the Unit Stack Configuration records for the pipe location where the BeginDate is on or before the EndDate of the baseline data and the EndDate is null or is on or after the BeginDate of the baseline data.

Set totalHI to 0.

For each retrieved record,

Locate the Unit Capacity record with the highest MaximumHeatInputCapacity where the location is the unit in the Unit Stack Configuration record, the BeginDate is on or before the EndDate of the baseline data, and the EndDate is null or is on or before the BeginDate of the baseline data.

If not found,

return result A.

If found,

add MaximumHeatInputCapacity to totalHI.

If the AverageHourlyHeatInputRate is greater than totalHI,

return result B.

Otherwise,

Locate the Unit Capacity record with the highest MaximumHeatInputCapacity where the location is the location in the baseline data, the BeginDate is on or before the EndDate of the baseline data, and the EndDate is null or is on or before the BeginDate of the baseline data.

If not found,

return result A.

If found, 2016

If the AverageHourlyHeatInputRate is greater than the MaximumHeatInputCapacity in the retrieved record,

return result B.

Results:

Result	Description	Severity
A	There are no active UnitCapacity records for this unit or for all units linked to this pipe during the baseline data collection period.	Critical Error Level 1
B	The AverageHourlyHeatInputRate for the baseline period exceeds the maximum heat input capacity for the unit or for all units linked to the pipe.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Fuelflow-to-Load Baseline Data

Check Code: FF2LBAS-10

Check Name: FuelFlow to Load Baseline Average FuelFlow Rate Valid

Related Former Checks: FFLRF-6A

Applicability: Appendix D Check

Specifications:

For fuelflow-to-load baseline data with valid method and non-null AverageFuelFlowRate:

If AverageFuelFlowRate is less than or equal to 0,

return result A.

Results:

Result	Description	Severity
A	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Baseline Data

Check Code: FF2LBAS-11

Check Name: FuelFlow to Load Baseline Begin Time Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For a fuel flow-to-load baseline data record with a valid begin time and a non-null FF2LBAS Baseline Start Date:

If the BeginDate and BeginHour of the baseline data is prior to the FF2L Baseline Start Date and FF2L Baseline Start Hour,

return result A.

Results:

Result	Description	Severity
A	According to the Accuracy Test (and PEI) associated with the fuel flow-to-load baseline data, the begin date and hour of the baseline data collection period is prior to the date when the accuracy test (and PEI) were completed or the flowmeter was reinstalled.	Critical Error Level 2

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Baseline Data

Check Code: FF2LBAS-12

Check Name: FuelFlow to Load Baseline Number of Hours Excluded Cofiring Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For fuelflow-to-load baseline data:

If the NumberOfHoursExcludedCofiring is not null and is less than 0,

return result A.

Results:

Result	Description	Severity
A	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Baseline Data

Check Code: FF2LBAS-13

Check Name: FuelFlow to Load Baseline Number of Hours Excluded Ramping Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For fuelflow-to-load baseline data:

If the NumberOfHoursExcludedRamping is not null and is less than 0,

return result A.

Results:

Result	Description	Severity
A	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Baseline Data

Check Code: FF2LBAS-14

Check Name: FuelFlow to Load Baseline Number of Hours Excluded Low Range Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For fuelflow-to-load baseline data:

If the NumberOfHoursExcludedLowRange is not null and is less than 0,

return result A.

If FF2LBAS Data Collection Period Hours is not null,

tempval = 168

If NumberOfHoursExcludedCofiring is greater than 0,

calculate tempval = tempval + NumberOfHoursExcludedCofiring.

If NumberOfHoursExcludedRamping is greater than 0,

calculate tempval = tempval + NumberOfHoursExcludedRamping.

If NumberOfHoursExcludedLowRange is greater than 0,

calculate tempval = tempval + NumberOfHoursExcludedLowRange.

If tempval is greater than FF2LBAS Data Collection Period Hours,

return result B.

Results:

Result	Description	Severity
A	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1
B	The number of hours excluded in the baseline data collection period exceeds the number of available clock hours in the period.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Baseline Data

Check Code:	FF2LBAS-15	2016
Check Name:	FuelFlow to Load Baseline Base FuelFlow to Load UOM Valid	
Related Former Checks:	FFLRF-6B, 7A, and 8	
Applicability:	Appendix D Check	
Specifications:		

For fuelflow-to-load baseline data:

Set FF2LBAS Fuel Flow to Load Ratio UOM Code Valid to false.

If FF2LBAS Method Valid is true and AverageFuelFlowRate is not null,

Set FF2LBAS Fuel Flow to Load Ratio UOM Code Valid to true.

If FuelFlowToLoadUOMCode is null,

set FF2LBAS Fuel Flow to Load Ratio UOM Code Valid to false, and return result A.

Otherwise,

Locate a record in the Parameter to Units of Measure lookup table where the ParameterCode is equal to "FF2L" and the UnitsOfMeasureCode is equal to the FuelFlowToLoadUOMCode.

If not found,

set FF2LBAS Fuel Flow to Load Ratio UOM Code Valid to false, and return result B.

Otherwise,

If the FF2LBAS Load UOM Code and MonitoringSystemID are not null,

Locate a record in the Baseline UOM to Load UOM to SystemType cross-check table where the BaselineUOM is equal to the FuelFlowToLoadUOMCode, the LoadUOM is equal to the FF2LBAS Load UOM Code, and the SystemTypeList contains the SystemTypeCode the Monitoring System record associated with the baseline data.

If not found,

set FF2LBAS Fuel Flow to Load Ratio UOM Code Valid to false, and return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1
C	The [fieldname] does not correspond to the MaximumLoadUnitsOfMeasure and SystemTypeCode of the system reported in the monitoring plan.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Baseline Data

Check Code: FF2LBAS-16

Check Name: FuelFlow to Load Baseline Base GHR UOM Valid

Related Former Checks: FFLRF-6D

Applicability: Appendix D Check

Specifications:

For fuelflow-to-load baseline data:

Set FF2LBAS GHR UOM Code Valid to false.

If FF2LBAS Method Valid is true and AverageHourlyHeatInputRate is not null,

Set FF2LBAS GHR UOM Code Valid to true.

If GHRUnitsOfMeasureCode is null,

set FF2LBAS GHR UOM Code Valid to false, and return result A.

Otherwise,

Locate a record in the Parameter to Units of Measure lookup table where the ParameterCode is equal to "GHR" and the UnitsOfMeasureCode is equal to the GHRUnitsOfMeasureCode.

If not found,

set FF2LBAS GHR UOM Code Valid to false, and return result B.

Otherwise,

If the FF2LBAS Load UOM Code is not null,

Locate a record in the Baseline UOM to Load UOM to SystemType cross-check table where the BaselineUOM is equal to the GHRUnitsOfMeasureCode and the LoadUOM is equal to the FF2LBAS Load UOM Code.

If not found,

set FF2LBAS GHR UOM Code Valid to false, and return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1
C	The [fieldname] does not correspond to the MaximumLoadUnitsOfMeasure reported in the monitoring plan.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Baseline Data

Check Code: FF2LBAS-17

Check Name: FuelFlow to Load Baseline FuelFlow to Load Ratio Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For fuelflow-to-load baseline data with valid method and a non-null AverageFuelFlowRate:

If BaselineFuelFlowToLoadRatio is null,

return result A.

If BaselineFuelFlowToLoadRatio is less than or equal to 0,

return result B.

If FF2LBAS Fuel Flow to Load Ratio UOM Code Valid is true, AverageLoad is greater than 0, and AverageFuelFlowRate is greater than 0,

Calculate calcFFLR = AverageFuelFlowRate / AverageLoad, and round result to two decimal places.

If BaselineFuelFlowToLoadRatio is not equal to calcFFLR,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
C	The recalculated baseline fuel flow-to-load ratio does not equal the reported ratio.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Baseline Data

Check Code: FF2LBAS-18

Check Name: FuelFlow to Load Baseline GHR Valid

Related Former Checks: FFLRF-10B

Applicability: Appendix D Check

Specifications:

For fuelflow-to-load baseline data:

If the BaselineGHR is null, and the BaselineFuelFlowToLoadRatio is not null,

set FF2LBAS Test Basis to "Q".

If the BaselineGHR is not null, and the BaselineFuelFlowToLoadRatio is null,

set FF2LBAS Test Basis to "H".

Otherwise,

set FF2LBAS Test Basis to null.

In the QA Evaluation Process, (for tests that have not yet been submitted or have been approved for resubmission) the appropriate values will be stored in the QA Supp Data and QA Supp Attribute records for the test.

If FF2LBAS Method Valid is true, and the AverageHourlyHeatInputRate is not null,

If BaselineGHR is null,

return result A.

If BaselineGHR is less than or equal to 0,

return result B.

If FF2LBAS Load UOM Code Valid is true, AverageLoad is greater than 0, and AverageHourlyHeatInputRate is greater than 0,

Calculate calcGHR = AverageHourlyHeatInputRate / AverageLoad *1000, and round result to the nearest integer.

If BaselineGHR is not equal to calcGHR,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
C	The recalculated baseline GHR does not equal the reported GHR.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Baseline Data

Check Code: FF2LBAS-19

Check Name: System ID Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the fuel flow-to-load baseline data:

If the MonitoringSystemID is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation

Check Code: FF2LBAS-20

Check Name: Duplicate FuelFlow to Load Baseline Data

Related Former Checks:

Applicability: CEM Check

Specifications:

For fuel flow-to-load baseline data with a valid TestNumber:

Locate another TestSummary record for the location where the TestTypeCode is equal to "FF2LBAS" and the TestNumber is equal to the TestNumber in the current record.

If found,

return result A.

Otherwise,

Locate an unassociated QA Supp record for the location where the TestTypeCode is equal to " FF2LBAS " and the TestNumber is equal to the TestNumber in the current record.

If found,

return result B.

Results:

Result	Description	Severity
A	Another [testtype] with this test number already exists. You must assign a different test number.	Fatal
B	You cannot change the TestNumber to the value that you have entered, because a [testtype] with this TestNumber has already been submitted. If this is a different test, you should assign it a different TestNumber. If you are trying to resubmit this test, you should delete this test, and either reimport this test with its original TestNumber or retrieve the original test from the EPA host system.	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation

Check Category:

Fuelflow-to-Load Test

Check Code: FF2LTST-1

Check Name: FuelFlow to Load Test System Type Valid

Related Former Checks: FFLRF-1

Applicability: Appendix D Check

Specifications:

For the fuel-flow-to-load test:

If the MonitoringSystemID is null,

set FF2LTST System Valid to false, and return result A.

Otherwise,

If the SystemTypeCode of the associated system is equal to "OILV", "OILM", "GAS", "LTOL", or "LTGS",

set FF2LTST System Valid to true.

Otherwise,

set FF2LTST System Valid to false, and return result B.

If FF2LTST System is invalid, do not perform other checks. In the QA Evaluation Process, (for tests that have not yet been submitted or have been approved for resubmission) the appropriate values will be stored in the QA Supp Data record for the test.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	According to the monitoring system record, the monitoring system for this [testtype] was not a fuel flow system.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Fuelflow-to-Load Test

Check Code: FF2LTST-2

Check Name: Identification of Previously Reported Test or Test Number for FuelFlow to Load Test

Related Former Checks:

Applicability: CEM Check

Specifications:

For Fuel Flow-to-load Test with valid reporting period and a non-null MonitoringSystemID:

Locate another fuel flow-to-load test for the system where the reporting period is equal to the reporting period of the current fuel flow-to-load test.

If found,

return result A.

Otherwise,

Locate an unassociated QASupp record for the location where the TestType Code is equal to "FF2LTST", and the MonitoringSystemID and reporting period are equal to MonitoringSystemID and reporting period of the current fuel flow-to-load test, and the TestNum is not equal to the TestNumber in the current fuel flow-to-load test.

If found,

return result A.

Otherwise,

Locate a QASupp record for the location where the TestTypeCode is equal to "FF2LTST" and the TestNum equal to the TestNumber in the current TestSummary record.

If found,

If CAN_SUBMIT in the QA Supp record is equal to "N",

If this is an unassociated QASupp record, and the MonitoringSystemID and ReportingPeriod in the QASupp record is not equal to MonitoringSystemID and reporting period of the current fuel flow-to-load test,

return result B.

Otherwise,

return result C.

Results:

Result	Description	Severity
A	Based on the information in this record, this test has already been submitted with a different test number, or the Client Tool database already contains the same test with a different test number. This test cannot be submitted.	Fatal
B	Another [testtype] with this test number has already been submitted for this location. This test cannot be submitted with this test number. If this is a different test, you should assign it a unique test number.	Fatal
C	This test has already been submitted and will not be resubmitted. If you wish to resubmit this test, please contact EPA for approval.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Test Evaluation *Condition:* Duplicate Fuel Flow to Load Test *Equals* false
2	QA Test Evaluation Report Fuelflow-to-Load Test

Check Code: FF2LTST-3

Check Name: FuelFlow to Load Test Basis Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For a fuel flow-to-load test:

If TestBasisCode is null,

If TestResultCode is equal to "PASSED" or "FAILED",

return result A.

If TestBasisCode is not in the TestBasisCode lookup table,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported a [fieldname] that is not in the list of valid values.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Test Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Test
	Condition: FF2LTST System Valid*Equals* true

Check Code: FF2LTST-4

Check Name: FuelFlow to Load Test Basis Consistent with Baseline Data

Related Former Checks: FFLCK-4

Applicability: Appendix D Check

Specifications:

For the fuel flow-to-load test with a valid Reporting Period ,

Locate the latest QA Supp Data record for the location where the TestTypeCode is equal to "FF2LBAS", the MonitoringSystemID is equal to the MonitoringSystemID in the current test, the EndDate is on or prior to the last day of the quarter of the current test, and CAN_SUBMIT is equal to "N".

Locate the latest Fuel Flow-to-Load Baseline Data record for the system where the EndDate is on or prior to the last day of the quarter of the current test.

If TestResultCode is not equal to "INPROG",

If there is no QA Supp Data record and there is no Fuel Flow-to-Load Baseline Data record,

return result A.

Otherwise,

If no Fuel Flow-to-Load Baseline Data record was found, or the TestSummaryID of both records are equal, or the EndDate of the QA Supp Data record is later than the EndDate of the Fuel Flow-to-Load Baseline Data record,

Locate a QA Supp Attribute record for the QA Supp Data record where the Attribute_Name is equal to "TEST_BASIS_CD".

If found,

If the TestBasisCode in the current test is equal to "Q" and the Attribute_Value in the retrieved QA Supp Attribute record is equal to "H"; or the TestBasisCode in the current test is equal to "H" and the Attribute_Value in the retrieved QA Supp Attribute record is equal to "Q",

return result B.

Otherwise,

If the TestBasisCode in the current test is equal to "Q" and the BaselineFuelFlowToLoadRatio in the retrieved Fuel Flow-to-Load Baseline Data record is null, or the TestBasisCode in the current test is equal to "H" and the BaselineGHR is the retrieved Fuel Flow-to-Load Baseline Data is null,

return result B.

Otherwise,

If a QA Supp Data record or a Fuel Flow-to-Load Baseline Data record was located above,

If no Fuel Flow-to-Load Baseline Data record was found, or the TestSummaryID of both records are equal, or the EndDate of the QA Supp Data record is later than the EndDate of the Fuel Flow-to-Load Baseline Data record,

Set BaselineEndDate to the EndDate in the QA Supp Data record.

Otherwise,

Set BaselineEndDate to the EndDate in the Fuel Flow-to-Load Baseline Data record.

If the BaselineEndDate is prior to the last day of the quarter of the fuel flow-to-load test,

Locate all System Component records for the system where the ComponentTypeCode is equal to "GFFM" or "OFFM", and the EndDate is null or is on or after the Baseline End Date.

Locate a QA Supp Data record for the location where the TestTypeCode is equal to "FF ACC " or "FFACCTT" , the ComponentID is equal to any of the ComponentIDs in the System Component records retrieved above , and the EndDate or ReinstallationDate is on or after the BaselineEndDate.

If none are found,

return result C.

Results:

Result	Description	Severity
A	The fuel flow-to-load baseline data associated with this test cannot be found.	Critical Error Level 1
B	The TestBasisCode is inconsistent with the data submitted in the associated fuel flow-to-load baseline data.	Critical Error Level 1
C	You reported a TestResultCode of "INPROG" indicating that the baseline data collection period is still in progress, but the EndDate of the associated fuel flow-to-load baseline data is prior to the end of the test quarter.	Critical Error Level 2

Usage:

1	QA Test Evaluation Report Fuelflow-to-Load Test

Check Code: FF2LTST-5

Check Name: FuelFlow to Load Average Difference Valid

Related Former Checks: FFLCK-5

Applicability: Appendix D Check

Specifications:

For the fuel flow-to-load test:

If TestResultCode is equal to "PASSED" or "FAILED",

If AverageDifference is null,

return result A.

If AverageDifference is less than 0,

return result B.

If AverageDifference is greater than 15.0 and the TestResultCode is equal to "PASSED",

return result C.

If AverageDifference is greater than 10.0 and the TestResultCode is equal to "PASSED",

return result D.

If AverageDifference is less than or equal to 10.0 and the TestResultCode is equal to "FAILED",

return result E.

If TestResultCode is equal to "FEW168H" or "EXC168H" and the AverageDifference is not null,

return result F.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1
C	The TestResultCode of the fuel flow-to-load test indicates a passing test, but the AverageDifference indicates a failing test.	Critical Error Level 1
D	The TestResultCode of the fuel flow-to-load test indicates a passing test, but the AverageDifference is between 10.0% and 15.0%, which may be a failing test result. Disregard this error message if the arithmetic average of the hourly loads used in the fuel flow-to-load ratio or GHR data analysis for this quarter was less than or equal to 50 MW, 500 klb/hr of steam, or 600 mmBtu/hr.	Informational Message
E	The TestResultCode of the fuel flow-to-load test indicates a failing test, but the AverageDifference indicates a passing test.	Critical Error Level 1
F	You should not report a value for [fieldname] when the TestResultCode is equal to "EXC168H" or "FEW168H".	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Test Evaluation

2	QA Test Evaluation Report Fuelflow-to-Load Test *Condition:* FF2LTST System Valid*Equals* true

Check Code: FF2LTST-6

Check Name: FuelFlow to Load Test Number of Hours Used Valid

Related Former Checks: FFLCK-3

Applicability: Appendix D Check

Specifications:

For the fuel flow-to-load test:

If NumberOfHoursUsed is less than 0,

return result A.

If TestResultCode is equal to "PASSED" or "FAILED",

If NumberOfHoursUsed is null,

return result B.

If NumberOfHoursUsed is less than 168,

return result C.

If TestResultCode is equal to "FEW168H" or "EXC168H",

If NumberOfHoursUsed is greater than or equal to 168,

return result D.

If NumberOfHoursUsed is not null,

return result E.

Results:

Result	Description	Severity
A	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1
B	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
C	The NumberOfHoursUsed was less than 168 which is the minimum required to complete the quarterly fuel flow-to-load test.	Critical Error Level 1
D	The NumberOfHoursUsed is greater than or equal to 168, which is inconsistent with the TestResultCode that indicates that the minimum number of hours of data was not available for the quarter.	Critical Error Level 1
E	You should not report a value for [fieldname] when the TestResultCode is equal to "EXC168H" or "FEW168H".	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Test Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Test
	Condition: FF2LTST System Valid*Equals* true

Check Code: FF2LTST-7

Check Name: FuelFlow to Load Test Number of Hours Excluded Cofiring Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For the fuel flow-to-load test:

If the NumberOfHoursExcludedCofiring is not null and is less than 0,

return result A.

Results:

Result	Description	Severity
A	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Test Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Test
	Condition: FF2LTST System Valid*Equals* true

Check Code: FF2LTST-8

Check Name: FuelFlow to Load Test Number of Hours Excluded Ramping Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For the fuel flow-to-load test:

If the NumberOfHoursExcludedRamping is not null and is less than 0,

return result A.

Results:

Result	Description	Severity
A	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Test Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Test
	Condition: FF2LTST System Valid*Equals* true

Check Code: FF2LTST-9

Check Name: FuelFlow to Load Test Number of Hours Excluded Low Range Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For the fuel flow-to-load test:

If the NumberOfHoursExcludedLowRange is not null and is less than 0,

return result A.

Results:

Result	Description	Severity
A	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Test Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Test
	Condition: FF2LTST System Valid*Equals* true

Check Code: FF2LTST-10

Check Name: FuelFlow to Load Test Reason Code Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For the Fuel Flow to Load check:

If the TestReasonCode is null,

If the Test Reporting Period Begin Date is on or after ECMPS MP Begin Date,

return result A.

Otherwise,

return result B.

If the TestReasonCode is not equal to "QA",

Locate the TestReasonCode in the Test Reason Code Lookup table,

If not found,

return result C.

If found,

return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You did not provide [fieldname] for [key]. This information will be required for ECMPS submissions.	Non-Critical Error
C	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
D	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Test Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Test
	Condition: FF2LTST System Valid*Equals* true

Check Code: FF2LTST-11

Check Name: FuelFlow to Load Test Result Code Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For the fuel flow-to-load test:

In the QA Evaluation Process, (for tests that have not yet been submitted or have been approved for resubmission) the appropriate values will be stored in the QA Supp Data record for the test.

If the TestResultCode is null,

return result A.

If the TestResultCode is not equal to "PASSED", "FAILED", "INPROG", "EXC168H", or "FEW168H",

Locate the TestResultCode is not in the Test Result Code Lookup table,

If not found,

return result B.

If found,

return result C.

If TestResultCode is equal to "EXC168H", and NumberOfHoursExcludedCofiring, NumberOfHoursExcludedRamping, NumberOfHoursExcludedLowRange are all null or equal to 0,

return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
C	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1
D	The TestResultCode was reported as "EXC168H" to indicate that fewer than 168 hours of quality-assured flow rate data remain after excluding certain hours, but all the fields for excluded hours were blank or zero.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Test Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Test
	Condition: FF2LTST System Valid*Equals* true

Check Code: FF2LTST-12

Check Name: Fuel Flow to Load Test Total Hours Valid

Related Former Checks: FFLCK-6

Applicability: Appendix D Check

Specifications:

For the fuel flow-to-load test:

If the sum of NumberOfHoursUsed (if greater than 0), NumberOfHoursExcludedForCofiring (if greater than 0), NumberOfHoursExcludedRamping (if greater than 0), and NumberOfHoursExcludedLowRange (if greater than 0) is greater than 2209,

return result A.

Results:

Result	Description	Severity
A	The total number of hours used in the fuel flow-to-load or GHR analysis and the number of hours excluded exceed the total number of hours in the quarter.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Test Evaluation
2	QA Test Evaluation Report Fuelflow-to-Load Test
	Condition: FF2LTST System Valid*Equals* true

Check Code: FF2LTST-13

Check Name: System ID Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For the fuel flow-to-load test:

If the MonitoringSystemID is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Test Evaluation

Check Code: FF2LTST-14

Check Name: Duplicate FuelFlow to Load Test

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For fuel flow-to-load test with a valid TestNumber:

Locate another TestSummary record for the location where the TestTypeCode is equal to "FF2LTST" and the TestNumber is equal to the TestNumber in the current record.

If found,

return result A.

Otherwise,

Locate an unassociated QA Supp record for the location where the TestTypeCode is equal to " FF2LTST " and the TestNumber is equal to the TestNumber in the current record.

If found,

return result B.

Results:

Result	Description	Severity
A	Another [testtype] with this test number already exists. You must assign a different test number.	Fatal
B	You cannot change the TestNumber to the value that you have entered, because a [testtype] with this TestNumber has already been submitted. If this is a different test, you should assign it a different TestNumber. If you are trying to resubmit this test, you should delete this test, and either reimport this test with its original TestNumber or retrieve the original test from the EPA host system.	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Test Evaluation

Check Category:

Fuel Flowmeter Accuracy Test

Check Code: FFACC-1

Check Name: Accuracy Test Component Type Valid

Related Former Checks: ACC-2

Applicability: Appendix D Check

Specifications:

For the accuracy test:

If the ComponentID is null,

set Accuracy Test Component Type Valid to false, and return result A.

Otherwise,

If the ComponentTypeCode of the associated component is not equal to "OFFM" or "GFFM",

set Accuracy Test Component Type Valid to false, and return result B.

Otherwise,

set Accuracy Test Component Type Valid to true.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The component type in the monitoring plan is [comptype]. This type of component does not require a fuel flow accuracy test. Only component types 'OFFM' or 'GFFM' may have a fuel flow accuracy test.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Fuel Flowmeter Accuracy Test

Check Code: FFACC-2

Check Name: Aborted Accuracy Test Check

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For the accuracy test:

If the Accuracy Test Component Type Valid is false,

set Evaluate Accuracy Test to false.

Otherwise,

If the TestResultCode is equal to "ABORTED",

set Evaluate Accuracy Test to false, set Accuracy Test Calc Result to "ABORTED", and return result A.

Otherwise,

set Evaluate Accuracy Test to true.

Results:

Result	Description	Severity
A	The TestResultCode indicates that the test was aborted. If the test was aborted for a reason not related to monitor performance, you should not report the test.	Informational Message

Usage:

1	QA Test Evaluation Report Fuel Flowmeter Accuracy Test

Check Code: FFACC-3

Check Name: Identification of Previously Reported Test or Number for Fuel Flowmeter Accuracy Test

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For an accuracy test with valid End Time and a non-null ComponentID:

Locate another accuracy test for the component where the EndDate, EndHour, and EndMinute are equal to the EndDate, EndHour, and EndMinute of the current TestSummary record.

If found,

return result A.

Otherwise,

Locate an unassociated QASupp record for the location where the TestTypeCode is equal to "FFACC", and the ComponentID, EndDate, and EndHour is equal to ComponentID, EndDate, and EndHour of the current TestSummary record, and the EndMinute is null or is equal to the EndMinute in the current TestSummary record, and the TestNum is not equal to the TestNumber in the current TestSummary record,

If found,

return result A.

Otherwise,

Locate a QASupp record for the location where the TestTypeCode is equal to "FFACC" and the TestNum equal to the TestNumber in the current TestSummary record.

If found,

If CAN_SUBMIT in the QA Supp record is equal to "N",

If this is an unassociated QASupp record, and the ComponentID, EndDate, EndHour, and EndMinute in the QASupp record is not equal to ComponentID, EndDate, EndHour, or EndMinute of the current TestSummary record,

return result B.

Otherwise,

return result C.

Results:

Result	Description	Severity
A	Based on the information in this record, this test has already been submitted with a different test number, or the Client Tool database already contains the same test with a different test number. This test cannot be submitted.	Fatal
B	Another [testtype] with this test number has already been submitted for this location. This test cannot be submitted with this test number. If this is a different test, you should assign it a unique test number.	Fatal
C	This test has already been submitted and will not be resubmitted. If you wish to resubmit this test, please contact EPA for approval.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuel Flowmeter Accuracy Test Evaluation *Condition:* Duplicate Fuel Flow Accuracy *Equals* false
2	QA Test Evaluation Report Fuel Flowmeter Accuracy Test

Check Code: FFACC-4

Check Name: Accuracy Test Reinstallation Date Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For the accuracy test:

If AccuracyTestMethodCode is valid and is equal to "ILMMF",

If ReinstallationDate or ReinstallationHour is not null,

return result A.

If the ReinstallationDate is not null,

If the ReinstallationDate is prior to 1/1/1993 or later than the current date,

return result B.

If the ReinstallationHour is between 0 and 23,

If the EndDate and EndHour of the test are valid, and the ReinstallationDate and ReinstallationHour are prior to the EndDate and EndHour of the test,

return result C.

If the ReinstallationDate is null,

If AccuracyTestMethodCode is valid and is not equal to "ILMMF",

return result E.

Results:

Result	Description	Severity
A	You reported a ReinstallationDate and/or ReinstallationHour for an accuracy test that, according to the accuracy test method, was performed in-line.	Critical Error Level 1
B	You reported a [Fieldname] of [Date], which is outside the range of acceptable values for this date for [key].	Critical Error Level 1
C	You reported a ReinstallationDate/Hour which precedes EndDate/Hour of the accuracy test.	Critical Error Level 1
D	This check result is obsolete.	No Errors
E	You did not report a ReinstallationDate for an accuracy test that, according to the accuracy test method, was not performed in-line.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuel Flowmeter Accuracy Test Evaluation *Condition:* Evaluate Accuracy Test Screen *Equals* true
2	QA Test Evaluation Report Fuel Flowmeter Accuracy Test *Condition:* Evaluate Accuracy Test *Equals* true

Check Code: FFACC-5

Check Name: Accuracy Test Reinstallation Hour Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For the accuracy test:

If the ReinstallationHour is null,

If AccuracyTestMethodCode is valid and is not equal to "ILMMF",

return result A.

If the ReinstallationHour is not between 0 and 23,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuel Flowmeter Accuracy Test Evaluation
	Condition: Evaluate Accuracy Test Screen *Equals* true
2	QA Test Evaluation Report Fuel Flowmeter Accuracy Test
	Condition: Evaluate Accuracy Test *Equals* true

Check Code: FFACC-6

Check Name: Accuracy Test Reason Code Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For the accuracy test:

If the TestReasonCode is null,

If EndDate is on or after ECMPS MP Begin Date,

return result A.

Otherwise,

return result B.

If the TestReasonCode is not in the TestReasonCode lookup table,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You did not provide [fieldname] for [key]. This information will be required for ECMPS submissions.	Non-Critical Error
C	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuel Flowmeter Accuracy Test Evaluation
2	QA Test Evaluation Report Fuel Flowmeter Accuracy Test
	Condition: Accuracy Test Component Type Valid*Equals* true

Check Code: FFACC-7

Check Name: Accuracy Test Method Code Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For the accuracy test:

If the AccuracyTestMethodCode is null,

set Accuracy Test Method Valid to false, and return result A.

If the AccuracyTestMethodCode is not in the AccuracyTestMethodCode lookup table,

set Accuracy Test Method Valid to false, and return result B.

Otherwise,

set Accuracy Test Method Valid to true.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuel Flowmeter Accuracy Test Evaluation *Condition:* Evaluate Accuracy Test Screen *Equals* true
2	QA Test Evaluation Report Fuel Flowmeter Accuracy Test *Condition:* Evaluate Accuracy Test *Equals* true

Check Code: FFACC-8

Check Name: Accuracy Test Low Fuel Accuracy Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For the accuracy test:

If LowFuelAccuracy is null,

return result A.

If LowFuelAccuracy is less than 0,

return result B.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuel Flowmeter Accuracy Test Evaluation *Condition:* Evaluate Accuracy Test Screen *Equals* true
2	QA Test Evaluation Report Fuel Flowmeter Accuracy Test *Condition:* Evaluate Accuracy Test *Equals* true

Check Code: FFACC-9

Check Name: Accuracy Test Mid Fuel Accuracy Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For the accuracy test:

If MidFuelAccuracy is null,

return result A.

If MidFuelAccuracy is less than 0,

return result B.

Results:

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

Usage:

1 QA and Certification Data Entry Screen Evaluation Fuel Flowmeter Accuracy Test Evaluation

Condition: Evaluate Accuracy Test Screen *Equals* true

2 QA Test Evaluation Report Fuel Flowmeter Accuracy Test

Condition: Evaluate Accuracy Test *Equals* true

Check Code: FFACC-10

Check Name: Accuracy Test High Fuel Accuracy Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For the accuracy test:

If HighFuelAccuracy is null,

return result A.

If HighFuelAccuracy is less than 0,

return result B.

Results:

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

Usage:

1 QA and Certification Data Entry Screen Evaluation Fuel Flowmeter Accuracy Test Evaluation

Condition: Evaluate Accuracy Test Screen *Equals* true

2 QA Test Evaluation Report Fuel Flowmeter Accuracy Test

Condition: Evaluate Accuracy Test *Equals* true

Check Code: FFACC-11

Check Name: Accuracy Test Result Code Valid

Related Former Checks: ACC-4

Applicability: Appendix D Check

Specifications:

For the accuracy test:

Set Accuracy Test Calc Result to null.

If TestResultCode is not equal to "ABORTED",

If HighFuelAccuracy, MidFuelAccuracy, and LowFuelAccuracy are all greater than or equal to 0,

If HighFuelAccuracy, MidFuelAccuracy, or LowFuelAccuracy is greater than 2.0

set Accuracy Test Calc Result to "FAILED",

Otherwise,

set Accuracy Test Calc Result to "PASSED".

If the TestResultCode is null,

return result A.

If the TestResultCode is not equal to "PASSED", "FAILED" or "ABORTED",

Locate the TestResultCode in the Test Result Code Lookup table.

If not found,

return result B.

If found,

return result C.

If the TestResultCode is equal to "PASSED" and Accuracy Test Calc Result is equal to "FAILED",

return result D.

If the TestResultCode is equal to "FAILED" and Accuracy Test Calc Result is equal to "PASSED",

return result E.

In the QA Evaluation Process, the Accuracy Test Calc Result will be stored as calculated values in the Test Summary record for the test, and (for tests that have not yet been submitted or have been approved for resubmission) the appropriate values will be stored in the QA Supp Data record for the test.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
C	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1

D	The TestResultCode indicates a passing accuracy test but the accuracy results do not meet the criteria of 2.0% of the upper range value to pass an accuracy test.	Critical Error Level 1
E	You reported a TestResultCode of "FAILED", but the results recalculated or determined from the other reported values indicate that the test passed.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuel Flowmeter Accuracy Test Evaluation
2	QA Test Evaluation Report Fuel Flowmeter Accuracy Test

Check Code: FFACC-12

Check Name: Accuracy Test Component ID Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For the accuracy test:

If the ComponentID is null,

set Evaluate Accuracy Test Screen to false, and return result A.

If TestResultCode is equal to "ABORTED",

set Evaluate Accuracy Test Screen to false.

Otherwise,

set Evaluate Accuracy Test Screen to true.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuel Flowmeter Accuracy Test Evaluation

Check Code: FFACC-13

Check Name: Duplicate Fuel Flowmeter Accuracy Test

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For an accuracy test with a valid TestNumber:

Locate another TestSummary record for the location where the TestTypeCode is equal to "FFACC" and the TestNumber is equal to the TestNumber in the current record.

If found,

return result A.

Otherwise,

Locate an unassociated QA Supp record for the location where the TestTypeCode is equal to " FFACC " and the TestNumber is equal to the TestNumber in the current record.

If found,

return result B.

Results:

Result	Description	Severity
A	Another [testtype] with this test number already exists. You must assign a different test number.	Fatal
B	You cannot change the TestNumber to the value that you have entered, because a [testtype] with this TestNumber has already been submitted. If this is a different test, you should assign it a different TestNumber. If you are trying to resubmit this test, you should delete this test, and either reimport this test with its original TestNumber or retrieve the original test from the EPA host system.	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Fuel Flowmeter Accuracy Test Evaluation

Check Category:

Transmitter Transducer Test

Check Code: FFACCTT-1

Check Name: Transmitter Transducer Test Component Type Valid

Related Former Checks: ACC-5

Applicability: Appendix D Check

Specifications:

For the transmitter transducer test:

If the ComponentID is null,

set Transmitter Transducer Test Component Type Valid to false, and return result A.

Otherwise,

If the ComponentTypeCode of the associated component is not equal to "OFFM" or "GFFM",

set Transmitter Transducer Test Component Type Valid to false, and return result B.

Otherwise,

set Transmitter Transducer Test Component Type Valid to true.

If the SampleAcquisitionMethodCode of the associated component is not equal to "ORF", "VEN", or "NOZ",

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The component type in the monitoring plan is [comptype]. This type of component does not require a transmitter transducer test. Only component types 'OFFM' or 'GFFM' may perform this type of test.	Critical Error Level 1
C	The acquisition method code reported in the monitoring plan for this fuel flowmeter is [sample-method] which indicates that the use of the transmitter transducer test record may be inappropriate. A transmitter transducer test should be reported only for orifice, nozzle and venturi-type fuel flowmeters unless otherwise approved by petition. You may disregard this message if you have an approved petition to quality-assure your fuel flowmeter in the same manner as an orifice, nozzle or venturi-type meter.	Critical Error Level 2

Usage:

1	QA Test Evaluation Report Transmitter Transducer Test

Check Code: FFACCTT-2

Check Name: Aborted Transmitter Transducer Test Check

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For the transmitter transducer test:

If the TestResultCode is equal to "ABORTED",

return result A.

Results:

Result	Description	Severity
A	The TestResultCode indicates that the test was aborted. If the test was aborted for a reason not related to monitor performance, you should not report the test.	Informational Message

Usage:

1	QA Test Evaluation Report Transmitter Transducer Test

Check Code: FFACCTT-3

Check Name: Transmitter Transducer Test Reason Code Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For the Transmitter Transducer test:

If TestResultCode is equal to "ABORTED",

Set Transmitter Transducer Test Calc Result to "ABORTED".

Otherwise,

Set Transmitter Transducer Test Calc Result to "PASSED".

If the TestReasonCode is null,

If EndDate is on or after ECMPS MP Begin Date,

return result A.

Otherwise,

return result B.

If the TestReasonCode is not in the TestReasonCode lookup table,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You did not provide [fieldname] for [key]. This information will be required for ECMPS submissions.	Non-Critical Error
C	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Transmitter Transducer Test Evaluation
2	QA Test Evaluation Report Transmitter Transducer Test

Check Code: FFACCTT-4

Check Name: Identification of Previously Reported Test or Number for Transmitter Transducer Test

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For a transmitter transducer test with valid end time and a non-null ComponentID:

Locate another transmitter transducer test for the component where the EndDate, EndHour, and EndMinute are equal to the EndDate, EndHour, and EndMinute of the current TestSummary record.

If found,

return result A.

Otherwise,

Locate an unassociated QASupp record for the location where the TestTypeCode is equal to "FFACCTT", and the ComponentID, EndDate, and EndHour is equal to ComponentID, EndDate, and EndHour of the current TestSummary record, and the EndMinute is null or is equal to the EndMinute in the current TestSummary record, and the TestNum is not equal to the TestNumber in the current TestSummary record,

If found,

return result A.

Otherwise,

Locate a QASupp record for the location where the TestTypeCode is equal to "FFACCTT" and the TestNum equal to the TestNumber in the current TestSummary record.

If found,

If CAN_SUBMIT in the QA Supp record is equal to "N",

If this is an unassociated QASupp record, and the ComponentID, EndDate, EndHour, and EndMinute in the QASupp record is not equal to ComponentID, EndDate, EndHour, or EndMinute of the current TestSummary record,

return result B.

Otherwise,

return result C.

Results:

Result	Description	Severity
A	Based on the information in this record, this test has already been submitted with a different test number, or the Client Tool database already contains the same test with a different test number. This test cannot be submitted.	Fatal
B	Another [testtype] with this test number has already been submitted for this location. This test cannot be submitted with this test number. If this is a different test, you should assign it a unique test number.	Fatal
C	This test has already been submitted and will not be resubmitted. If you wish to resubmit this test, please contact EPA for approval.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Transmitter Transducer Test Evaluation *Condition:* Duplicate Transmitter Transducer *Equals* false
2	QA Test Evaluation Report Transmitter Transducer Test

Check Code: FFACCTT-5

Check Name: Low Level Accuracy Valid

Related Former Checks: ACC-7

Applicability: Appendix D Check

Specifications:

For the Transmitter Transducer test with a TestResultCode not equal to "ABORTED":

If LowLevelAccuracy is null,

set Transmitter Transducer Test Calc Result to "INVALID", and return result A.

If LowLevelAccuracy is less than 0,

set Transmitter Transducer Test Calc Result to "INVALID", and return result B.

If Transmitter Transducer Test Calc Result is not equal to "INVALID",

If the LowLevelAccuracySpecCode is equal to "AGA3" and LowLevelAccuracy is greater than 2.0,

set Transmitter Transducer Test Calc Result to "FAILED".

If the LowLevelAccuracySpecCode is equal to "SUM" and LowLevelAccuracy is greater than 4.0,

set Transmitter Transducer Test Calc Result to "FAILED".

If the LowLevelAccuracySpecCode is equal to "ACT" and LowLevelAccuracy is greater than 1.0,

set Transmitter Transducer Test Calc Result to "FAILED".

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Transmitter Transducer Test Evaluation
2	QA Test Evaluation Report Transmitter Transducer Test

Check Code: FFACCTT-6

Check Name: Low Level Accuracy Specification Code Valid

Related Former Checks: ACC-6

Applicability: Appendix D Check

Specifications:

For the Transmitter Transducer test with a TestResultCode not equal to "ABORTED":

If LowLevelAccuracySpecCode is null,

set Transmitter Transducer Test Calc Result to "INVALID", and return result A.

If LowLevelAccuracySpecCode is not in the Accuracy Specification Code lookup table,

set Transmitter Transducer Test Calc Result to "INVALID", and return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Transmitter Transducer Test Evaluation
2	QA Test Evaluation Report Transmitter Transducer Test

Check Code: FFACCTT-7

Check Name: Mid Level Accuracy Valid

Related Former Checks: ACC-7

Applicability: Appendix D Check

Specifications:

For the Transmitter Transducer test with a TestResultCode not equal to "ABORTED":

If MidLevelAccuracy is null,

set Transmitter Transducer Test Calc Result to "INVALID", and return result A.

If MidLevelAccuracy is less than 0,

set Transmitter Transducer Test Calc Result to "INVALID", and return result B.

If Transmitter Transducer Test Calc Result is not equal to "INVALID",

If the MidLevelAccuracySpecCode is equal to "AGA3" and MidLevelAccuracy is greater than 2.0,

set Transmitter Transducer Test Calc Result to "FAILED".

If the MidLevelAccuracySpecCode is equal to "SUM" and MidLevelAccuracy is greater than 4.0,

set Transmitter Transducer Test Calc Result to "FAILED".

If the MidLevelAccuracySpecCode is equal to "ACT" and MidLevelAccuracy is greater than 1.0,

set Transmitter Transducer Test Calc Result to "FAILED".

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Transmitter Transducer Test Evaluation
2	QA Test Evaluation Report Transmitter Transducer Test

Check Code: FFACCTT-8

Check Name: Mid Level Accuracy Specification Code Valid

Related Former Checks: ACC-6

Applicability: Appendix D Check

Specifications:

For the Transmitter Transducer test with a TestResultCode not equal to "ABORTED":

If MidLevelAccuracySpecCode is null,

set Transmitter Transducer Test Calc Result to "INVALID", and return result A.

If MidLevelAccuracySpecCode is not in the Accuracy Specification Code lookup table,

set Transmitter Transducer Test Calc Result to "INVALID", and return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Transmitter Transducer Test Evaluation
2	QA Test Evaluation Report Transmitter Transducer Test

Check Code: FFACCTT-9

Check Name: High Level Accuracy Valid

Related Former Checks: ACC-7

Applicability: Appendix D Check

Specifications:

For the Transmitter Transducer test with a TestResultCode not equal to "ABORTED":

Set Transmitter Transducer Test Result Determined to true.

If HighLevelAccuracy is null,

set Transmitter Transducer Test Calc Result to "INVALID", and return result A.

If HighLevelAccuracy is less than 0,

set Transmitter Transducer Test Calc Result to "INVALID", and return result B.

If Transmitter Transducer Test Calc Result is not equal to "INVALID",

If the HighLevelAccuracySpecCode is equal to "AGA3" and HighLevelAccuracy is greater than 2.0,

set Transmitter Transducer Test Calc Result to "FAILED".

If the HighLevelAccuracySpecCode is equal to "SUM" and HighLevelAccuracy is greater than 4.0,

set Transmitter Transducer Test Calc Result to "FAILED".

If the HighLevelAccuracySpecCode is equal to "ACT" and HighLevelAccuracy is greater than 1.0,

set Transmitter Transducer Test Calc Result to "FAILED".

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Transmitter Transducer Test Evaluation
2	QA Test Evaluation Report Transmitter Transducer Test

Check Code: FFACCTT-10

Check Name: High Level Accuracy Specification Code Valid

Related Former Checks: ACC-6

Applicability: Appendix D Check

Specifications:

For the Transmitter Transducer test with a TestResultCode not equal to "ABORTED":

If HighLevelAccuracySpecCode is null,

set Transmitter Transducer Test Calc Result to "INVALID", and return result A.

If HighLevelAccuracySpecCode is not in the Accuracy Specification Code lookup table,

set Transmitter Transducer Test Calc Result to "INVALID", and return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Transmitter Transducer Test Evaluation
2	QA Test Evaluation Report Transmitter Transducer Test

Check Code: FFACCTT-11

Check Name: Transmitter Transducer Test Result Code Valid

Related Former Checks: ACC-7

Applicability: Appendix D Check

Specifications:

For the Transmitter Transducer test:

If the TestResultCode is null,

return result A.

If the TestResultCode is not equal to "PASSED", "FAILED" or "ABORTED",

Locate the TestResultCode in the Test Result Code Lookup table.

If not found,

return result B.

If found,

return result C.

If the TestResultCode is equal to "PASSED" and Transmitter Transducer Test Calc Result is equal to "FAILED",

return result D.

If the TestResultCode is equal to "FAILED" and Transmitter Transducer Test Calc Result is equal to "PASSED",

return result E.

In the QA Evaluation Process, the Transmitter Transducer Test Calc Result will be stored as calculated values in the Test Summary record for the test, and (for tests that have not yet been submitted or have been approved for resubmission) the appropriate values will be stored in the QA Supp Data record for the test.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
C	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1
D	The TestResultCode indicates a passing transmitter transducer test but the accuracy results do not meet the test criteria for the methodology used.	Critical Error Level 1
E	You reported a TestResultCode of "FAILED", but the results recalculated or determined from the other reported values indicate that the test passed.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Transmitter Transducer Test Evaluation
2	QA Test Evaluation Report Transmitter Transducer Test

Check Code: FFACCTT-12

Check Name: Transmitter Transducer Test Component ID Valid

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For the transmitter transducer test:

If the ComponentID is null,

return result A..

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Transmitter Transducer Test Evaluation

Check Code: FFACCTT-13

Check Name: Duplicate Transmitter Transducer Test

Related Former Checks:

Applicability: Appendix D Check

Specifications:

For a transmitter transducer test with a valid TestNumber:

Locate another TestSummary record for the location where the TestTypeCode is equal to "FFACCTT" and the TestNumber is equal to the TestNumber in the current record.

If found,

return result A.

Otherwise,

Locate an unassociated QA Supp record for the location where the TestTypeCode is equal to " FFACCTT " and the TestNumber is equal to the TestNumber in the current record.

If found,

return result B.

Results:

Result	Description	Severity
A	Another [testtype] with this test number already exists. You must assign a different test number.	Fatal
B	You cannot change the TestNumber to the value that you have entered, because a [testtype] with this TestNumber has already been submitted. If this is a different test, you should assign it a different TestNumber. If you are trying to resubmit this test, you should delete this test, and either reimport this test with its original TestNumber or retrieve the original test from the EPA host system.	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Transmitter Transducer Test Evaluation

Check Category:

Linearity Check

Check Code: LINEAR-1

Check Name: Determine Linearity Injection Sequence

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity check:

If there are no Linearity Injection records,

Set Injection Times Valid to false.

Otherwise,

Set Linearity Injection Times Valid to true.

Proceed through the Linearity Injection records for the test in Injection Date/Hour/Minute order.

If the InjectionDate is null, or the InjectionHour is null or not between 0 and 23, or the InjectionMinute is null or not between 0 and 59,

set Linearity Injection Times Valid to false.

Otherwise,

Set the Linearity Test Begin Date, Begin Hour, and Begin Minute to the InjectionDate, InjectionHour, and InjectionMinute of the first injection.

Set the Linearity Test End Date, End Hour, and End Minute to the InjectionDate, InjectionHour, and InjectionMinute of the last injection.

If the associated GasLevelCode of any injection is the same as the GasLevelCode of the prior injection,

set Injection Sequence Valid to false.

Otherwise,

set Injection Sequence Valid to true.

If any two injections had the same InjectionDate, InjectionHour, and InjectionMinute,

set Simultaneous Linearity Injections to true.

Otherwise,

set Simultaneous Linearity Injections to false.

Usage:

1 QA Test Evaluation Report Linearity Test (Pass 1)

Condition: Linearity Test Aborted *Equals* false

Check Code: LINEAR-2

Check Name: Linearity Component Type Valid

Related Former Checks: LIN-1

Applicability: CEM Check

Specifications:

For the linearity check:

If the ComponentID is null,

set Linearity Component Valid to false, and return result A.

Otherwise

If the TestTypeCode is equal to "LINE",

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

set LinearityTestType to "linearity check".

set Linearity Component Valid to true.

Otherwise,

set Linearity Component Valid to false, and return result B.

else if the TestTypeCode is equal to " HG LINE",

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

set LinearityTestType to " Hg linearity check".

set Linearity Component Valid to true.

Otherwise,

set Linearity Component Valid to false, and return result B.

else if the TestTypeCode is equal to "HGSI 3 ",

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

set LinearityTestType to "three-point system integrity check".

set Linearity Component Valid to true.

Otherwise,

set Linearity Component Valid to false, and return result C.

If Linearity Component is invalid, do not perform checks for the Linearity Summary (Pass 1), Linearity Injection, and Linearity Summary (Pass 2) categories. Set the calculated values in the associated Linearity Summary records to null.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	The ComponentTypeCode for this test is [comptype]. This type of component does not require a linearity check.	Critical Error Level 1

C	This type of component does not require a three-point system integrity check. Only HG components with a converter may have a three-point system integrity check.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Linearity Test (Pass 1)

Check Code: LINEAR-3

Check Name: Aborted Check Not Evaluated

Related Former Checks: LIN-2

Applicability: CEM Check

Specifications:

For the linearity check:

If the TestResultCode is equal to "ABORTED",

set Linearity Test Result to "ABORTED", Linearity Test Aborted to true, and return result A.

Do not perform checks for the Linearity Summary (Pass 1), Linearity Injection, and Linearity Summary (Pass 2) categories.

Set all calculated values in associated Linearity Summary records to null.

Otherwise,

set Linearity Test Aborted to false.

Results:

Result	Description	Severity
A	The TestResultCode indicates that the test was aborted. [Children] records for this test will not be evaluated. If the test was aborted for a reason not related to monitor performance, you should not report the test.	Informational Message

Usage:

1	QA Test Evaluation Report Linearity Test (Pass 1)
	Condition: Linearity Component Valid *Equals* true

Check Code: LINEAR-4

Check Name: Identification of Previously Reported Test or Test Number for Linearity Check

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity check with valid span scale and end time and a non-null ComponentID:

Set Extra Linearity Test to false and Linearity Supp Data ID to null.

Locate another test for the component where the TestTypeCode, SpanScale, EndDate, EndHour, and EndMinute are equal to the TestTypeCode, SpanScale, EndDate, EndHour, and EndMinute of the current TestSummary record.

If found,

set Extra Linearity Test to true, and return result A.

Otherwise,

Locate an unassociated QASupp record for the location where the TestTypeCode , ComponentID, SpanScale, EndDate, EndHour, and EndMinute is equal to the TestTypeCode, ComponentID, SpanScale, EndDate, EndHour, and EndMinute of the current TestSummary record, and the TestNum is not equal to the TestNumber in the current TestSummary record,

If found,

set Extra Linearity Test to true, and return result A.

Otherwise,

Locate a QASupp record for the location where the TestTypeCode and the TestNum are equal to the TestTypeCode and TestNumber in the current TestSummary record.

If found,

Set Linearity Supp Data ID to the QA Supp Data ID in the QASupp record.

If CAN_SUBMIT in the QA Supp record is equal to "N",

If this is an unassociated QASupp record, and the ComponentID, SpanScale, EndDate, EndHour, and EndMinute in the QASupp record is not equal to ComponentID, SpanScale, EndDate, EndHour, or EndMinute of the current TestSummary record,

return result B.

Otherwise,

return result C.

Results:

Result	Description	Severity
A	Based on the information in this record, this test has already been submitted with a different test number, or the Client Tool database already contains the same test with a different test number. This test cannot be submitted.	Fatal
B	Another [testtype] with this test number has already been submitted for this location. This test cannot be submitted with this test number. If this is a different test, you should assign it a unique test number.	Fatal

C	This test has already been submitted and will not be resubmitted. If you wish to resubmit this test, please contact EPA for approval.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Linearity Evaluation *Condition:* Duplicate Linearity *Equals* false
2	QA Test Evaluation Report Linearity Test (Pass 1)

Check Code: LINEAR-5

Check Name: Linearity Test Begin Time Consistent with Injections

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity check with valid begin time and injection times:

If BeginDate, BeginHour, and BeginMinute does not equal the InjectionDate, InjectionHour, and InjectionMinute of the earliest injection,

return result A.

Results:

Result	Description	Severity
A	You reported a Test Begin Date, Hour, and Minute that is not the same as the Injection Date, Hour, and Minute of the first injection in the test.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Linearity Test (Pass 1)
	Condition: Linearity Test Aborted *Equals* false

Check Code: LINEAR-6

Check Name: Linearity Test End Time Consistent with Injections

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity check with valid end time and injection times:

If EndDate, EndHour, and EndMinute does not equal the InjectionDate, InjectionHour, and InjectionMinute of the latest injection,

return result A.

Results:

Result	Description	Severity
A	You reported a Test End Date, Hour, and Minute that is not the same as the Injection Date, Hour, and Minute of the last injection in the test.	Critical Error Level 1

Usage:

1 QA Test Evaluation Report Linearity Test (Pass 1)

Condition: Linearity Test Aborted *Equals* false

Check Code: LINEAR-9

Check Name: Linearity Test Reason Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity check:

If the TestReasonCode is null,

return result A.

If the TestReasonCode is not in the TestReasonCode lookup table,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Linearity Evaluation
2	QA Test Evaluation Report Linearity Test (Pass 1)
	Condition: Linearity Component Valid *Equals* true

Check Code: LINEAR-10

Check Name: Linearity Test Result Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity check:

If TestResultCode is null,

return result A.

If TestResultCode is not equal to "ABORTED", "PASSED", "PASSAPS", or "FAILED",

Locate the TestResultCode in the Test Result Code Lookup table.

If not found,

return result B.

If found,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
C	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Linearity Evaluation

Check Code: LINEAR-11

Check Name: Simultaneous Gas Injections

Related Former Checks: LIN-3

Applicability: CEM Check

Specifications:

For the linearity check with valid injection times.

If Simultaneous Linearity Injections is equal to true,

return result A.

Results:

Result	Description	Severity
A	You reported that two or more reference gas injections were performed at the same date and time. Two injections in a [testtype] cannot be performed simultaneously.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Linearity Test (Pass 1)
	Condition: Linearity Test Aborted *Equals* false

Check Code: LINEAR-12

Check Name: Inappropriate Gas Injections Sequence

Related Former Checks: LIN-4

Applicability: CEM Check

Specifications:

For the linearity check with valid injection times:

If Linearity Sequence Valid is equal to false,

return result A.

Results:

Result	Description	Severity
A	Two or more consecutive reference gas injections have the same calibration gas level. Section 6.2 in Appendix A of 40 CFR Part 75 requires successive gas injections during a [testtype] to be at different calibration gas levels.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Linearity Test (Pass 1)
	Condition: Linearity Test Aborted *Equals* false

Check Code: LINEAR-13

Check Name: Concurrent Tests

Related Former Checks: LIN-7A

Applicability: CEM Check

Specifications:

For the linearity check with valid Begin and End Times and a valid Span Scale:

Locate another test for the component where the TestTypeCode and SpanScale is equal to the TestTypeCode and SpanScale in the current Test Summary record; the BeginDate, BeginHour, and BeginMinute is before the EndDate, EndHour, and EndMinute in the current Test Summary record; and the EndDate, EndHour, and EndMinute is after the BeginDate, BeginHour, and BeginMinute in the current Test Summary record.

If found,

return result A.

If not found,

Locate a n unassociated QA Supp record for the location where the TestTypeCode , ComponentID and SpanScale is equal to the TestTypeCode, ComponentID and SpanScale in the current Test Summary record; the BeginDate, BeginHour, and BeginMinute is before the EndDate, EndHour, and EndMinute in the current Test Summary record; and the EndDate, EndHour, and EndMinute is after the BeginDate, BeginHour, and BeginMinute in the current Test Summary record; and the TestNum is not equal to the TestNumber in the current Test Summary record.

If found,

return result A.

Results:

Result	Description	Severity
A	This [testtype] was conducted at the same time as another [testtype] for the same component and range.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Linearity Test (Pass 1)
	Condition: Extra Linearity Test *Equals* false
2	QA Test Evaluation Report Linearity Test (Pass 1)
	Condition: Linearity Component Valid *Equals* true

Check Code: LINEAR-14

Check Name: Duplicate Linearity Summary Check

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity summary record:

If the GasLevelCode is equal to the Last Linearity Level Code,

set Linearity Level Valid to false, and return result A.

Do not perform the checks in the Linearity Injections and Linearity Summary (Pass 2) categories.

Set all calculated values in associated Linearity Summary records to null.

Otherwise,

Set Last Linearity Level Code to the GasLevelCode, and add GasLevelCode to the Linearity Level List.

Results:

Result	Description	Severity
A	You have reported more than one linearity summary record for [key].	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- Linearity Summary (Pass 1)

Check Code: LINEAR-15

Check Name: Linearity Summary Calibration Gas Level Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a Linearity Summary record:

If GasLevelCode is null,

return result A.

If GasLevelCode is not equal to "HIGH", "MID", or "LOW",

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You reported a [fieldname] that is not in the list of valid values.	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Linearity Injection Evaluation
2	QA and Certification Data Entry Screen Evaluation Linearity Summary Evaluation

Check Code: LINEAR-16

Check Name: Linearity Summary Mean Measured Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity summary record,

If MeanMeasuredValue is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Linearity Summary Evaluation
2	QA Test Evaluation Report --- Linearity Summary (Pass 1)
	Condition: Linearity Level Valid *Equals* true

Check Code: LINEAR-17

Check Name: Linearity Summary Mean Reference Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity summary record:

If MeanReferenceValue is null,

return result A.

If MeanReferenceValue is less than 0,

return result B.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Linearity Summary Evaluation
2	QA Test Evaluation Report --- Linearity Summary (Pass 1)
	Condition: Linearity Level Valid *Equals* true

Check Code: LINEAR-18

Check Name: Linearity Summary Percent Error Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity summary record,

If PercentError is null,

set Linearity Summary Percent Error Valid to false, and return result A.

If PercentError is less than 0,

set Linearity Summary Percent Error Valid to false, and return result B.

Otherwise,

set Linearity Summary Percent Error Valid to true.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Linearity Summary Evaluation
2	QA Test Evaluation Report --- Linearity Summary (Pass 1)
	Condition: Linearity Level Valid *Equals* true

Check Code: LINEAR-19

Check Name: Linearity Injection Injection Time Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity injection:

Set Linearity Injection Included to false.

If the Injection Date is null, or the Injection Hour is null or not between 0 and 23, or the Injection Minute is null or not between 0 and 59,

set Linearity Injection Time Valid to false, Linearity Injection Count to -1, Linearity Level Valid to false, and return result A.

Otherwise,

set Linearity Injection Time Valid to true.

If the Injection Date/Hour/Minute is equal to the Last Linearity Injection Time,

set Linearity Level Valid to false and Linearity Injection Count to -1.

Otherwise,

set Linearity Injection Time to the Injection Date/Hour/Minute.

If Linearity Injection Count is greater than or equal to 0,

add 1 to Linearity Injection Count.

if Linearity Injection Count is less than or equal to 3,

set Linearity Injection Included to true.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Linearity Injection Evaluation
2	QA Test Evaluation Report ------ Linearity Injection

Check Code: LINEAR-20

Check Name: Linearity Injection Measured Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity injection:

If MeasuredValue is null,

set Linearity Level Valid to false, and return result A.

Otherwise,

If both Linearity Injection Included and Linearity Level Valid are true,

add MeasuredValue to Linearity Measured Value Total.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Linearity Injection Evaluation
2	QA Test Evaluation Report ------ Linearity Injection

Check Code: LINEAR-21

Check Name: Linearity Injection Reference Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity injection:

If ReferenceValue is null,

set Linearity Reference Value Valid and Linearity Level Valid to false, and return result A.

If ReferenceValue is less than 0,

set Linearity Reference Value Valid and Linearity Level Valid to false, and return result B.

Otherwise,

set Linearity Reference Value Valid to true,

If both Linearity Injection Included and Linearity Level Valid are true,

add ReferenceValue to Linearity Reference Value Total.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Linearity Injection Evaluation
2	QA Test Evaluation Report ------ Linearity Injection

Check Code: LINEAR-22

Check Name: Linearity Injection Reference Value Consistent with Span and Gas Level

Related Former Checks: LIN-14

Applicability: CEM Check

Specifications:

For the linearity injection record with a valid ReferenceValue and a Test Span Value greater than 0:

Calculate Linearity Reference Percent of Span = ReferenceValue divided by the Test Span Value times 100 (rounded to the nearest tenth)

If the GasLevelCode is "LOW",

If Linearity Reference Percent of Span is less than 20.0 or greater than 30.0,

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

If Linearity Reference Percent of Span is less than 20.0 - Tolerance in the cross-check record or is greater than 30.0 + Tolerance in the cross-check record,

set Linearity Reference Value Consistent with Span to "CRITICAL", and return result A.

Otherwise,

If Linearity Reference Value Consistent with Span is null,

set Linearity Reference Value Consistent with Span to "WARNING", and return result B.

If the GasLevelCode is "MID",

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

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

If Linearity Reference Percent of Span is less than 50.0 - Tolerance in the cross-check record or is greater than 60.0 + Tolerance in the cross-check record,

set Linearity Reference Value Consistent with Span to "CRITICAL", and return result C.

Otherwise,

If Linearity Reference Value Consistent with Span is null,

set Linearity Reference Value Consistent with Span to "WARNING", and return result D.

If the GasLevelCode is "HIGH",

If Linearity Reference Percent of Span is greater than 100.0,

set Linearity Reference Value Consistent with Span to "CRITICAL", and return result E.

If Linearity Reference Percent of Span is less than 80.0,

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

If Linearity Reference Percent of Span is less than 80.0 - Tolerance in the cross-check record,

set Linearity Reference Value Consistent with Span to "CRITICAL", and return result E.

Otherwise,

If Linearity Reference Value Consistent with Span is null,

set Linearity Reference Value Consistent with Span to "WARNING", and return result F.

Results:

Result	Description	Severity
A	The tag value of the "LOW" level reference calibration gas for the injection data is [percent]% of span and does not meet the performance specifications of 40 CFR Part 75. The concentration of the low reference calibration gas must be between 20.0% and 30.0% of the span value. This test is invalid.	Critical Error Level 2
B	The tag value of the "LOW" level reference calibration gas for the injection data is [percent]% of span and does not meet the performance specifications of 40 CFR Part 75. The concentration of the low reference calibration gas must be between 20.0% and 30.0% of the span value.	Non-Critical Error
C	The tag value of the "MID" level reference calibration gas for the injection data is [percent]% of span and does not meet the performance specifications of 40 CFR Part 75. The concentration of the mid reference calibration gas must be between 50.0% and 60.0% of the span value. This test is invalid.	Critical Error Level 2
D	The tag value of the "MID" level reference calibration gas for the injection data is [percent]% of span and does not meet the performance specifications of 40 CFR Part 75. The concentration of the mid reference calibration gas must be between 50.0% and 60.0% of the span value.	Non-Critical Error
E	The tag value of the "HIGH" level reference calibration gas for the injection data is [percent]% of span and does not meet the performance specifications of 40 CFR Part 75. The concentration of the high reference calibration gas must be between 80.0% and 100.0% of the span value. This test is invalid.	Critical Error Level 2
F	The tag value of the "HIGH" level reference calibration gas for the injection data is [percent]% of span and does not meet the performance specifications of 40 CFR Part 75. The concentration of the high reference calibration gas must be between 80.0% and 100.0% of the span value.	Non-Critical Error

Usage:

1 QA Test Evaluation Report ------ Linearity Injection

Condition: Linearity Reference Value Consistent with Span *Not Equal* CRITICAL

Check Code: LINEAR-23

Check Name: Linearity Reference Values Consistent with Calibration Gas Levels

Related Former Checks: LIN-8

Applicability: CEM Check

Specifications:

For each linearity injection record with a valid ReferenceValue and an associated GasLevelCode equal to "MID":

Locate a Linearity Injection record for the test with an associated GasLevelCode equal to "HIGH" and a ReferenceValue less than the ReferenceValue in the current injection record.

If found,

set Linearity Reference Values Consistent to false, and return result A.

Otherwise,

Locate a Linearity Injection record for the test with an associated GasLevelCode equal to "LOW" and a ReferenceValue greater than the ReferenceValue in the current injection record.

If found,

set Linearity Reference Values Consistent to false, and return result A.

Results:

Result	Description	Severity
A	The reference values in this test are not consistent with the calibration gas levels. The reference values of low-level gas injections must be less than those of mid-level gas injections; and the reference values of mid-level gas injections must be less than those of high-level gas injections.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report ------ Linearity Injection
	Condition: Linearity Reference Values Consistent *Equals* true

Check Code: LINEAR-24

Check Name: Simultaneous Injection in Alternate Range Test

Related Former Checks: LIN-7B

Applicability: CEM Check

Specifications:

For the linearity injection with a valid Injection Time:

If the Span Scale is "H",

Locate a Component Linearity Injection record for the component where the associated SpanScale is equal to "L"; the InjectionDate, InjectionHour, and InjectionMinute is equal to the InjectionDate, InjectionHour, and InjectionMinute in the current injection record.

If found,

set Simultaneous Injection for Alternate Range to true, and return result A.

If the Span Scale is "L",

Locate a Component Linearity Injection record for the component where the associated SpanScale is equal to "H"; the InjectionDate, InjectionHour, and InjectionMinute is equal to the InjectionDate, InjectionHour, and InjectionMinute in the current injection record.

If found,

set Simultaneous Linearity Injection for Alternate Range to true, and return result A.

Results:

Result	Description	Severity
A	An injection in this test was conducted at the same time as an injection in another [testtype] for the alternate range of the same analyzer.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report ------ Linearity Injection *Condition:* Simultaneous Linearity Injection for Alternate Range *Equals* false

Check Code: LINEAR-25

Check Name: Appropriate Number of Gas Injections

Related Former Checks: LIN-12, LIN-13

Applicability: CEM Check

Specifications:

For the linearity summary record:

If the Linearity Injection Count is greater than 0 and less than 3,

set Calculate Linearity Level to false, and return result A.

Otherwise

set Calculate Linearity Level to Linearity Level Valid.

If the Linearity Injection Count is greater than 3,

return result B.

Results:

Result	Description	Severity
A	There are fewer than three gas injections for [key]. For each gas level there must be three injections.	Critical Error Level 1
B	There were more than three gas injections for [key]. Only the last three injections at this level were retained for analysis. All other gas injections have been disregarded.	Informational Message

Usage:

1	QA Test Evaluation Report --- Linearity Summary (Pass 2)

Check Code: LINEAR-26

Check Name: Calculate Gas Level Results

Related Former Checks: LIN-15, LIN-16

Applicability: CEM Check

Specifications:

For the linearity summary record:

If ***Calculate Linearity Level*** is equal to true,

Calculate ***Linearity Summary Mean Reference Value*** = ***Linearity Reference Value Total*** / 3.

Calculate ***Linearity Summary Mean Measured Value*** = ***Linearity Measured Value Total*** / 3.

Calculate ***Linearity Summary Mean Difference*** = abs(***Linearity Summary Mean Reference Value*** - ***Linearity Summary Mean Measured Value***).

If ***Linearity Summary Mean Reference Value*** is greater than 0,

Calculate ***Linearity Summary Percent Error*** = min (***Linearity Summary Mean Difference*** / ***Linearity Summary Mean Reference Value*** * 100, 9999.9) , rounded to 1 decimal place.

else

Set ***Linearity Summary Percent Error*** to null.

Round ***Linearity Summary Mean Reference Value*** to 3 decimal places.

Round ***Linearity Summary Mean Measured Value*** to 3 decimal places.

If the Component Type Code of the associated component is equal to "SO2" or "NOX",

Round ***Linearity Summary Mean Difference*** to 0 decimal places.

Otherwise,

Round ***Linearity Summary Mean Difference*** to 1 decimal place.

If ***Linearity Summary Mean Reference Value*** is greater than 0 AND (*Linearity Summary Percent Error* is less than or equal to 5.0; or if the Component Type Code of the associated component is equal to "HG" and the *Linearity Summary Percent Error* is less than or equal to 10.0),

set ***Linearity Summary APS Indicator*** to 0.

If ***Linearity Test Result*** is not equal to "INVALID", "FAILED", or "PASSAPS",

set ***Linearity Test Result*** to "PASSED".

Otherwise,

If the Component Type Code of the associated component is equal to "SO2" or "NOX",

If ***Linearity Summary Mean Difference*** is less than or equal to 5,

set ***Linearity Summary APS Indicator*** to 1, and ***Linearity Summary Percent Error*** to ***Linearity Summary Mean Difference*** .

If ***Linearity Test Result*** is not equal to "FAILED" or "INVALID",

set ***Linearity Test Result*** to "PASSAPS".

Otherwise,

If ***Linearity Summary Mean Reference Value*** is greater than 0,

set ***Linearity Summary APS Indicator*** to 0.

Otherwise,

set ***Linearity Summary APS Indicator*** to 1, and ***Linearity Summary Percent Error*** to ***Linearity Summary Mean Difference*** .

If ***Linearity Test Result*** is not equal to "FAILED" or "INVALID",

If *APSIndicator in the Linearity Summary record* is equal to 1,

Set ***Linearity Test Result*** to "FAILED".

If *PercentError in the Linearity Summary record*is greater than or equal to 0 and less than or equal to 5,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "LINE" and the FieldDescription is equal to "MeanDifferencePPM".

If the absolute value of the difference between the ***Linearity Summary Mean Difference*** and the *Percent Error in the Linearity Summary record*is less than or equal to the Tolerance in the cross-check record,

Set ***Linearity Test Result*** to "PASSAPS".

Otherwise,

If *PercentError in the Linearity Summary record*is greater than or equal to 0 and less than or equal to 5.0 , AND ***Linearity Summary Mean Reference Value*** is greater than 0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "LINE" and the FieldDescription is equal to "PercentError".

If the absolute value of the difference between the ***Linearity Summary Percent Error*** *(MeanDiff)* and the *Percent Error in the Linearity Summary record*is less than or equal to the Tolerance in the cross-check record,

If ***Linearity Test Result*** is not equal to "PASSAPS",

set ***Linearity Test Result*** to "PASSED".

Otherwise,

set ***Linearity Test Result*** to "FAILED".

Otherwise,

set ***Linearity Test Result*** to "FAILED".

If the Component Type Code of the associated component is equal to "CO2" or "O2",

If ***Linearity Summary Mean Difference*** is less tha n or equal to 0.5,

set ***Linearity Summary APS Indicator*** to 1, and ***Linearity Summary Percent Error*** to ***Linearity Summary Mean Difference*** .

If ***Linearity Test Result*** is not equal to "FAILED" or "INVALID",

set ***Linearity Test Result*** to "PASSAPS".

Otherwise,

Set ***Linearity Summary APS Indicator*** to 0.

If ***Linearity Test Result*** is not equal to "FAILED" or "INVALID",

If *APSIndicator in the Linearity Summary record* is equal to 1,

Set ***Linearity Test Result*** to "FAILED".

If *PercentError in the Linearity Summary record* is greater than or equal to 0 and less than or equal to 0.5,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "LINE" and the FieldDescription is equal to "MeanDifferencePCT".

If the absolute value of the difference between the ***Linearity Summary Mean Difference*** and the *Percent Error in the Linearity Summary record* is less than or equal to the Tolerance in the cross-check record,

Set ***Linearity Test Result*** to "PASSAPS".

Otherwise,

If *PercentError in the Linearity Summary record* is greater than or equal to 0 and less than or equal to 5.0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "LINE" and the FieldDescription is equal to "PercentError".

If the absolute value of the difference between the ***Linearity Summary Percent Error*** *(MeanDiff)* and the *Percent Error in the Linearity Summary record* is less than or equal to the Tolerance in the cross-check record,

If ***Linearity Test Result*** is not equal to "PASSAPS",

set ***Linearity Test Result*** to "PASSED".

Otherwise,

set ***Linearity Test Result*** to "FAILED".

Otherwise,

set ***Linearity Test Result*** to "FAILED".

If the Component Type Code of the associated component is equal to "HG",

If ***Linearity Summary Mean Difference*** is less that or equal to 0.8,

set ***Linearity Summary APS Indicator*** to 1, and ***Linearity Summary Percent Error*** to ***Linearity Summary Mean Difference*** .

If ***Linearity Test Result*** is not equal to "FAILED" or "INVALID",

set ***Linearity Test Result*** to "PASSAPS".

Otherwise,

If ***Linearity Summary Mean Reference Value*** is greater than 0,

Set ***Linearity Summary APS Indicator*** to 0.

Otherwise,

set ***Linearity Summary APS Indicator*** to 1, and ***Linearity Summary Percent Error*** to ***Linearity Summary Mean Difference*** .

If ***Linearity Test Result*** is not equal to "FAILED" or "INVALID",

If *APSIndicator in the Linearity Summary record* is equal to 1,

Set ***Linearity Test Result*** to "FAILED".

If *PercentError in the Linearity Summary record* is greater than or equal to 0 and less than or equal to 0.8,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to C***urrentLinearitySummary*** .TestTypeCode and the FieldDescription is equal to "MeanDifferenceUGSCM".

If the absolute value of the difference between the ***Linearity Summary Mean Difference*** and the *Percent Error in the Linearity Summary record* is less than or equal to the Tolerance in the cross-check record,

Set ***Linearity Test Result*** to "PASSAPS".

Otherwise,

If *PercentError in the Linearity Summary record* is greater than or equal to 0 and less than or equal to 10.0, AND ***Linearity Summary Mean Reference Value*** is greater than 0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to C***urrentLinearitySummary*** .TestTypeCode and the FieldDescription is equal to "PercentError".

If the absolute value of the difference between the ***Linearity Summary Percent Error*** *(MeanDiff)* and the *Percent Error in the Linearity Summary record* is less than or equal to the Tolerance in the cross-check record,

If ***Linearity Test Result*** is not equal to "PASSAPS",

set ***Linearity Test Result*** to "PASSED".

Otherwise,

set ***Linearity Test Result*** to "FAILED".

Otherwise,

set ***Linearity Test Result*** to "FAILED".

Otherwise,

set ***Linearity Test Result*** to "INVALID", ***Linearity Summary Mean Reference Value, Linearity Summary Mean Measured Value, Linearity Summary Percent Error, Linearity Summary APS Indicator*** to null, and return result A.

Results:

Result	Description	Severity
A	The software could not evaluate the [test] calculations reported for [key], because of the errors listed above.	Informational Message

Usage:

1	QA Test Evaluation Report --- Linearity Summary (Pass 2)

Check Code: LINEAR-27

Check Name: Reported Summary Values Consistent with Recalculated Gas Level Values

Related Former Checks: LIN-20, LIN-21

Applicability: CEM Check

Specifications:

For the linearity summary record:

If Calculate Linearity Level is equal to true,

If the APSIndicator in the current record is not equal to 1 and the Linearity Summary APS Indicator is equal to 1,

return result A.

Otherwise,

If the Reported Percent Error is valid,

If the APSIndicator in the current record is equal to 0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "LINE" , "HGLINE", or "HGSI3" and the FieldDescription is equal to "PercentError".

If the absolute value of the difference between the Linearity Summary Percent Error and the Percent Error in the Linearity Summary record is greater than the Tolerance in the cross-check record,

return result B.

If the APSIndicator in the current record is equal to 1,

If the Component Type Code of the associated component is equal to "SO2" or "NOX",

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "LINE" and the FieldDescription is equal to "MeanDifferencePPM".

If the absolute value of the difference between the Linearity Summary Mean Difference and the Percent Error in the Linearity Summary record is greater than the tolerance in the cross-check record,

return result B.

else if the Component Type Code of the associated component is equal to "HG",

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to C***urrentLinearitySummary*** .TestTypeCode and the FieldDescription is equal to "MeanDifferenceUGSCM".

If the absolute value of the difference between the Linearity Summary Mean Difference and the Percent Error in the Linearity Summary record is greater than the tolerance in the cross-check record,

return result B.

Otherwise,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to C***urrentLinearitySummary*** .TestTypeCode and the FieldDescription is equal to "MeanDifferencePCT".

If the absolute value of the difference between the Linearity Summary Mean Difference and the

Percent Error in the Linearity Summary record is greater than the tolerance in the cross-check record.

return result B.

Set Linearity Intermediate Values to null.

If the Component Type Code of the associated component is equal to "SO2" or "NOX",

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "LINE" and the FieldDescription is equal to "MeanDifferencePPM".

else if the Component Type Code of the associated component is equal to "HG",

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to ***CurrentLinearitySummary*** .TestTypeCode and the FieldDescription is equal to "MeanDifferenceUGSCM".

Otherwise,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to

CurrentLinearitySummary .TestTypeCode and the FieldDescription is equal to "MeanDifferencePCT".

If MeanReferenceValue in the Linearity Summary record is not null, and the absolute value of the difference between the Linearity Summary Mean Reference Value and the MeanReferenceValue in the Linearity Summary record is greater than the tolerance in the cross-check record,

append "MeanReferenceValue" to Linearity Intermediate Values.

If MeanMeasuredValue in the Linearity Summary record is not null, and the absolute value of the difference between the Linearity Summary Mean Measured Value and the MeanMeasuredValue in the Linearity Summary record is greater than the tolerance in the cross-check record,

append "MeanMeasuredValue" to Linearity Intermediate Values.

If Linearity Intermediate Values is not null,

return result C.

In the QA Evaluation Process, the Linearity Summary Mean Reference Value, Linearity Summary Mean Measured Value, Linearity Summary Percent Error, Linearity Summary APS Indicator will be stored as calculated values in the Linearity Summary record for the gas level.

Results:

Result	Description	Severity
A	The APS flag in the Linearity Summary record for [key] is not equal to 1, although EPA applied the alternative performance specification to determine that the test passed the applicable performance specification.	Critical Error Level 1
B	The Percent Error reported in the Linearity Summary record for [key] is inconsistent with the value which has been recalculated from the injections associated with the test.	Critical Error Level 1
C	The [fieldnames] reported in the Linearity Summary record for [key] is inconsistent with the value which has been recalculated from the injections associated with the test.	Non-Critical Error

Usage:

1	QA Test Evaluation Report --- Linearity Summary (Pass 2)

Check Code: LINEAR-28

Check Name: Too Few Gas Levels

Related Former Checks: LIN-6A

Applicability: CEM Check

Specifications:

For the linearity test:

If Linearity Test Result is equal to "ABORTED", or Linearity Component Valid is false,

set Calculate Linearity Test to false.

Otherwise,

set Calculate Linearity Test to true.

If the number of levels in the Linearity Level List is less than 3,

set Linearity Test Result to null and Calculate Linearity Test to false, and return result A.

If Linearity Test Result is equal to "INVALID",

set Linearity Test Result to null and Calculate Linearity Test to false.

If Linearity Test Result is null,

set Calculate Linearity Test to false.

Results:

Result	Description	Severity
A	You have reported fewer than three calibration gas levels in this test.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Linearity Test (Pass 2)

Check Code: LINEAR-29

Check Name: Determine Linearity Check Results

Related Former Checks: LIN-22

Applicability: CEM Check

Specifications:

For the linearity check:

If TestResultCode is null,

return result A.

If TestResultCode is not equal to "ABORTED", "PASSED", "PASSAPS", or "FAILED",

Locate the TestResultCode in the Test Result Code Lookup table.

If not found,

return result B.

If found,

return result C.

If the Linearity Test Result is equal to "FAILED", and the TestResultCode is equal to "PASSED" or "PASSAPS",

return result D.

If the Linearity Test Result is equal to "PASSED" or "PASSAPS", and the TestResultCode is equal to "FAILED",

return result E.

In the QA Evaluation Process, the Linearity Test Result and the Test Span Value will be stored as calculated values in the Test Summary record for the test, and (for tests that have not yet been submitted or have been approved for resubmission) the appropriate values will be stored in the QA Supp Data record for the test.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1
C	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1
D	The TestResultCode indicates a passing test, but the result recalculated from the injection records indicates a failing test.	Critical Error Level 1
E	You reported a TestResultCode of "FAILED", but the results recalculated or determined from the other reported values indicate that the test passed.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Linearity Test (Pass 2)

Check Code: LINEAR-30

Check Name: Initialize Linearity Test Variables

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity check:

Set Linearity Test Result to null, Linearity Level List to null, Last Linearity Level Code to null, Linearity Reference Values Consistent to true, and Simultaneous Linearity Injection for Alternate Range to false.

Set Linearity Test Type to null.

Usage:

1	QA and Certification Data Entry Screen Evaluation Linearity Evaluation
2	QA and Certification Data Entry Screen Evaluation Linearity Injection Evaluation
3	QA Test Evaluation Report Linearity Test (Pass 1)

Check Code: LINEAR-31

Check Name: Duplicate Linearity

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity check with a valid TestNumber:

Locate another TestSummary record for the location where the TestTypeCode and the TestNumber are equal to the TestTypeCode and TestNumber in the current record.

If found,

return result A.

Otherwise,

Locate an unassociated QA Supp record for the location where the TestTypeCode and the TestNumber are equal to the TestTypeCode and TestNumber in the current record.

If found,

return result B.

Results:

Result	Description	Severity
A	Another test with this test type and test number already exists. You must assign a different test number.	Fatal
B	You cannot change the TestNumber to the value that you have entered, because a test with this TestType and TestNumber has already been submitted. If this is a different test, you should assign it a different TestNumber. If you are trying to resubmit this test, you should delete this test, and either reimport this test with its original TestNumber or retrieve the original test from the EPA host system.	Fatal

Usage:

1 QA and Certification Data Entry Screen Evaluation Linearity Evaluation

Condition: Test Number Valid*Equals* true

Check Code: LINEAR-32

Check Name: Duplicate Linearity Summary

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Linearity Summary record with a valid GasLevelCode:

Locate another Linearity Summary record for the test where the GasLevelCode is equal to the GasLevelCode in the current record:

If found,

return result A.

Results:

Result	Description	Severity
A	Another [recordtype] record already exists with the same [fieldnames].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Linearity Summary Evaluation

Check Code: LINEAR-33

Check Name: Duplicate Linearity Injection

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Linearity Injection record:

Set Duplicate Linearity Injection to false.

If GasLevelCode, InjectionDate, InjectionHour, and InjectionMinute are all valid,

Locate another Linearity Injection record for the test where the GasLevelCode, InjectionDate, InjectionHour, and InjectionMinute are equal to the GasLevelCode, InjectionDate, InjectionHour, and InjectionMinute in the current record.

If found,

set Duplicate Linearity Injection to true, and return result A.

Results:

Result	Description	Severity
A	Another [recordtype] record already exists with the same [fieldnames].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Linearity Injection Evaluation

Check Code: LINEAR-34

Check Name: Too Many Gas Injections

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity injection record that is not a duplicate:

Count the number of linearity injections in the test where the GasLevelCode is equal to the GasLevelCode in the current record (excluding the current record).

If the number is greater than 2,

return result A.

Results:

Result	Description	Severity
A	There were more than three gas injections for [key]. Only the last three injections at this level were retained for analysis. All other gas injections have been disregarded.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Linearity Injection Evaluation

Check Code: LINEAR-35

Check Name: Linearity Component ID Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity check:

If the ComponentID is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Linearity Evaluation

Check Code: LINEAR-36

Check Name: Initialize Linearity Summary Variables

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity summary record:

Set Linearity Reference Value Total, Linearity Measured Value Total, and Linearity Injection Count to 0.

Set Linearity Level Valid to true.

Set Last Injection Time and Linearity Reference Value Consistent with Span to null.

Usage:

1	QA and Certification Data Entry Screen Evaluation Linearity Injection Evaluation
2	QA and Certification Data Entry Screen Evaluation Linearity Summary Evaluation
3	QA Test Evaluation Report --- Linearity Summary (Pass 1)

Check Code: LINEAR-37

Check Name: APS Indicator Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity summary record:

If APSIndicator is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Linearity Summary Evaluation
2	QA Test Evaluation Report --- Linearity Summary (Pass 1)

Check Code: LINEAR-38

Check Name: Calculate Linearity Summary Values

Related Former Checks:

Applicability: CEM Check

Specifications:

For the linearity summary record:

Set Linearity Calc MRV, Linearity Calc MMV, Linearity Calc PE, and Linearity Calc APS to null.

If the GasLevelCode is not equal to "HIGH", "LOW", or "MID",

return result A.

Otherwise,

Set TotalRV, TotalMV, and InjCt to 0.

Sort the Linearity Injection records for the GasLevelCode in descending InjectionDate, InjectionHour, InjectionMinute order.

For each injection record:

If the Injection Date is null, or the Injection Hour is null or not between 0 and 23, or the Injection Minute is null or not between 0 and 59,

return result A.

Otherwise,

Add 1to InjCt.

If InjCt is less than or equal to 3,

If MeasuredValue is null, ReferenceValue is null, or ReferenceValue is less than 0,

return result A.

Otherwise,

add MeasuredValue to TotalMV.

add ReferenceValue to TotalRV.

If InjCt is less than 3,

return result B.

Otherwise,

Calculate Linearity Calc MRV = TotalRV / 3.

Calculate Linearity Calc MMV = TotalMV / 3.

Calculate MeanDiff = abs(Linearity Calc MRV - Linearity Calc MMV).

Calculate Linearity Calc PE = min (MeanDiff / Linearity Calc MRV * 100, 9999.9)

Round Linearity Calc MRV and Linearity Calc MMV to 3 decimal places.

If the Component Type Code of the associated component is equal to "SO2" or "NOX",

Round MeanDiff to 0 decimal places.

Otherwise,

Round MeanDiff to 1 decimal place.

Round Linearity Calc PE to 1 decimal place.

If Linearity CalcPE is less than or equal to 5.0; OR the Component Type Code of the associated component is equal to "HG" and Linearity CalcPE is less than or equal to 10.0,

set Linearity Calc APS to 0.

Otherwise,

If the Component Type Code of the associated component is equal to "SO2" or "NOX",

If MeanDiff is less than or equal to 5,

set Linearity Calc APS to 1, and Linearity Calc PE to MeanDiff.

Otherwise,

set Linearity Calc APS to 0.

If the Component Type Code of the associated component is equal to "CO2" or "O2",

If MeanDiff is less that or equal to 0.5,

set Linearity Calc APS to 1, and Linearity Calc PE to MeanDiff.

Otherwise,

set Linearity Calc APS to 0.

If the Component Type Code of the associated component is equal to "HG",

If MeanDiff is less than or equal to 0.8,

set Linearity Calc APS to 1, and Linearity Calc PE to MeanDiff.

Otherwise,

set Linearity Calc APS to 0.

Return Linearity Calc MRV, Linearity Calc MMV, Linearity Calc PE, and Linearity Calc APS to screen.

Results:

Result	Description	Severity
A	The values in this record could not be calculated because of invalid data.	Critical Error Level 1
B	There are fewer than three gas injections for [key]. For each gas level there must be three injections.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Linearity Summary Calculations

Check Category:

Online-Offline Calibration Test

Check Code: ONOFF-1

Check Name: Online Offline Calibration Test Component Type Check

Related Former Checks: OFFON-1

Applicability: CEM Check

Specifications:

For the OOC test:

If the ComponentID is null,

set OOC Test Component Type Valid to false, and return result A.

Otherwise,

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

set OOC Test Component Type Valid to true.

Otherwise,

set OOC Test Component Type Valid to false, and return result B.

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

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The ComponentTypeCode in the monitoring plan is [comptype]. This type of component does not require an online offline calibration test.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Online Offline Calibration Test

Check Code: ONOFF-2

Check Name: Aborted Online Offline Calibration Test Check

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If OOC Test Component Type Valid is equal to true,

set Evaluate OOC Injections to true.

Otherwise,

set Evaluate OOC Injections to false.

Usage:

1	QA Test Evaluation Report Online Offline Calibration Test

Check Code: ONOFF-3

Check Name: Online Offline Calibration Test Reason Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If the TestReasonCode is null,

return result A.

If the TestReasonCode is not equal to "INITIAL" or "DIAG",

Locate the TestReasonCode in the Test Reason Code Lookup table,

If not found,

return result B.

If found,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
C	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation
2	QA Test Evaluation Report Online Offline Calibration Test
	Condition: OOC Test Component Type Valid*Equals* true

Check Code: ONOFF-4

Check Name: Online Offline Calibration Test Upscale Gas Level Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If the UpscaleGasLevelCode is null,

set Upscale OOC Gas Level Valid to false, and return result A.

If the UpscaleGasLevelCode is not equal to "MID" or "HIGH",

set Upscale OOC Gas Level Valid to false, and return result B.

If the UpscaleGasLevelCode is equal to "MID",

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

set Upscale OOC Gas Level Valid to false, and return result C.

Otherwise,

set Upscale OOC Gas Level Valid to true.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test *Condition:* Evaluate OOC Injections *Equals* true

Check Code: ONOFF-5

Check Name: Offline Upscale Injection Time Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If the OfflineUpscaleInjectionDate is null, or the OfflineUpscaleInjectionHour is null or not between 0 and 23,

set OOC Injection Times Valid to false, and return result A.

Results:

Result	Description	Severity
A	The [type] injection Date and/or Hour is invalid.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test *Condition:* Evaluate OOC Injections *Equals* true

Check Code: ONOFF-6

Check Name: Offline Upscale Measured Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If OfflineUpscaleMeasuredValue is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test *Condition:* Evaluate OOC Injections *Equals* true

Check Code: ONOFF-7

Check Name: Offline Upscale Reference Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If OfflineUpscaleReferenceValue is null,

return result A.

If OfflineUpscaleReferenceValue is less than or equal to 0,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test *Condition:* Evaluate OOC Injections *Equals* true

Check Code: ONOFF-8

Check Name: Offline Upscale Calibration Error Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If the OfflineUpscaleCalibrationError is null,

return result A.

If the OfflineUpscaleCalibrationError is less than 0,

return result B.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test *Condition:* Evaluate OOC Injections *Equals* true

Check Code: ONOFF-9

Check Name: Offline Zero Injection Time Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If the OfflineZeroInjectionDate is null, or the OfflineZeroInjectionHour is null or not between 0 and 23,

set OOC Injection Times Valid to false, and return result A.

Results:

Result	Description	Severity
A	The [type] injection Date and/or Hour is invalid.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test *Condition:* Evaluate OOC Injections *Equals* true

Check Code: ONOFF-10

Check Name: Offline Zero Measured Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If OfflineZeroMeasuredValue is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test *Condition:* Evaluate OOC Injections *Equals* true

Check Code: ONOFF-11

Check Name: Offline Zero Reference Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If OfflineZeroReferenceValue is null,

return result A.

If OfflineZeroReferenceValue is less than 0,

return result B.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test *Condition:* Evaluate OOC Injections *Equals* true

Check Code: ONOFF-12

Check Name: Offline Zero Calibration Error Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If the OfflineZeroCalibrationError is null,

return result A.

If the OfflineZeroCalibrationError is less than 0,

return result B.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test *Condition:* Evaluate OOC Injections *Equals* true

Check Code: ONOFF-13

Check Name: Online Upscale Injection Time Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If the OnlineUpscaleInjectionDate is null, or the OnlineUpscaleInjectionHour is null or not between 0 and 23,

set OOC Injection Times Valid to false, and return result A.

Results:

Result	Description	Severity
A	The [type] injection Date and/or Hour is invalid.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test *Condition:* Evaluate OOC Injections *Equals* true

Check Code: ONOFF-14

Check Name: Online Upscale Measured Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If OnlineUpscaleMeasuredValue is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test *Condition:* Evaluate OOC Injections *Equals* true

Check Code: ONOFF-15

Check Name: Online Upscale Reference Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If OnlineUpscaleReferenceValue is null,

return result A.

If OnlineUpscaleReferenceValue is less than or equal to 0,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test *Condition:* Evaluate OOC Injections *Equals* true

Check Code: ONOFF-16

Check Name: Online Upscale Calibration Error Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If the OnlineUpscaleCalibrationError is null,

return result A.

If the OnlineUpscaleCalibrationError is less than 0,

return result B.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test *Condition:* Evaluate OOC Injections *Equals* true

Check Code: ONOFF-17

Check Name: Online Zero Injection Time Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If the OnlineZeroInjectionDate is null, or the OnlineZeroInjectionHour is null or not between 0 and 23,

set OOC Injection Times Valid to false, and return result A.

Results:

Result	Description	Severity
A	The [type] injection Date and/or Hour is invalid.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test *Condition:* Evaluate OOC Injections *Equals* true

Check Code: ONOFF-18

Check Name: Online Zero Measured Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If OnlineZeroMeasuredValue is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test *Condition:* Evaluate OOC Injections *Equals* true

Check Code: ONOFF-19

Check Name: Online Zero Reference Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If OnlineZeroReferenceValue is null,

return result A.

If OnlineZeroReferenceValue is less than 0,

return result B.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test *Condition:* Evaluate OOC Injections *Equals* true

Check Code: ONOFF-20

Check Name: Online Zero Calibration Error Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If the OnlineZeroCalibrationError is null,

return result A.

If the OnlineZeroCalibrationError is less than 0,

return result B.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test *Condition:* Evaluate OOC Injections *Equals* true

Check Code: ONOFF-21

Check Name: Reference Values Consistent with Calibration Gas Levels

Related Former Checks: OFFON-8

Applicability: CEM Check

Specifications:

For an OOC Test with both an Online Zero Reference Value and a Offline Zero Reference Value that are greater than or equal to 0 and both an Online Upscale Reference Value and a Offline Upscale Reference Value that are greater than 0:

If max(Offline Zero Reference Value, Online Zero Reference Value) is greater than or equal to the min(Offline Upscale Reference Value, Online Upscale Reference Value),

set OOC Test Calc Result to "INVALID", and return result A.

Results:

Result	Description	Severity
A	The reference values are not consistent with the reported calibration gas levels. The reference values of zero-level gas injections or reference signals must be less than those of upscale gas injections.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation
	Condition: Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test
	Condition: Evaluate OOC Injections *Equals* true

Check Code: ONOFF-22

Check Name: Online Offline Calibration Test Injection Sequence Valid

Related Former Checks: OFFON-9

Applicability: CEM Check

Specifications:

For an OOC test with valid injection times:

If the later of the OfflineZeroInjectionDate/Hour and the OfflineUpscaleInjectionDate/Hour is not prior to the earlier of the OnlineZeroInjectionDate/Hour and the OnlineUpscaleInjectionDate/Hour,

return result A.

Otherwise,

If the difference between the earlier of the OfflineZeroInjectionDate/Hour and the OfflineUpscaleInjectionDate/Hour and the later of the OnlineZeroInjectionDate/Hour and the OnlineUpscaleInjectionDate/Hour is greater than 26 hours,

return result B.

Results:

Result	Description	Severity
A	The offline calibration injections were not completed prior to the online calibration injections for this test.	Critical Error Level 2
B	The injections for this test were not completed within a period of 26 clock hours.	Critical Error Level 2

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test *Condition:* Evaluate OOC Injections *Equals* true

Check Code: ONOFF-23

Check Name: Identification of Previously Reported Test or Test Number for Online Offline Calibration Test

Related Former Checks:

Applicability: CEM Check

Specifications:

For an OOC test with valid span scale and end time and a non-null ComponentID:

Locate another OOC test for the component where the SpanScale, EndDate, and EndHour are equal to the SpanScale, EndDate, and EndHour of the current TestSummary record.

If found,

return result A.

Otherwise,

Locate an unassociated QASupp record for the location where the TestTypeCode is equal to "ONOFF", and the ComponentID, SpanScale, EndDate, and EndHour is equal to ComponentID, SpanScale, EndDate, and EndHour of the current TestSummary record, and the TestNum is not equal to the TestNumber in the current TestSummary record,

If found,

return result A.

Otherwise,

Locate a QASupp record for the location where the TestTypeCode is equal to "ONOFF" and the TestNum equal to the TestNumber in the current TestSummary record.

If found,

If CAN_SUBMIT in the QA Supp record is equal to "N",

If this is an unassociated QASupp record, and the ComponentID, SpanScale, EndDate, and EndHour in the QASupp record is not equal to ComponentID, SpanScale, EndDate, and EndHour of the current TestSummary record,

return result B.

Otherwise,

return result C.

Results:

Result	Description	Severity
A	Based on the information in this record, this test has already been submitted with a different test number, or the Client Tool database already contains the same test with a different test number. This test cannot be submitted.	Fatal
B	Another [testtype] with this test number has already been submitted for this location. This test cannot be submitted with this test number. If this is a different test, you should assign it a unique test number.	Fatal
C	This test has already been submitted and will not be resubmitted. If you wish to resubmit this test, please contact EPA for approval.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation *Condition:* Duplicate Online Offline Calibration *Equals* false
2	QA Test Evaluation Report Online Offline Calibration Test

Check Code: ONOFF-24

Check Name: Online Offline Calibration Test Begin Time Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For an OOC test with valid begin date, begin hour, and injection times:

If BeginDate/BeginHour of the test does not equal the earliest of the OfflineZeroInjectionDate/Hour, OnlineZeroInjectionDate/Hour, OfflineUpscaleInjectionDate/Hour and the OnlineUpscaleInjectionDate/Hour,

return result A.

Results:

Result	Description	Severity
A	You reported a test BeginDate and BeginHour that is not the same as the date and hour of the first injection in the test.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation
	Condition: Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test
	Condition: Evaluate OOC Injections *Equals* true

Check Code: ONOFF-25

Check Name: Online Offline Calibration Test End Time Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For an OOC test with valid end date, end hour, and injection times:

If EndDate/EndHour of the test does not equal the latest of the OfflineZeroInjectionDate/Hour, OnlineZeroInjectionDate/Hour, OfflineUpscaleInjectionDate/Hour and the OnlineUpscaleInjectionDate/Hour,

return result A.

Results:

Result	Description	Severity
A	You reported a test EndDate and EndHour that is not the same as the date and hour of the last injection in the test.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation
	Condition: Evaluate OOC Screen *Equals* true
2	QA Test Evaluation Report Online Offline Calibration Test
	Condition: Evaluate OOC Injections *Equals* true

Check Code: ONOFF-26

Check Name: Upscale Reference Values Consistent with Span

Related Former Checks: OFFON-3

Applicability: CEM Check

Specifications:

For an OOC Test with a Test Span Value that is not null and both an Online Upscale Reference Value and an Offline Upscale Reference Value that are greater than 0:

Calculate OOC Upscale Reference Percent of Span = max(OfflineUpscaleReferenceValue, OnlineUpscaleReferenceValue) / Test Span Value * 100, and round to result to one decimal place.

Set noncritical to false.

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

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

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

If OOC Upscale Reference Percent of Span is less than 50.0 - Tolerance in the cross-check record or OOC Upscale Reference Percent of Span greater than 60.0 + Tolerance in the cross-check record,

return result A.

Otherwise,

set noncritical to true.

If OfflineUpscaleReferenceValue is not equal to the OnlineUpscaleReferenceValue,

Calculate tempval = min(OfflineUpscaleReferenceValue, OnlineUpscaleReferenceValue) / Test Span Value * 100, and round to result to one decimal place.

If tempval is less than 50.0 - Tolerance in the cross-check record or tempval is greater than 60.0 + Tolerance in the cross-check record,

set OOC Upscale Reference Percent of Span to tempval, and return result A.

If tempval is less than 50.0 or tempval greater than 60.0,

set OOC Upscale Reference Percent of Span to tempval and noncritical to true.

If noncritical is true,

return result B.

If UpscaleGasLevelCode is equal to "HIGH",

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

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

If OOC Upscale Reference Percent of Span is less than 50.0 - Tolerance in the cross-check record or OOC Upscale Reference Percent of Span greater than 70.0 + Tolerance in the cross-check record,

return result C.

Otherwise,

set noncritical to true.

If OfflineUpscaleReferenceValue is not equal to OnlineUpscaleReferenceValue,

Calculate tempval = min(OfflineUpscaleReferenceValue, OnlineUpscaleReferenceValue) / Test Span Value * 100, and round to result to one decimal place.

If tempval is less than 50.0 - Tolerance in the cross-check record or tempval is greater than 70.0 + Tolerance in the cross-check record,

set OOC Upscale Reference Percent of Span to tempval, and return result C.

If tempval is less than 50.0 or tempval is greater than 70.0,

set OOC Upscale Reference Percent of Span to tempval and noncritical to true.

If noncritical is true,

return result D.

Otherwise,

If OOC Upscale Reference Percent of Span is greater than 100.0,

return result E

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

If OOC Upscale Reference Percent of Span is less than 80.0 - Tolerance in the cross-check record,

return result E.

Otherwise,

set noncritical to true.

If OfflineUpscaleReferenceValue is not equal to OnlineUpscaleReferenceValue,

Calculate tempval = min(OfflineUpscaleReferenceValue, OnlineUpscaleReferenceValue) / Test Span Value * 100, and round to result to one decimal place.

If tempval is less than 80.0 - Tolerance in the cross-check record or tempval is greater than 100.0,

set OOC Upscale Reference Percent of Span to tempval, and return result E.

If tempval is less than 80.0,

set OOC Upscale Reference Percent of Span to tempval and noncritical to true.

If noncritical is true,

return result F.

Results:

Result	Description	Severity
A	The tag value of at least one Mid level reference signal or calibration gas for [key] is [percent]%, which does not meet the applicable performance specifications. The concentration of the mid reference signal or calibration	Critical Error Level 2

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

Usage:

1 QA Test Evaluation Report Online Offline Calibration Test

Condition: Evaluate OOC Injections *Equals* true

Check Code: ONOFF-27

Check Name: Zero Reference Values Consistent with Span

Related Former Checks: OFFON-3

Applicability: CEM Check

Specifications:

For an OOC Test with a Test Span Value that is not null and both an Online Zero Reference Value and an Offline Zero Reference Value that are greater than or equal to 0:

Calculate OOC Zero Reference Percent of Span = max(Online Zero Reference Value, Offline Zero Reference Value) / Test Span Value * 100, and round to result to one decimal place.

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

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

If OOC Zero Reference Percent of Span is greater than 20.0 + Tolerance in the cross-check record,

return result A.

Otherwise,

return result B.

Results:

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

Usage:

1 QA Test Evaluation Report Online Offline Calibration Test

Condition: Evaluate OOC Injections *Equals* true

Check Code: ONOFF-28

Check Name: Calculate Offline Upscale Gas Injection or Reference Signal Results

Related Former Checks: OFFON-10

Applicability: CEM Check

Specifications:

For the OOC Test:

If Test Span Value is null, the Upscale OOC Gas Level Valid is false, the Offline Upscale Reference Value is null or is less than or equal to zero, or Offline Upscale Measured Values is null,

set OOC Test Calc Result to "INVALID", OOC Offline Upscale Injection Calc Result to null, OOC Offline Upscale Injection Calc APS Indicator to null, and return result A.

Otherwise,

Calculate diff = abs(Offline Upscale Injection Measured Value - Offline Upscale Injection Reference Value)

Set OOC Offline Upscale Injection Calc APS Indicator to 0.

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

Round diff to 1 decimal place.

Set OOC Offline Upscale Injection Calc Result to diff.

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

If OOC Offline Upscale Injection Calc Result is greater than 0.5,

set OOC Test Calc Result to "FAILED".

If OfflineUpscaleCalibrationError is greater than or equal to 0 and less than or equal to 0.5,

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

If the absolute value of the difference between diff and OfflineUpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record,

set OOC Test Calc Result to "PASSED".

Otherwise,

set OOC Test Calc Result to "PASSED".

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

Calculate OOC Offline Upscale Injection Calc Result = min(round(diff / Test Span Value * 100, 1), 9999.9)

Round diff to 0 decimal places.

If OOC Offline Upscale Injection Calc Result is greater than 2.5, Test Span Value is less than 200, and diff is less than or equal to 5,

set OOC Offline Upscale Injection Calc Result to diff.

set OOC Offline Upscale Injection Calc APS Indicator to 1.

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

set OOC Test Calc Result to "PASSAPS".

Otherwise,

If OOC Offline Upscale Injection Calc Result is greater than 2.5,

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

If OfflineUpscaleAPSIndicator is NOT equal to 1 and OfflineUpscaleCalibrationError is greater than or equal to 0 and less than or equal to 2.5,

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

If the absolute value of the difference between OOC Offline Upscale Injection Calc Result and OfflineUpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record,

If OOC Test Calc Result is not equal to "PASSAPS",

set OOC Test Calc Result to "PASSED".

Otherwise,

set OOC Test Calc Result to "FAILED".

Otherwise,

set OOC Test Calc Result to "FAILED".

If OfflineUpscaleAPSIndicator is equal to 1 and OfflineUpscaleCalibrationError is greater than or equal to 0 and less than or equal to 5, and Test Span Value is less than 200,

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

If the absolute value of the difference between diff and OfflineUpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record,

set OOC Test Calc Result to "PASSAPS".

Otherwise,

If OOC Test Calc Result is not equal to "INVALID", "FAILED", or "PASSAPS"

set OOC Test Calc Result to "PASSED".

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

Calculate OOC Offline Upscale Injection Calc Result = min(round(diff / Test Span Value * 100, 1), 9999.9).

Round diff to 2 decimal places.

If OOC Offline Upscale Injection Calc Result is greater than 3.0, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and diff is less than or equal to 0.01,

set OOC Offline Upscale Injection Calc Result to 0.

set OOC Offline Upscale Injection Calc APS Indicator to 1.

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

set OOC Test Calc Result to "PASSAPS".

Otherwise,

If OOC Offline Upscale Injection Calc Result is greater than 3.0,

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

If OfflineUpscaleAPSIndicator is NOT equal to 1 and OfflineUpscaleCalibrationError is greater than or equal to 0 and less than or equal to 3.0,

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

If the absolute value of the difference between OOC Offline Upscale Injection Calc Result and OfflineUpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record,

If OOC Test Calc Result is not equal to "PASSAPS",

set OOC Test Calc Result to "PASSED".

Otherwise,

set OOC Test Calc Result to "FAILED".

Otherwise,

set OOC Test Calc Result to "FAILED".

If OfflineUpscaleAPSIndicator is equal to 1, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and OfflineUpscaleCalibrationError is greater than or equal to 0 and less than or equal to 0.01,

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

If the absolute value of the difference between diff and OfflineUpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record,

set OOC Test Calc Result to "PASSAPS".

Otherwise,

If OOC Test Calc Result is not equal to "INVALID", "FAILED", or "PASSAPS"

set OOC Test Calc Result to "PASSED".

Results:

Result	Description	Severity
A	The software could not evaluate the [test] calculations reported for [key], because of the errors listed above.	Informational Message

Usage:

1 QA Test Evaluation Report Online Offline Calibration Test

Condition: Evaluate OOC Injections *Equals* true

Check Code: ONOFF-29

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

Related Former Checks: OFFON-10

Applicability: CEM Check

Specifications:

For the OOC Test:

If Test Span Value is null or Offline Zero Reference Value is null or is less than zero, or Offline Zero Measured Values is null,

set OOC Test Calc Result to "INVALID", OOC Offline Zero Injection Calc Result to null, OOC Offline Zero Injection Calc APS Indicator to null, and return result A.

Otherwise,

Calculate diff = abs(Offline Zero Injection Measured Value - Offline Zero Injection Reference Value)

Set OOC Offline Zero Injection Calc APS Indicator to 0.

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

Round diff to 1 decimal place.

Set OOC Offline Zero Injection Calc Result to diff.

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

If OOC Offline Zero Injection Calc Result is greater than 0.5,

set OOC Test Calc Result to "FAILED".

If OfflineZeroCalibrationError is greater than or equal to 0 and less than or equal to 0.5,

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

If the absolute value of the difference between diff and OfflineZeroCalibrationError is less than or equal to the Tolerance in the cross-check record,

set OOC Test Calc Result to "PASSED".

Otherwise,

set OOC Test Calc Result to "PASSED".

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

Calculate OOC Offline Zero Injection Calc Result = min(round(diff / Test Span Value * 100, 1), 9999.9)

Round diff to 0 decimal places.

If OOC Offline Zero Injection Calc Result is greater than 2.5, Test Span Value is less than 200, and diff is less than or equal to 5,

set OOC Offline Zero Injection Calc Result to diff.

set OOC Offline Zero Injection Calc APS Indicator to 1.

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

set OOC Test Calc Result to "PASSAPS".

Otherwise,

If OOC Offline Zero Injection Calc Result is greater than 2.5,

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

If OfflineZeroAPSIndicator is NOT equal to 1 and OfflineZeroCalibrationError is greater than or equal to 0 and less than or equal to 2.5,

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

If the absolute value of the difference between OOC Offline Zero Injection Calc Result and OfflineZeroCalibrationError is less than or equal to the Tolerance in the cross-check record,

If OOC Test Calc Result is not equal to "PASSAPS",

set OOC Test Calc Result to "PASSED".

Otherwise,

set OOC Test Calc Result to "FAILED".

Otherwise,

set OOC Test Calc Result to "FAILED".

If OfflineZeroAPSIndicator is equal to 1 and OfflineZeroCalibrationError is greater than or equal to 0 and less than or equal to 5, and Test Span Value is less than 200,

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

If the absolute value of the difference between diff and OfflineZeroCalibrationError is less than or equal to the Tolerance in the cross-check record,

set OOC Test Calc Result to "PASSAPS".

Otherwise,

If OOC Test Calc Result is not equal to "INVALID", "FAILED", or "PASSAPS"

set OOC Test Calc Result to "PASSED".

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

Calculate OOC Offline Zero Injection Calc Result = min(round(diff / Test Span Value * 100, 1), 9999.9).

Round diff to 2 decimal places.

If OOC Offline Zero Injection Calc Result is greater than 3.0, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and diff is less than or equal to 0.01,

set OOC Offline Zero Injection Calc Result to 0.

set OOC Offline Zero Injection Calc APS Indicator to 1.

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

set OOC Test Calc Result to "PASSAPS".

Otherwise,

If OOC Offline Zero Injection Calc Result is greater than 3.0,

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

If OfflineZeroAPSIndicator is NOT equal to 1 and OfflineZeroCalibrationError is greater than or equal to 0 and less than or equal to 3.0,

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

If the absolute value of the difference between OOC Offline Zero Injection Calc Result and OfflineZeroCalibrationError is less than or equal to the Tolerance in the cross-check record,

If OOC Test Calc Result is not equal to "PASSAPS",

set OOC Test Calc Result to "PASSED".

Otherwise,

set OOC Test Calc Result to "FAILED".

Otherwise,

set OOC Test Calc Result to "FAILED".

If OfflineZeroAPSIndicator is equal to 1, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and OfflineZeroCalibrationError is greater than or equal to 0 and less than or equal to 0.01,

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

If the absolute value of the difference between diff and OfflineZeroCalibrationError is less than or equal to the Tolerance in the cross-check record,

set OOC Test Calc Result to "PASSAPS".

Otherwise,

If OOC Test Calc Result is not equal to "INVALID", "FAILED", or "PASSAPS"

set OOC Test Calc Result to "PASSED".

Results:

Result	Description	Severity
A	The software could not evaluate the [test] calculations reported for [key], because of the errors listed above.	Informational Message

Usage:

1 QA Test Evaluation Report Online Offline Calibration Test

Condition: Evaluate OOC Injections *Equals* true

Check Code: ONOFF-30

Check Name: Calculate Online Upscale Gas Injection or Reference Signal Results

Related Former Checks: OFFON-10

Applicability: CEM Check

Specifications:

For the OOC Test:

If Test Span Value is null, or Upscale OOC Gas Level Valid is false, or Online Upscale Reference Value is null or is less than or equal to zero, or Online Upscale Measured Values is null,

set OOC Test Calc Result to "INVALID", OOC Online Upscale Injection Calc Result to null, OOC Online Upscale Injection Calc APS Indicator to null, and return result A.

Otherwise,

Calculate diff = abs(Online Upscale Injection Measured Value - Online Upscale Injection Reference Value)

Set OOC Online Upscale Injection Calc APS Indicator to 0.

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

Round diff to 1 decimal place.

Set OOC Online Upscale Injection Calc Result to diff.

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

If OOC Online Upscale Injection Calc Result is greater than 0.5,

set OOC Test Calc Result to "FAILED".

If OnlineUpscaleCalibrationError is greater than or equal to 0 and less than or equal to 0.5,

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

If the absolute value of the difference between diff and OnlineUpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record,

set OOC Test Calc Result to "PASSED".

Otherwise,

set OOC Test Calc Result to "PASSED".

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

Calculate OOC Online Upscale Injection Calc Result = min(round(diff / Test Span Value * 100, 1), 9999.9)

Round diff to 0 decimal places.

If OOC Online Upscale Injection Calc Result is greater than 2.5, Test Span Value is less than 200, and diff is less than or equal to 5,

set OOC Online Upscale Injection Calc Result to diff.

set OOC Online Upscale Injection Calc APS Indicator to 1.

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

set OOC Test Calc Result to "PASSAPS".

Otherwise,

If OOC Online Upscale Injection Calc Result is greater than 2.5,

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

If OnlineUpscaleAPSIndicator is NOT equal to 1 and OnlineUpscaleCalibrationError is greater than or equal to 0 and less than or equal to 2.5,

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

If the absolute value of the difference between OOC Online Upscale Injection Calc Result and OnlineUpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record,

If OOC Test Calc Result is not equal to "PASSAPS",

set OOC Test Calc Result to "PASSED".

Otherwise,

set OOC Test Calc Result to "FAILED".

Otherwise,

set OOC Test Calc Result to "FAILED".

If OnlineUpscaleAPSIndicator is equal to 1 and OnlineUpscaleCalibrationError is greater than or equal to 0 and less than or equal to 5, and Test Span Value is less than 200,

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

If the absolute value of the difference between diff and OnlineUpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record,

set OOC Test Calc Result to "PASSAPS".

Otherwise,

If OOC Test Calc Result is not equal to "INVALID", "FAILED", or "PASSAPS"

set OOC Test Calc Result to "PASSED".

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

Calculate OOC Online Upscale Injection Calc Result = min(round(diff / Test Span Value * 100, 1), 9999.9).

Round diff to 2 decimal places.

If OOC Online Upscale Injection Calc Result is greater than 3.0, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and diff is less than or equal to 0.01,

set OOC Online Upscale Injection Calc Result to 0.

set OOC Online Upscale Injection Calc APS Indicator to 1.

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

set OOC Test Calc Result to "PASSAPS".

Otherwise,

If OOC Online Upscale Injection Calc Result is greater than 3.0,

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

If OnlineUpscaleAPSIndicator is NOT equal to 1 and OnlineUpscaleCalibrationError is greater than or equal to 0 and less than or equal to 3.0,

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

If the absolute value of the difference between OOC Online Upscale Injection Calc Result and OnlineUpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record,

If OOC Test Calc Result is not equal to "PASSAPS",

set OOC Test Calc Result to "PASSED".

Otherwise,

set OOC Test Calc Result to "FAILED".

Otherwise,

set OOC Test Calc Result to "FAILED".

If OnlineUpscaleAPSIndicator is equal to 1, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and OnlineUpscaleCalibrationError is greater than or equal to 0 and less than or equal to 0.01,

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

If the absolute value of the difference between diff and OnlineUpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record,

set OOC Test Calc Result to "PASSAPS".

Otherwise,

If OOC Test Calc Result is not equal to "INVALID", "FAILED", or "PASSAPS"

set OOC Test Calc Result to "PASSED".

Results:

Result	Description	Severity
A	The software could not evaluate the [test] calculations reported for [key], because of the errors listed above.	Informational Message

Usage:

1 QA Test Evaluation Report Online Offline Calibration Test

Condition: Evaluate OOC Injections *Equals* true

Check Code: ONOFF-31

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

Related Former Checks: OFFON-10

Applicability: CEM Check

Specifications:

For the OOC Test:

If Test Span Value is null or Online Zero Reference Value is null or is less than zero, or Online Zero Measured Values is nul

set OOC Test Calc Result to "INVALID", OOC Online Zero Injection Calc Result to null, OOC Online Zero Injection Calc APS Indicator to null, and return result A.

Otherwise,

Calculate diff = abs(Online Zero Injection Measured Value - Online Zero Injection Reference Value)

Set OOC Online Zero Injection Calc APS Indicator to 0.

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

Round diff to 1 decimal place.

Set OOC Online Zero Injection Calc Result to diff.

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

If OOC Online Zero Injection Calc Result is greater than 0.5,

set OOC Test Calc Result to "FAILED".

If OnlineZeroCalibrationError is greater than or equal to 0 and less than or equal to 0.5,

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

If the absolute value of the difference between diff and OnlineZeroCalibrationError is less than or equal to the Tolerance in the cross-check record,

set OOC Test Calc Result to "PASSED".

Otherwise,

set OOC Test Calc Result to "PASSED".

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

Calculate OOC Online Zero Injection Calc Result = min(round(diff / Test Span Value * 100, 1), 9999.9)

Round diff to 0 decimal places.

If OOC Online Zero Injection Calc Result is greater than 2.5, Test Span Value is less than 200, and diff is less than or equal to 5,

set OOC Online Zero Injection Calc Result to diff.

set OOC Online Zero Injection Calc APS Indicator to 1.

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

set OOC Test Calc Result to "PASSAPS".

Otherwise,

If OOC Online Zero Injection Calc Result is greater than 2.5,

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

If OnlineZeroAPSIndicator is NOT equal to 1 and OnlineZeroCalibrationError is greater than or equal to 0 and less than or equal to 2.5,

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

If the absolute value of the difference between OOC Online Zero Injection Calc Result and OnlineZeroCalibrationError is less than or equal to the Tolerance in the cross-check record,

If OOC Test Calc Result is not equal to "PASSAPS",

set OOC Test Calc Result to "PASSED".

Otherwise,

set OOC Test Calc Result to "FAILED".

Otherwise,

set OOC Test Calc Result to "FAILED".

If OnlineZeroAPSIndicator is equal to 1 and OnlineZeroCalibrationError is greater than or equal to 0 and less than or equal to 5, and Test Span Value is less than 200,

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

If the absolute value of the difference between diff and OnlineZeroCalibrationError is less than or equal to the Tolerance in the cross-check record,

set OOC Test Calc Result to "PASSAPS".

Otherwise,

If OOC Test Calc Result is not equal to "INVALID", "FAILED", or "PASSAPS"

set OOC Test Calc Result to "PASSED".

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

Calculate OOC Online Zero Injection Calc Result = min(round(diff / Test Span Value * 100, 1), 9999.9).

Round diff to 2 decimal places.

If OOC Online Zero Injection Calc Result is greater than 3.0, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and diff is less than or equal to 0.01,

set OOC Online Zero Injection Calc Result to 0.

set OOC Online Zero Injection Calc APS Indicator to 1.

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

set OOC Test Calc Result to "PASSAPS".

Otherwise,

If OOC Online Upscale Injection Calc Result is greater than 3.0,

If OOC Test Calc Result is not equal to "INVALID" or "FAILED",

If OnlineZeroAPSIndicator is NOT equal to 1 and OnlineZeroCalibrationError is greater than or equal to 0 and less than or equal to 3.0,

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

If the absolute value of the difference between OOC Online Zero Injection Calc Result and OnlineZeroCalibrationError is less than or equal to the Tolerance in the cross-check record,

If OOC Test Calc Result is not equal to "PASSAPS",

set OOC Test Calc Result to "PASSED".

Otherwise,

set OOC Test Calc Result to "FAILED".

Otherwise,

set OOC Test Calc Result to "FAILED".

If OnlineZeroAPSIndicator is equal to 1, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and OnlineZeroCalibrationError is greater than or equal to 0 and less than or equal to 0.01,

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

If the absolute value of the difference between diff and OnlineZeroCalibrationError is less than or equal to the Tolerance in the cross-check record,

set OOC Test Calc Result to "PASSAPS".

Otherwise,

If OOC Test Calc Result is not equal to "INVALID", "FAILED", or "PASSAPS"

set OOC Test Calc Result to "PASSED".

Results:

Result	Description	Severity
A	The software could not evaluate the [test] calculations reported for [key], because of the errors listed above.	Informational Message

Usage:

1 QA Test Evaluation Report Online Offline Calibration Test

Condition: Evaluate OOC Injections *Equals* true

Check Code: ONOFF-32

Check Name: Reported Offline Upscale Injection Results Consistent with Recalculated Values

Related Former Checks: OFFON-13

Applicability: CEM Check

Specifications:

For the OOC test:

If the OfflineUpscaleAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "FLOW", and the SampleAcquisitionMethodCode of the associated component is not equal to "DP",

return result A.

If the OfflineUpscaleAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "SO2" or "NOX", and the Test Span Value is greater than or equal to 200,

return result B.

If the OfflineUpscaleAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "CO2" or "O2",

return result C.

Otherwise,

If OOC Offline Upscale Injection Calc Result is not null,

If the OfflineUpscaleAPSIndicator in the current record is not equal to 1 and the OOC Offline Upscale Injection Calc APS Indicator is equal to 1,

return result D.

If the OfflineUpscaleCalibrationError is greater than or equal to 0,

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

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

If the absolute value of the difference between the OOC Offline Upscale Injection Calc Result and the OfflineUpscaleCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

If the OOC Offline Upscale Injection Calc APS Indicator is equal to 1,

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

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

If the absolute value of the difference between the OOC Offline Upscale Injection Calc Result and the OfflineUpscaleCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

Otherwise,

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

If the absolute value of the difference between the OOC Offline Upscale Injection Calc Result and the OfflineUpscaleCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

else i f the OfflineUpscaleAPSIndicator is equal to 0 ,

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

If the absolute value of the difference between the OOC Offline Upscale Injection Calc Result and the OfflineUpscaleCalibrationError is greater than the Tolerance in the cross-check record,

return result F.

Results:

Result	Description	Severity
A	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance criteria for non-differential pressure flow monitors.	Critical Error Level 1
B	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance specification criteria for SO2 and NOX components when the instrument span is greater than or equal to 200.	Critical Error Level 1
C	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance specification criteria for CO2 and O2 components.	Critical Error Level 1
D	You did not report a value of "1" in the [level] APS Indicator for [key], although EPA applied the alternative performance specification to determine that the injection passed the applicable performance specification.	Critical Error Level 1
E	The absolute difference reported as the [level] Calibration Error for [key] is inconsistent with the recalculated absolute difference for the gas injection or reference signal.	Critical Error Level 1
F	The [level] Calibration Error reported for [key] is inconsistent with the recalculated calibration error for the gas injection or reference signal.	Critical Error Level 1

Usage:

1 QA Test Evaluation Report Online Offline Calibration Test

Condition: Evaluate OOC Injections *Equals* true

Check Code: ONOFF-33

Check Name: Reported Offline Zero Injection Results Consistent with Recalculated Values

Related Former Checks: OFFON-13

Applicability: CEM Check

Specifications:

For the OOC test:

If the OfflineZeroAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "FLOW", and the SampleAcquisitionMethodCode of the associated component is not equal to "DP",

return result A.

If the OfflineZeroAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "SO2" or "NOX", and the Test Span Value is greater than or equal to 200,

return result B.

If the OfflineZeroAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "CO2" or "O2",

return result C.

Otherwise,

If OOC Offline Zero Injection Calc Result is not null,

If the OfflineZeroAPSIndicator in the current record is not equal to 1 and the OOC Offline Zero Injection Calc APS Indicator is equal to 1,

return result D.

If the OfflineZeroCalibrationError is greater than or equal to 0,

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

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

If the absolute value of the difference between the OOC Offline Zero Injection Calc Result and the OfflineZeroCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

If the OOC Offline Zero Injection Calc APS Indicator is equal to 1,

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

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

If the absolute value of the difference between the OOC Offline Zero Injection Calc Result and the OfflineZeroCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

Otherwise,

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

If the absolute value of the difference between the OOC Offline Zero Injection Calc Result and the OfflineZeroCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

else i f OfflineZeroAPSIndicator is equal to 0,

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

If the absolute value of the difference between the OOC Offline Zero Injection Calc Result and the OfflineZeroCalibrationError is greater than the Tolerance in the cross-check record,

return result F.

Results:

Result	Description	Severity
A	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance criteria for non-differential pressure flow monitors.	Critical Error Level 1
B	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance specification criteria for SO2 and NOX components when the instrument span is greater than or equal to 200.	Critical Error Level 1
C	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance specification criteria for CO2 and O2 components.	Critical Error Level 1
D	You did not report a value of "1" in the [level] APS Indicator for [key], although EPA applied the alternative performance specification to determine that the injection passed the applicable performance specification.	Critical Error Level 1
E	The absolute difference reported as the [level] Calibration Error for [key] is inconsistent with the recalculated absolute difference for the gas injection or reference signal.	Critical Error Level 1
F	The [level] Calibration Error reported for [key] is inconsistent with the recalculated calibration error for the gas injection or reference signal.	Critical Error Level 1

Usage:

1 QA Test Evaluation Report Online Offline Calibration Test

Condition: Evaluate OOC Injections *Equals* true

Check Code: ONOFF-34

Check Name: Reported Online Upscale Injection Results Consistent with Recalculated Values

Related Former Checks: OFFON-13

Applicability: CEM Check

Specifications:

For the OOC test:

If the OnlineUpscaleAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "FLOW", and the SampleAcquisitionMethodCode of the associated component is not equal to "DP",

return result A.

If the OnlineUpscaleAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "SO2" or "NOX", and the Test Span Value is greater than or equal to 200,

return result B.

If the OnlineUpscaleAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "CO2" or "O2",

return result C.

Otherwise,

If OOC Online Upscale Injection Calc Result is not null,

If the OnlineUpscaleAPSIndicator in the current record is not equal to 1 and the OOC Online Upscale Injection Calc APS Indicator is equal to 1,

return result D.

If the OnlineUpscaleCalibrationError is greater than or equal to 0,

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

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

If the absolute value of the difference between the OOC Online Upscale Injection Calc Result and the OnlineUpscaleCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

If the OOC O n line Upscale Injection Calc APS Indicator is equal to 1,

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

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

If the absolute value of the difference between the OOC Online Upscale Injection Calc Result and the OnlineUpscaleCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

Otherwise,

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

If the absolute value of the difference between the OOC Online Upscale Injection Calc Result and the OnlineUpscaleCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

else i f OnlineUpscaleAPSIndicator is equal to 0 ,

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

If the absolute value of the difference between the OOC Online Upscale Injection Calc Result and the OnlineUpscaleCalibrationError is greater than the Tolerance in the cross-check record,

return result F.

Results:

Result	Description	Severity
A	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance criteria for non-differential pressure flow monitors.	Critical Error Level 1
B	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance specification criteria for SO2 and NOX components when the instrument span is greater than or equal to 200.	Critical Error Level 1
C	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance specification criteria for CO2 and O2 components.	Critical Error Level 1
D	You did not report a value of "1" in the [level] APS Indicator for [key], although EPA applied the alternative performance specification to determine that the injection passed the applicable performance specification.	Critical Error Level 1
E	The absolute difference reported as the [level] Calibration Error for [key] is inconsistent with the recalculated absolute difference for the gas injection or reference signal.	Critical Error Level 1
F	The [level] Calibration Error reported for [key] is inconsistent with the recalculated calibration error for the gas injection or reference signal.	Critical Error Level 1

Usage:

1 QA Test Evaluation Report Online Offline Calibration Test

Condition: Evaluate OOC Injections *Equals* true

Check Code: ONOFF-35

Check Name: Reported Online Zero Injection Results Consistent with Recalculated Values

Related Former Checks: OFFON-13

Applicability: CEM Check

Specifications:

For the OOC test:

If the OnlineZeroAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "FLOW", and the SampleAcquisitionMethodCode of the associated component is not equal to "DP",

return result A.

If the OnlineZeroAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "SO2" or "NOX", and the Test Span Value is greater than or equal to 200,

return result B.

If the OnlineZeroAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "CO2" or "O2",

return result C.

Otherwise,

If OOC Online Zero Injection Calc Result is not null,

If the OnlineZeroAPSIndicator in the current record is not equal to 1 and the OOC Online Zero Injection Calc APS Indicator is equal to 1,

return result D.

If the OnlineZeroCalibrationError is greater than or equal to 0,

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

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

If the absolute value of the difference between the OOC Online Zero Injection Calc Result and the OnlineZeroCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

If the OOC O n line Z e ro Injection Calc APS Indicator is equal to 1,

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

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

If the absolute value of the difference between the OOC Online Zero Injection Calc Result and the OnlineZeroCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

Otherwise,

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

If the absolute value of the difference between the OOC Online Zero Injection Calc Result and the OnlineZeroCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

else i f OnlineZeroAPSIndicator is equal to 0 ,

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

If the absolute value of the difference between the OOC Online Zero Injection Calc Result and the OnlineZeroCalibrationError is greater than the Tolerance in the cross-check record,

return result F.

Results:

Result	Description	Severity
A	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance criteria for non-differential pressure flow monitors.	Critical Error Level 1
B	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance specification criteria for SO2 and NOX components when the instrument span is greater than or equal to 200.	Critical Error Level 1
C	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance specification criteria for CO2 and O2 components.	Critical Error Level 1
D	You did not report a value of "1" in the [level] APS Indicator for [key], although EPA applied the alternative performance specification to determine that the injection passed the applicable performance specification.	Critical Error Level 1
E	The absolute difference reported as the [level] Calibration Error for [key] is inconsistent with the recalculated absolute difference for the gas injection or reference signal.	Critical Error Level 1
F	The [level] Calibration Error reported for [key] is inconsistent with the recalculated calibration error for the gas injection or reference signal.	Critical Error Level 1

Usage:

1 QA Test Evaluation Report Online Offline Calibration Test

Condition: Evaluate OOC Injections *Equals* true

Check Code: ONOFF-36

Check Name: Determination of Overall Online Offline Calibration Test Result

Related Former Checks: OFFON-14

Applicability: CEM Check

Specifications:

For the OOC test:

If OOC Test Calc Result is equal to "INVALID",

set OOC Test Calc Result to null.

If TestResultCode is null,

return result A.

If TestResultCode is not equal to "PASSED"or "PASSAPS",

Locate the TestResultCode is not in the Test Result Code Lookup table,

If not found,

return result B.

If found,

return result C.

If OOC Test Calc Result is equal to "FAILED",

return result D.

In the QA Evaluation Process, the OOC Test Calc Result and Test Span Value will be stored as calculated values in the Test Summary record for the test, the calculated injection values will be stored in the OnlineOfflineCalibration record for the test, and (for tests that have not yet been submitted or have been approved for resubmission) the appropriate values will be stored in the QA Supp Data record for the test.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
C	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1
D	You have reported an online offline calibration demonstration, but the recalculated results indicate a failing test.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Online Offline Calibration Test

Check Code: ONOFF-37

Check Name: Online Offline Calibration Test Component ID Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If the ComponentID is null,

set Evaluate OOC Screen to false, and return result A.

If TestResultCode is equal to "ABORTED",

set Evaluate OOC Screen to false.

Otherwise,

set Evaluate OOC Screen to true.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation

Check Code: ONOFF-38

Check Name: Duplicate Online Offline Calibration Test

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test with a valid TestNumber:

Locate another TestSummary record for the location where the TestTypeCode is equal to "ONOFF" and the TestNumber is equal to the TestNumber in the current record.

If found,

return result A.

Otherwise,

Locate an unassociated QA Supp record for the location where the TestTypeCode is equal to "ONOFF" and the TestNumber is equal to the TestNumber in the current record.

If found,

return result B.

Results:

Result	Description	Severity
A	Another [testtype] with this test number already exists. You must assign a different test number.	Fatal
B	You cannot change the TestNumber to the value that you have entered, because a [testtype] with this TestNumber has already been submitted. If this is a different test, you should assign it a different TestNumber. If you are trying to resubmit this test, you should delete this test, and either reimport this test with its original TestNumber or retrieve the original test from the EPA host system.	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation

Check Code: ONOFF-39

Check Name: Online Offline Calibration Test Result Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If TestResultCode is null,

return result A.

If TestResultCode is not equal to "PASSED" or "PASSAPS",

Locate the TestResultCode is not in the Test Result Code Lookup table,

If not found,

return result B.

If found,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
C	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation

Check Code: ONOFF-40

Check Name: Initialize Online Offline Calibration Test Variables

Related Former Checks: OFFON-1

Applicability: CEM Check

Specifications:

For the OOC test:

Set OOC Injection Times Valid to true.

Set OOC Test Calc Result to null.

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation
2	QA Test Evaluation Report Online Offline Calibration Test

Check Code: ONOFF-41

Check Name: Online Zero APS Indicator Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If OnlineZeroAPSIndicator is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation
2	QA Test Evaluation Report Online Offline Calibration Test

Check Code: ONOFF-42

Check Name: Offline Zero APS Indicator Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If OfflineZeroAPSIndicator is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation
2	QA Test Evaluation Report Online Offline Calibration Test

Check Code: ONOFF-43

Check Name: Online Upscale APS Indicator Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If OnlineUpscaleAPSIndicator is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation
2	QA Test Evaluation Report Online Offline Calibration Test

Check Code: ONOFF-44

Check Name: Offline Upscale APS Indicator Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the OOC test:

If OfflineUpscaleAPSIndicator is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation
2	QA Test Evaluation Report Online Offline Calibration Test

Check Code: ONOFF-45

Check Name: Calculate Online Offline Calibration

Related Former Checks:

Applicability: CEM Check

Specifications:

For the injection:

Set Online Zero Calc Result, Online Zero Calc APS, Online Upscale Calc Result, and Online Upscale Calc APS to null.

Set Offline Zero Calc Result, Offline Zero Calc APS, Offline Upscale Calc Result, and Offline Upscale Calc APS to null.

If the UpscaleGasLevelCode is not equal to "MID" or "HIGH", or the OnlineUpscaleReferenceValue is null, or the OnlineUpscaleMeasuredValue is null, or the OnlineZeroReferenceValue is null, or the OnlineZeroMeasuredValue is null, or the ZeroReferenceValue is greater than or equal to UpscaleReferenceValue,

return result A.

If the OfflineUpscaleReferenceValue is null, or the OfflineUpscaleMeasuredValue is null, or the OfflineZeroReferenceValue is null, or the OfflineZeroMeasuredValue is null,

return result A.

If max(OnlineZeroReferenceValue, OfflineZeroReferenceValue) is greater than or equal to min (OnlineUpscaleReferenceValue, OfflineUpscaleReferenceValue,

return result A.

If the associated ComponentTypeCode is equal to "FLOW" and the SpanScaleCode is not null; or the ComponentTypeCode is not equal to "FLOW" and the SpanScaleCode is not equal to "H" or "L",

return result A.

Otherwise,

Locate the System Component records for the associated component with the earliest BeginDate.

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

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

Otherwise,

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

If the Span record is not found,

return result B.

Otherwise,

Calculate diff = abs(OnlineZeroInjectionMeasuredValue - OnlineZeroInjectionReferenceValue)

Set Online Zero Calc APS to 0.

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

Round diff to 1 decimal place.

Set Online Zero Calc Result to diff.

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

Calculate Online Zero Calc Result = min(round(diff / SpanValue * 100, 1), 9999.9).

Round diff to 0 decimal places.

If Online Zero Calc Result is greater than 2.5, SpanValue is less than 200, and diff is less than or equal to 5,

set Online Zero Calc Result to diff.

set Online Zero Calc APS to 1.

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

Calculate Online Zero Calc Result = min(round(diff / SpanValue * 100, 1), 9999.9).

Round diff to 2 decimal places.

If Online Zero Calc Result is greater than 3.0, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and diff is less than or equal to 0.01,

set Online Zero Calc Result to 0.

set Online Zero Calc APS to 1.

Calculate diff = abs(OnlineUpscaleInjectionMeasuredValue - OnlineUpscaleInjectionReferenceValue)

Set Online Upscale Calc APS to 0.

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

Round diff to 1 decimal place.

Set Online Upscale Calc Result to diff.

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

Calculate Online Upscale Calc Result = min(round(diff / SpanValue * 100, 1), 9999.9).

Round diff to 0 decimal places.

If Online Upscale Calc Result is greater than 2.5, SpanValue is less than 200, and diff is less than or equal to 5,

set Online Upscale Calc Result to diff.

set Online Upscale Calc APS to 1.

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

Calculate Online Upscale Calc Result = min(round(diff / SpanValue * 100, 1), 9999.9).

Round diff to 2 decimal places.

If Online Upscale Calc Result is greater than 3.0, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and diff is less than or equal to 0.01,

set Online Upscale Calc Result to 0.

set Online Upscale Calc APS to 1.

Calculate diff = abs(OfflineZeroInjectionMeasuredValue - OfflineZeroInjectionReferenceValue)

Set Offline Zero Calc APS to 0.

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

Round diff to 1 decimal place.

Set Offline Zero Calc Result to diff.

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

Calculate Offline Zero Calc Result = min(round(diff / SpanValue * 100, 1), 9999.9).

Round diff to 0 decimal places.

If Offline Zero Calc Result is greater than 2.5, SpanValue is less than 200, and diff is less than or equal to 5,

set Offline Zero Calc Result to diff.

set Offline Zero Calc APS to 1.

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

Calculate Offline Zero Calc Result = min(round(diff / SpanValue * 100, 1), 9999.9).

Round diff to 2 decimal places.

If Offline Zero Calc Result is greater than 3.0, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and diff is less than or equal to 0.01,

set Offline Zero Calc Result to 0.

set Offline Zero Calc APS to 1.

Calculate diff = abs(OfflineUpscaleInjectionMeasuredValue - OfflineUpscaleInjectionReferenceValue)

Set Offline Upscale Calc APS to 0.

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

Round diff to 1 decimal place.

Set Offline Upscale Calc Result to diff.

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

Calculate Offline Upscale Calc Result = min(round(diff / SpanValue * 100, 1), 9999.9).

Round diff to 0 decimal places.

If Offline Upscale Calc Result is greater than 2.5, SpanValue is less than 200, and diff is less than or equal to 5,

set Offline Upscale Calc Result to diff.

set Offline Upscale Calc APS to 1.

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

Calculate Offline Upscale Calc Result = min(round(diff / SpanValue * 100, 1), 9999.9).

Round diff to 2 decimal places.

If Offline Upscale Calc Result is greater than 3.0, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and diff is less than or equal to 0.01,

set Offline Upscale Calc Result to 0.

set Offline Upscale Calc APS to 1.

Results:

Result	Description	Severity
A	The values in this record could not be calculated because of invalid data.	Critical Error Level 1
B	You have not reported a valid monitoring plan span record that was active during the test.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation QA and Certification Data Entry Screen Evaluation

Check Category:

Protocol Gas

Check Code: PGVP-1

Check Name: Gas Type Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a Protocal Gas record with a non-null ***Protocol Gas Parameter*** :

If GasTypeCode is null,

return result A.

Else if GasTypeCode is equal to "ZERO",

If TestTypeCode does not equal "RATA", "APPE" or "UNITDEF",

return result F.

If result is null,

If the GasTypeCode is not in the ***GasTypeCode lookup table*** .

return result B.

else if the GasTypeCode == "ZAM"

return result B.

else if the ***Protocol Gas Parameter*** is equal to "SO2", "NOX", "CO2", or "O2",

Locate ***Protocol Gas Parameter To Type Cross Reference*** records where ProtocolGasParameter is equal to ***Protocol Gas Parameter*** , and GasTypeList contains the GasTypeCode in the current Protocol Gas record.

If not found,

return result D.

else

add ***Protocol Gas Parameter*** + GasLevelCode to the ***Protocol Gases*** list.

else if the ***Protocol Gas Parameter*** contains "7E" but not "3A",

Locate ***Protocol Gas Parameter To Type Cross Reference*** records where ProtocolGasParameter is equal to "NOX", and GasTypeList contains the GasTypeCode in the current Protocol Gas record.

If not found,

return result D.

else

add "NOX" + GasLevelCode to the ***Protocol Gases*** list.

else if the ***Protocol Gas Parameter*** contains both "7E" and "3A",

Locate ***Protocol Gas Parameter To Type Cross Reference*** records where ProtocolGasParameter is equal to "NOX" or "DIL", and GasTypeList contains the GasTypeCode in the current Protocol Gas record.

If not found,

return result D.

else

For each located record,

add ***Protocol Gas Parameter To Type Cross Reference*** .ProtocolGasParameter + GasLevelCode to the ***Protocol Gases*** list.

else if the ***Protocol Gas Parameter*** contains "3A",

Locate ***Protocol Gas Parameter To Type Cross Reference*** records where ProtocolGasParameter is equal to "DIL", and GasTypeList contains the GasTypeCode in the current Protocol Gas record.

If not found,

return result D.

else

add "DIL" + GasLevelCode to the ***Protocol Gases*** list.

If result is null, and the GasTypeCode == "APPVD"

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1
C	You reported "APPVD" as the [fieldname] for [key]. This code indicates that you received approval from EPA for a new type of Protocol Gas. If you have not received approval from EPA, please contact ECMPS support. If you have already received approval, you should log in to the ECMPS host, so that the ECMPS program can obtain the necessary information to override this error.	Critical Error Level 1
D	You reported an GasTypeCode that is not appropriate for the component type or the test reference method for [key].	Critical Error Level 1
E	You reported an [fieldname] of "AIR" for [key], which indicates the use of purified air material, but this material can only be used for a high-level calibration.	Critical Error Level 1
F	You reported a GasTypeCode of "ZERO" which is only appropriate for the low level calibration of a reference analyzer used in Reference Method 3A, 6C, or 7E testing.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- Appendix E Protocol Gas Data
2	QA Test Evaluation Report --- Linearity Protocol Gas Data
3	QA Test Evaluation Report --- RATA Protocol Gas Data
4	QA Test Evaluation Report --- Unit Default Protocol Gas Data

Check Code: PGVP-2

Check Name: Cylinder ID Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a Protocol Gas record with a non-null ***Protocol Gas Parameter*** :

If CylinderID is null,

If GasTypeCode is not null and is not equal to "AIR" or "ZERO",

return result A.

Otherwise,

If the GasTypeCode is equal to "AIR" or "ZERO",

return result B.

Otherwise,

add CylinderID to the ***ProtocolGasCylinderIDList*** .

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You indicated that you used purified air material or zero air material instead of a cylinder gas, but you reported a CylinderIdentifier.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Protocol Gas Evaluation
2	QA Test Evaluation Report --- Appendix E Protocol Gas Data
3	QA Test Evaluation Report --- Linearity Protocol Gas Data
4	QA Test Evaluation Report --- RATA Protocol Gas Data
5	QA Test Evaluation Report --- Unit Default Protocol Gas Data

Check Code: PGVP-3

Check Name: Vendor ID Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a Protocal Gas record with a non-null ***Protocol Gas Parameter*** :

If VendorID is null,

If GasTypeCode is not null and is not equal to "AIR", "SRM", "NTRM", "GMIS", "RGM", "PRM", or "ZERO",

return result A.

else if the VendorID is not in the ***Protocol Gas Vendor*** lookup table,

return result B.

else if the GasTypeCode is equal to "AIR", "SRM", "NTRM", "GMIS", "RGM", "PRM", or "ZERO",

return result C.

else if the DeactivationDate in the ***Protocol Gas Vendor*** record is not null and the BeginDate of the current test is on or after January 1 after DeactivationDate + 8 years,

return result E.

else if the VendorID is equal to "NONPGVP",

Locate ***System Parameter*** lookup table record where Sys_Param_Name = 'PGVP_AETB_RULE_DATE'.

If the BeginDate of the current test is on or after the ***System Parameter*** .Param_Value1 + 60 days + 8 years,

return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1
C	You reported a [fieldname] for [key], but this value should only be reported for an EPA Protocol Gas Type. The cylinder gas type of [gastype] indicates the use of a non-EPA Protocol Gas Type.	Critical Error Level 1
D	You reported a VendorIdentifier of "NONPGVP" for [key], indicating the use of a EPA Protocol Gas Type purchased from a vendor not participating in the Protocol Gas Vendor Program (PGVP). You cannot use a gas purchased from a non-participating vendor that was acquired more than 60 days after the PGVP Effective Date.	Critical Error Level 2
E	You have reported a VendorIdentifier for [key] of a vendor who is no longer participating in the Protocol Gas Verification Program.	Critical Error Level 2

Usage:

1	QA and Certification Data Entry Screen Evaluation Protocol Gas Evaluation
2	QA Test Evaluation Report --- Appendix E Protocol Gas Data

3	QA Test Evaluation Report --- Linearity Protocol Gas Data
4	QA Test Evaluation Report --- RATA Protocol Gas Data
5	QA Test Evaluation Report --- Unit Default Protocol Gas Data

Check Code: PGVP-4

Check Name: Cylinder Expiration Date Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a Protocal Gas record with a non-null ***Protocol Gas Parameter*** :

If ExpirationDate is null,

If the GasTypeCode is not null and not equal to "AIR" or "ZERO",

return result A.

Otherwise,

If the GasTypeCode is equal to "AIR" or "ZERO",

return result B.

else if the ExpirationDate is prior to the End Date of the current test,

return result C.

else if the ExpirationDate is more than 8 years after the Begin Date of the current test,

return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported a [fieldname] for [key], but this value should only be reported for an EPA Protocol Gas Type. The cylinder gas type of [gastype] indicates the use of a non-EPA Protocol Gas Type.	Critical Error Level 1
C	You reported an ExpirationDate for the cylinder that is prior to the date of the test for [key].	Critical Error Level 2
D	You reported an ExpirationDate for the cylinder that is more than eight years after the date of the test for [key]. Gas cylinders expire in less than eight years.	Critical Error Level 2

Usage:

1	QA and Certification Data Entry Screen Evaluation Protocol Gas Evaluation
2	QA Test Evaluation Report --- Appendix E Protocol Gas Data
3	QA Test Evaluation Report --- Linearity Protocol Gas Data
4	QA Test Evaluation Report --- RATA Protocol Gas Data
5	QA Test Evaluation Report --- Unit Default Protocol Gas Data

Check Code: PGVP-5

Check Name: Gas Level Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a Protocal Gas record with a non-null ***Protocol Gas Parameter*** :

If GasLevelCode is null,

return result A.

else if GasLevelCode is not equal to "HIGH", "MID", or "LOW",

return result B.

else if the GasTypeCode == "AIR" and the GasLevelCode is not equal to "HIGH",

return result C.

else if GasTypeCode equals "ZERO", and GasLevelCode is not equal to "LOW",

return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1
C	You reported an [fieldname] of "AIR" for [key], which indicates the use of purified air material, but this material can only be used for a high-level calibration.	Critical Error Level 1
D	You reported an [fieldname] of "Zero" for [key], which indicates the use of zero air material, but this material may only be used for a low-level calibration.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Protocol Gas Evaluation
2	QA Test Evaluation Report --- Appendix E Protocol Gas Data
3	QA Test Evaluation Report --- Linearity Protocol Gas Data
4	QA Test Evaluation Report --- RATA Protocol Gas Data
5	QA Test Evaluation Report --- Unit Default Protocol Gas Data

Check Code: PGVP-6

Check Name: Protocol Gas Record Consistent with Test

Related Former Checks:

Applicability: CEM Check

Specifications:

For a Protocol Gas record:

Set ***Protocol Gas Parameter*** to null.

If the TestTypeCode of the current test is equal to "RATA",

If the SystemTypeCode associated with the current test is equal to "FLOW",

return result A.

else

if ***RATA Ref Method Code*** does not contain "3A", "6C", or "7E",

return result B.

else

if the associated SystemTypeCode is equal to "SO2", "CO2", or "O2",

set ***Protocol Gas Parameter*** to the associated SystemTypeCode.

else

Set ***Protocol Gas Parameter*** to the ***RATA Ref Method Code*** .

else if the TestTypeCode of the current test is equal to "APPE" or "UNITDEF"

Set ***Protocol Gas Parameter*** to "7E, 3A"

Otherwise,

Set ***Protocol Gas Parameter*** to the associated ComponentTypeCode.

Results:

Result	Description	Severity
A	You incorrectly reported a Protocol Gas Record for [key]. You should not report a Protocol Gas record for a RATA of a FLOW monitoring system.	Critical Error Level 1
B	You incorrectly reported a Protocol Gas Record for [key]. You should only report a Protocol Gas record for a RATA performed using instrumental reference methods 3A, 6C, or 7E.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- Appendix E Protocol Gas Data
2	QA Test Evaluation Report --- Linearity Protocol Gas Data
3	QA Test Evaluation Report --- RATA Protocol Gas Data
4	QA Test Evaluation Report --- Unit Default Protocol Gas Data

Check Code: PGVP-7

Check Name: Required Protocol Gas Records Reported

Related Former Checks:

Applicability: CEM Check

Specifications:

For the test:

If the ***Protocol Gases*** list is not null,

If the TestTypeCode == "RATA",

If ***RATA Ref Method Code*** contains "6C", and the ***Protocol Gases*** list does not contain "SO2HIGH", "SO2MID", AND "SO2LOW",

return result A.

else if ***RATA Ref Method Code*** contains "7E", and the ***Protocol Gases*** list does not contain "NOXHIGH", "NOXMID", AND "NOXLOW",

return result A.

else if ***RATA Ref Method Code*** contains "3A",

if the SystemTypeCode == "CO2",

if the ***Protocol Gases*** list does not contain "CO2HIGH", "CO2MID", AND "CO2LOW",

return result A.

else if the SystemTypeCode == "O2",

if the ***Protocol Gases*** list does not contain "O2HIGH", "O2MID", AND "O2LOW",

return result A.

else

if the ***Protocol Gases*** list does not contain "DILHIGH", "DILMID", AND "DILLOW",

return result A.

else if the TestTypeCode == "APPE" or "UNITDEF",

If the ***Protocol Gases*** list does not contain "NOXHIGH", "NOXMID", "NOXLOW","DILHIGH", "DILMID", AND "DILLOW",

return result A.

else

If the ***Protocol Gases*** list does not contain ComponentTypeCode + "HIGH", ComponentTypeCode + "MID", AND ComponentTypeCode + "LOW",

return result A.

Else if TestTypeCode is not equal to "RATA" or SystemTypeCode is not equal to "FLOW" and***RATA Ref Method Code*** contains "3A", "6C", or "7E",

Locate ***System Parameter*** lookup table record where Sys_Param_Name = 'PGVP_AETB_RULE_DATE'.

If the BeginDate of the current test is on or after the ***System Parameter*** .Param_Value1 + 180 days,

return result B.

Results:

Result	Description	Severity
A	You did not report Protocol Gas records for all three gas levels for all reference gases used in the test.	Critical Error Level 1
B	You did not report any valid Protocol Gas records for this test. This information is required by the Protocol Gas Verification Program reporting rule.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Appendix E Test (Pass 2)
	Condition: APPE System Valid *Equals* True
2	QA Test Evaluation Report Linearity Test (Pass 2)
	Condition: Linearity Component Valid *Equals* True
3	QA Test Evaluation Report Linearity Test (Pass 2)
	Condition: Linearity Test Aborted *Equals* False
4	QA Test Evaluation Report RATA (Pass 2)
	Condition: RATA System Valid *Equals* True
5	QA Test Evaluation Report RATA (Pass 2)
	Condition: RATA Aborted *Equals* False
6	QA Test Evaluation Report Unit Default Test (Pass 2)
	Condition: Unit Default Fuel Valid *Equals* True

Check Code: PGVP-8

Check Name: Protocol Gas Record Consistent with Test

Related Former Checks:

Applicability: CEM Check

Specifications:

For a Protocol Gas record:

Set ***Protocol Gas Parameter*** to null.

If the TestTypeCode of the current test is equal to "RATA",

If the SystemTypeCode associated with the current test is equal to "FLOW",

return result A.

else

Set ***Protocol Gas Parameter*** to the SystemTypeCode.

else if the TestTypeCode of the current test is equal to "APPE" or "UNITDEF"

Set ***Protocol Gas Parameter*** to "NOX".

Otherwise,

Set ***Protocol Gas Parameter*** to the associated ComponentTypeCode.

Results:

Result	Description	Severity
A	You incorrectly reported a Protocol Gas Record for [key]. You should not report a Protocol Gas record for a RATA of a FLOW monitoring system.	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Protocol Gas Evaluation

Check Code: PGVP-9

Check Name: Gas Type Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a Protocal Gas record with a non-null ***Protocol Gas Parameter*** :

If GasTypeCode is null,

return result A.

Else if GasTypeCode is equal to "ZERO",

If TestTypeCode does not equal "RATA", "APPE" or "UNITDEF",

return result F.

Otherwise,

If the GasTypeCode is not equal to "GMIS", "PRM", "RGM", or "SRM",

If the GasTypeCode is not in the ***GasTypeCode lookup table*** .

return result B.

else if the GasTypeCode == "ZAM"

return result B.

else if the GasTypeCode == "APPVD"

return result C.

else if the ***Protocol Gas Parameter*** is equal to "SO2", "CO2", or "O2",

Locate ***Protocol Gas Parameter To Type Cross Reference*** records where ProtocolGasParameter is equal to ***Protocol Gas Parameter*** , and GasTypeList contains the GasTypeCode in the current Protocol Gas record.

If not found,

return result D.

else if the (TestTypeCode is equal "LINE" and ***Protocol Gas Parameter*** == "NOX") or ***Protocol Gas Parameter*** == "NOXC",

Locate ***Protocol Gas Parameter To Type Cross Reference*** records where ProtocolGasParameter is equal to "NOX", and GasTypeList contains the GasTypeCode in the current Protocol Gas record.

If not found,

return result D.

else if the TestTypeCode == "RATA", "UNITDEF", or "APPE", AND the ***Protocol Gas Parameter*** == "NOX" or "NOXP",

Locate ***Protocol Gas Parameter To Type Cross Reference*** records where ProtocolGasParameter is equal to "NOX" or "DIL", and GasTypeList contains the GasTypeCode in the current Protocol Gas record.

If not found,

return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You reported a [fieldname] that is not in the list of valid values.	Fatal
C	You reported "APPVD" as the [fieldname] for [key]. This code indicates that you received approval from EPA for a new type of Protocol Gas. If you have not received approval from EPA, please contact ECMPS support. If you have already received approval, you should log in to the ECMPS host, so that the ECMPS program can obtain the necessary information to override this error.	Critical Error Level 1
D	You reported an GasTypeCode that is not appropriate for the component or system type for this test.	Critical Error Level 1
E	You reported an [fieldname] of "AIR" for [key], which indicates the use of purified air material, but this material can only be used for a high-level calibration.	Critical Error Level 1
F	You reported a GasTypeCode of "ZERO" which is only appropriate for the low level calibration of a reference analyzer used in Reference Method 3A, 6C, or 7E testing.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Protocol Gas Evaluation

Check Code: PGVP-10

Check Name: Gas Type Code Component List Valid

Related Former Checks: 2013 Q1 replacement for PGVP-1

Applicability: CEM Check

Specifications:

For a Protocal Gas record with a non-null ***Protocol Gas Parameter*** :

If GasTypeCode is null,

set ***Protocol Gas Component List Valid*** = false.

set ***Protocol Gas Approval Requested*** = false.

return result A.

Else

set ***Protocol Gas Approval Requested*** = false.

set ***Protocol Gas Invalid Component List*** to null.

set ***Protocol Gas Exclusive Component List*** to null.

set ***Protocol Gas Balance Component List*** to null.

set ***Protocol Gas Duplicate Component List*** to null.

set *Protocol Gas Component List* to null.

set *Protocol Gas Component Count* to 0.

set *Gas Type Contains Zero* to false.

set *Balance Component Count* to 0.

For each GasComponentCode in GasTypeCode,

Locate a record in the ***GasComponentCodeLookupTable*** where GasComponentCode is equal to the GasComponentCode in the GasTypeCode.

If not found,

add GasComponentCode to ***Protocol Gas Invalid Component List*** .

Else

If the located CanCombineIndicator is equal to 0,

add GasComponentCode to ***Protocol Gas Exclusive Component List*** .

If the located BalanceComponentIndicator is equal to 1,

add GasComponentCode to ***Protocol Gas Balance Component List*** .

increament *Balance Component Count* by 1.

If the GasComponentCode is equal to "APPVD",

set ***Protocol Gas Approval Requested*** = true.

Else if the GasComponentCode is equal to "ZERO",

set *Gas Type Contains Zero* to true.

If GasComponentCode is not in *Protocol Gas Component List* ,

add GasComponentCode to *Protocol Gas Component List.*

Else if GasComponentCode is not in ***Protocol Gas Duplicate Component List*** ,

add GasComponentCode to ***Protocol Gas Duplicate Component List*** .

increament *Protocol Gas Component Count* by 1.

If ***Protocol Gas Invalid Component List*** is not null,

set ***Protocol Gas Component List Valid*** = false.

return result B.

Else if ***Protocol Gas Duplicate Component List*** is not null,

set ***Protocol Gas Component List Valid*** = false.

return result H.

Else if ***Protocol Gas Exclusive Component List*** is not null, and *Protocol Gas Component Count* is greater than 1,

set ***Protocol Gas Component List Valid*** = false.

return result C.

Else if *Gas Type Contains Zero* is equal to true, and TestTypeCode does not equal "RATA", "APPE" or "UNITDEF",

set ***Protocol Gas Component List Valid*** = false.

return result D.

Else if ***Protocol Gas Approval Requested*** is equal to true,

set ***Protocol Gas Component List Valid*** = false.

return result E.

Else if ***Protocol Gas Exclusive Component List*** is null, and *Balance Component Count* is equal to 0,

set ***Protocol Gas Component List Valid*** = false.

return result F.

Else if ***Protocol Gas Exclusive Component List*** is null, and *Balance Component Count* is greater than 1,

set ***Protocol Gas Component List Valid*** = false.

return result G.

Else

set ***Protocol Gas Component List Valid*** = true.

Results:

Result	Description	Severity

A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the values ([invalidlist]), in the field [fieldname] for [key], which are not in the list of valid values.	Critical Error Level 1
C	You reported multiple gas components in the field [fieldname] for [key] that include values ([exclusivelist]) that you should report by themselves.	Critical Error Level 1
D	You reported a GasTypeCode of "ZERO" which is only appropriate for the low level calibration of a reference analyzer used in Reference Method 3A, 6C, or 7E testing.	Critical Error Level 1
E	You reported "APPVD" as the [fieldname] for [key]. This code indicates that you received approval from EPA for a new type of Protocol Gas. If you have not received approval from EPA, please contact ECMPS support. If you have already received approval, you should log in to the ECMPS host, so that the ECMPS program can obtain the necessary information to override this error.	Critical Error Level 1
F	You did not report a required PGVP balance component. A single balance component is required when reporting other individual gas components.	Critical Error Level 1
G	You reported multiple PGVP balance components ([balancelist]). A single balance component is required when reporting other individual gas components.	Critical Error Level 1
H	You reported one or more duplicate GasTypeCode components.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- Appendix E Protocol Gas Data
2	QA Test Evaluation Report --- Linearity Protocol Gas Data
3	QA Test Evaluation Report --- RATA Protocol Gas Data
4	QA Test Evaluation Report --- Unit Default Protocol Gas Data

Check Code: PGVP-11

Check Name: Protocol Gas Parameter Consistent with Gas Component List

Related Former Checks: 2013 Q1 replacement for PGVP-1

Applicability: CEM Check

Specifications:

For a Protocal Gas record with a non-null ***Protocol Gas Parameter*** :

If ***Protocol Gas Component List Valid*** is equal to true, and ***Protocol Gas Approval Requested*** is equal to false,

If the ***Protocol Gas Parameter*** is equal to "SO2" or "CO2",

If the GasTypeCode is equal to "GMIS", "NTRM", "PRM", "RGM", "SRM" or "ZERO",

add ***Protocol Gas Parameter*** + GasLevelCode to the ***Protocol Gases*** list.

Else if ***Protocol Gas Parameter*** is a GasComponentCode in GasTypeCode,

add ***Protocol Gas Parameter*** + GasLevelCode to the ***Protocol Gases*** list.

Else

return result A.

else if the ***Protocol Gas Parameter*** is equal to "O2",

If the GasTypeCode is equal to "GMIS", "NTRM", "PRM", "RGM", "SRM" or "ZERO",

add "O2" + GasLevelCode to the ***Protocol Gases*** list.

Else if GasTypeCode is equal to "AIR",

add "O2" + GasLevelCode to the ***Protocol Gases*** list.

Else "O2" is a GasComponentCode in GasTypeCode,

add "O2" + GasLevelCode to the ***Protocol Gases*** list.

Else

return result B.

else if the ***Protocol Gas Parameter*** is equal to "NOX", or the ***Protocol Gas Parameter*** contains "7E" but not "3A",

If the GasTypeCode is equal to "GMIS", "NTRM", "PRM", "RGM", "SRM" or "ZERO",

add "NOX" + GasLevelCode to the ***Protocol Gases*** list.

Else if "NO", "NO2", or "NOX" is a GasComponentCode in GasTypeCode,

add "NOX" + GasLevelCode to the ***Protocol Gases*** list.

Else

return result C.

else if the ***Protocol Gas Parameter*** contains both "7E" and "3A",

If the GasTypeCode is equal to "GMIS", "NTRM", "PRM", "RGM", "SRM" or "ZERO",

add "NOX" + GasLevelCode to the ***Protocol Gases*** list.

add "DIL" + GasLevelCode to the ***Protocol Gases*** list.

Else if GasTypeCode is equal to "AIR",

add "DIL" + GasLevelCode to the ***Protocol Gases*** list.

Else if "NO", "NO2", "NOX", "CO2" or "O2" is a GasComponentCode in GasTypeCode,

If "NO", "NO2" or "NOX" is a GasComponentCode in GasTypeCode,

add "NOX" + GasLevelCode to the ***Protocol Gases*** list.

If "CO2" or "O2" is a GasComponentCode in GasTypeCode,

add "DIL" + GasLevelCode to the ***Protocol Gases*** list.

Else

return result D.

else if the ***Protocol Gas Parameter*** contains "3A",

If the GasTypeCode is equal to "GMIS", "NTRM", "PRM", "RGM", "SRM" or "ZERO",

add "DIL" + GasLevelCode to the ***Protocol Gases*** list.

If GasTypeCode is equal to "AIR",

add "DIL" + GasLevelCode to the ***Protocol Gases*** list.

Else if "CO2" or "O2" is a GasComponentCode in GasTypeCode,

add "DIL" + GasLevelCode to the ***Protocol Gases*** list.

Else

return result E.

Results:

Result	Description	Severity
A	You reported an GasTypeCode that is not appropriate for the component type or the test reference method for [key].	Critical Error Level 1
B	You reported an GasTypeCode that is not appropriate for the component type or the test reference method for [key].	Critical Error Level 1
C	You reported an GasTypeCode that is not appropriate for the component type or the test reference method for [key].	Critical Error Level 1
D	You reported an GasTypeCode that is not appropriate for the component type or the test reference method for [key].	Critical Error Level 1
E	You reported an GasTypeCode that is not appropriate for the component type or the test reference method for [key].	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- Appendix E Protocol Gas Data
2	QA Test Evaluation Report --- Linearity Protocol Gas Data
3	QA Test Evaluation Report --- RATA Protocol Gas Data
4	QA Test Evaluation Report --- Unit Default Protocol Gas Data

Check Code: PGVP-12

Check Name: Gas Type Code Component List Valid

Related Former Checks: 2013 Q1 replacement for PGVP-9

Applicability: CEM Check

Specifications:

For a Protocal Gas record with a non-null ***Protocol Gas Parameter*** :

If GasTypeCode is null,

set ***Protocol Gas Component List Valid*** = false.

set ***Protocol Gas Approval Requested*** = false.

return result A.

Else

set ***Protocol Gas Approval Requested*** = false.

set ***Protocol Gas Invalid Component List*** to null.

set ***Protocol Gas Exclusive Component List*** to null.

set ***Protocol Gas Balance Component List*** to null.

set ***Protocol Gas Duplicate Component List*** to null.

set *Protocol Gas Component List* to null.

set *Protocol Gas Component Count* to 0.

set *Gas Type Contains Zero* to false.

set *Balance Component Count* to 0.

For each GasComponentCode in GasTypeCode,

Locate a record in the ***GasComponentCodeLookupTable*** where GasComponentCode is equal to the GasComponentCode in the GasTypeCode.

If not found,

add GasComponentCode to ***Protocol Gas Invalid Component List*** .

Else

If the located CanCombineIndicator is equal to 0,

add GasComponentCode to ***Protocol Gas Exclusive Component List*** .

If the located BalanceComponentIndicator is equal to 1,

add GasComponentCode to ***Protocol Gas Balance Component List*** .

increament *Balance Component Count* by 1.

If the GasComponentCode is equal to "APPVD",

set ***Protocol Gas Approval Requested*** = true.

Else if the GasComponentCode is equal to "ZERO",

set *Gas Type Contains Zero* to true.

If GasComponentCode is not in *Protocol Gas Component List* ,

add GasComponentCode to *Protocol Gas Component List.*

Else if GasComponentCode is not in ***Protocol Gas Duplicate Component List*** ,

add GasComponentCode to ***Protocol Gas Duplicate Component List*** .

increament *Protocol Gas Component Count* by 1.

If ***Protocol Gas Invalid Component List*** is not null,

set ***Protocol Gas Component List Valid*** = false.

return result B.

Else if ***Protocol Gas Duplicate Component List*** is not null,

set ***Protocol Gas Component List Valid*** = false.

return result H.

Else if ***Protocol Gas Exclusive Component List*** is not null, and *Protocol Gas Component Count* is greater than 1,

set ***Protocol Gas Component List Valid*** = false.

return result C.

Else if *Gas Type Contains Zero* is equal to true, and TestTypeCode does not equal "RATA", "APPE" or "UNITDEF",

set ***Protocol Gas Component List Valid*** = false.

return result D.

Else if ***Protocol Gas Approval Requested*** is equal to true,

set ***Protocol Gas Component List Valid*** = false.

return result E.

Else if ***Protocol Gas Exclusive Component List*** is null, and *Balance Component Count* is equal to 0,

set ***Protocol Gas Component List Valid*** = false.

return result F.

Else if ***Protocol Gas Exclusive Component List*** is null, and *Balance Component Count* is greater than 1,

set ***Protocol Gas Component List Valid*** = false.

return result G.

Else

set ***Protocol Gas Component List Valid*** = true.

Results:

Result	Description	Severity

A	You did not provide [fieldname], which is required for [key].	Fatal
B	You reported the values ([invalidlist]), in the field [fieldname] for [key], which are not in the list of valid values.	Fatal
C	You reported multiple gas components in the field [fieldname] for [key] that include values ([exclusivelist]) that you should report by themselves.	Fatal
D	You reported a GasTypeCode of "ZERO" which is only appropriate for the low level calibration of a reference analyzer used in Reference Method 3A, 6C, or 7E testing.	Critical Error Level 1
E	You reported "APPVD" as the [fieldname] for [key]. This code indicates that you received approval from EPA for a new type of Protocol Gas. If you have not received approval from EPA, please contact ECMPS support. If you have already received approval, you should log in to the ECMPS host, so that the ECMPS program can obtain the necessary information to override this error.	Critical Error Level 1
F	You did not report a required PGVP balance component. A single balance component is required when reporting other individual gas components.	Critical Error Level 1
G	You reported multiple PGVP balance components ([balancelist]). A single balance component is required when reporting other individual gas components.	Critical Error Level 1
H	You reported one or more duplicate GasTypeCode components.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Protocol Gas Evaluation

Check Code: PGVP-13

Check Name: Protocol Gas Parameter Consistent with Gas Component List

Related Former Checks: 2013 Q1 replacement for PGVP-9

Applicability: CEM Check

Specifications:

For a Protocal Gas record with a non-null ***Protocol Gas Parameter*** :

If ***Protocol Gas Component List Valid*** is equal to true, and ***Protocol Gas Approval Requested*** is equal to false,

If the GasTypeCode is not equal to "GMIS", "NTRM", "PRM", "RGM", "SRM" or "ZERO",

If the ***Protocol Gas Parameter*** is equal to "SO2" or "CO2",

If ***Protocol Gas Parameter*** is not a GasComponentCode in GasTypeCode,

return result A.

else if the ***Protocol Gas Parameter*** is equal to "O2",

If GasTypeCode is not equal to "AIR", and "O2" is not a GasComponentCode in GasTypeCode,

return result B.

else if the (TestTypeCode is equal to "LINE" and ***Protocol Gas Parameter*** is equal to "NOX") or ***Protocol Gas Parameter*** is equal to "NOXC",

If GasTypeCode does not contain "NO", "NO2" or "NOX" as a GasComponentCode,

return result C.

else if the TestTypeCode is equal to "RATA", "UNITDEF", or "APPE", AND the ***Protocol Gas Parameter*** is equal to "NOX" or "NOXP",

If GasTypeCode is not equal to "AIR", and "CO2", "NO", "NO2", "NOX", and "O2" are not a GasComponentCode in GasTypeCode,

return result D.

Results:

Result	Description	Severity
A	You reported an GasTypeCode that is not appropriate for the component or system type for this test.	Critical Error Level 1
B	You reported an GasTypeCode that is not appropriate for the component or system type for this test.	Critical Error Level 1
C	You reported an GasTypeCode that is not appropriate for the component or system type for this test.	Critical Error Level 1
D	You reported an GasTypeCode that is not appropriate for the component or system type for this test.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Protocol Gas Evaluation

Check Code: PGVP-14

Check Name: Duplicate Cylinder ID Check

Related Former Checks:

Applicability: General Check

Specifications:

If the TestTypeCode == "RATA", "LINE", "APPE", or "UNITDEF",

For each CylinderID in the current ***ProtocolGasCylinderIDList*** ,

If the CylinderID is found in ***ProtocolGasCylinderIDList*** more than once,

return result A.

Results:

Result	Description	Severity
A	You reported the same Cylinder Identifier for more than one protocol gas cylinder.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Protocol Gas Evaluation
2	QA Test Evaluation Report --- Appendix E Protocol Gas Data
3	QA Test Evaluation Report --- RATA Protocol Gas Data
4	QA Test Evaluation Report --- Unit Default Protocol Gas Data
5	QA Test Evaluation Report Linearity Test (Pass 2)

Check Category:

QA Certification Event

Check Code: QACERT-1

Check Name: QA Cert Event Code Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the QA Cert event:

If QACertEventCode is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1 QA and Certification Data Entry Screen Evaluation QA Certification Event Evaluation

Check Code: QACERT-2

Check Name: QA Cert Event Date Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the QA Cert event:

If QACertEventDate is null,

return result A.

else if QACertEventDate is before 01/01/1993 or after the current date,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You reported a [Fieldname] of [Date], which is outside the range of acceptable values for this date for [key].	Critical Error Level 1

Usage:

1	Other QA Evaluation Report QA Certification Event Evaluation
2	QA and Certification Data Entry Screen Evaluation QA Certification Event Evaluation

Check Code: QACERT-3

Check Name: QA Cert Event Hour Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the QA Cert event:

If QACertEventHour is null,

return result A.

else if QACertEventHour is not between 0 and 23,

return result B.

else if QACertEventCode is equal to 800, and the month and day of the QACertEventDate is equal to May 1or July 31,

if QACertEventHour is not equal to 0,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You reported a [Fieldname] of [Hour], which is outside the range of acceptable values for this hour for [key].	Critical Error Level 1
C	The QACertEventHour reported for [key] is not appropriate for this event. It must be equal to 0.	Critical Error Level 1

Usage:

1	Other QA Evaluation Report QA Certification Event Evaluation
2	QA and Certification Data Entry Screen Evaluation QA Certification Event Evaluation

Check Code: QACERT-4

Check Name: QA Cert Event System Valid

Related Former Checks: ARP-36

Applicability: General Check

Specifications:

For the QA Cert Event record:

Set QA Cert Event System Type to null.

If MonitoringSystemID and ComponentID are null,

If QAEventCode is not equal to 700 or 950 ,

return result A.

Otherwise,

If MonitoringSystemID is null,

If QA Cert Event Required ID Code is equal to "S" or "B",

return result B.

Otherwise,

Locate a Monitor System for the location where the MonitoringSystemID is equal to the MonitoringSystemId in the event record.

Set QA Cert Event System Type to the SystemTypeCode in the retrieved record.

If the EventDate and EventHour are valid, and the EventCode is NOT equal to 20, 25, 30, 35, 40, 51, 100, 101, 125, 250, 255, 300, 305, 400, 600, or 605,

If the BeginDate and BeginHour in the retrieved record is later than the EventDate and EventHour, or the EndDate and EndHour in the retrieved record is not null and is prior to the EventDate and EventHour,

return result C.

Results:

Result	Description	Severity
A	You did not report a MonitoringSystemID or ComponentID for [key].	Critical Error Level 1
B	You did not report a MonitoringSystemID for [key]. You must provide a MonitoringSystemID when the RequiredTestCode indicates that you must perform a system-specific test.	Critical Error Level 1
C	Based on the EventDate and EventHour, the monitoring system reported in the event record for [key] was not active.	Non-Critical Error

Usage:

1	Other QA Evaluation Report QA Certification Event Evaluation
2	QA and Certification Data Entry Screen Evaluation QA Certification Event Evaluation

Check Code: QACERT-5

Check Name: QA Cert Event Component Valid

Related Former Checks: ARP-38A/B

Applicability: General Check

Specifications:

For the QA Cert Event record:

Set QA Cert Event Component Type to null.

If ComponentID is null,

If the QA Cert Event Required ID Code is equal to "C" or "B",

return result A.

Otherwise,

Locate a Component record for the location where the ComponentID is equal to the ComponentID in the event record:

Set QA Cert Event Component Type to the ComponentTypeCode in the retrieved record.

If the EventDate and EventHour are valid, and the EventCode is NOT equal to 20, 25, 30, 35, 40, 51, 100, 101, 125, 250, 255, 300, 305, 400, or 600,

If the MonitoringSystemID is null,

Locate a SystemComponent record for the location where the ComponentID is equal to the ComponentID in the event record, the BeginDate and BeginHour is on or before the EventDate and EventHour, and the EndDate is null or the EndDate and EndHour is on or after the EventDate and EventHour.

If not found,

return result B.

Otherwise,

Locate a SystemComponent record for the location where the MonitoringSystemID and ComponentID are equal to the corresponding values in the event record , the BeginDate and BeginHour is on or before the EventDate and EventHour, and the EndDate is null or the EndDate and EndHour is on or after the EventDate and EventHour.

If not found,

return result C.

Results:

Result	Description	Severity
A	You did not report a ComponentID for [key]. You must provide a ComponentID when the RequiredTestCode indicates that you must perform a component-specific test.	Critical Error Level 1
B	Based on the EventDate and EventHour, the component reported in the event record for [key] was not active.	Non-Critical Error
C	According to the Monitoring System Component records in the monitoring plan, the component was not active during the event reported in the event record for [key].	Non-Critical Error

Usage:

1	Other QA Evaluation Report QA Certification Event Evaluation
2	QA and Certification Data Entry Screen Evaluation QA Certification Event Evaluation

Check Code: QACERT-6

Check Name: QA Cert Event Conditional Begin Date and Hour Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the QA Cert Event:

If ConditionalBeginDate is null,

If QACertEventCode is equal to 800,

return result D.

If ConditionalBeginHour is not null,

return result A.

Otherwise,

If ConditionalBeginHour is null,

return result B.

If ConditionalBeginHour is not between 0 and 23,

return result C.

Results:

Result	Description	Severity
A	You reported [hourfield2] but did not report [datefield2] for [key].	Critical Error Level 1
B	You reported [datefield2] but did not report an [hourfield2] for [key].	Critical Error Level 1
C	You reported a [Fieldname] of [Hour], which is outside the range of acceptable values for this hour for [key].	Critical Error Level 1
D	You reported a QA Certification Event record for [key], indicating the use of conditional data validation, but you have not reported a ConditionalBeginDate.	Critical Error Level 1

Usage:

1	Other QA Evaluation Report QA Certification Event Evaluation
2	QA and Certification Data Entry Screen Evaluation QA Certification Event Evaluation

Check Code: QACERT-7

Check Name: QA Cert Event Completion Test Date and Hour Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the QA Certification Event:

If CompletionTestDate is null,

If CompletionTestHour is not null,

return result A.

Otherwise,

return result D.

Otherwise,

If CompletionTestHour is null,

return result B.

If CompletionTestHour is not between 0 and 23,

return result C.

Results:

Result	Description	Severity
A	You reported [hourfield2] but did not report [datefield2] for [key].	Critical Error Level 1
B	You reported [datefield2] but did not report an [hourfield2] for [key].	Critical Error Level 1
C	You reported a [Fieldname] of [Hour], which is outside the range of acceptable values for this hour for [key].	Critical Error Level 1
D	You did not report a TestCompletionDate for [key]. If you have not yet complete the tests required for this QA Certification event, you should update the test completion date and hour, and resubmit the record after all tests are completed.	Informational Message

Usage:

1	Other QA Evaluation Report QA Certification Event Evaluation
2	QA and Certification Data Entry Screen Evaluation QA Certification Event Evaluation

Check Code: QACERT-8

Check Name: QA Cert Event Required Test Code Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the QA Cert event:

Set QA Cert Event Valid System or Component Type and QA Cert Event Required ID Code to null.

If RequiredTestCode is null,

return result A.

Otherwise,

Locate the Required Test Code to Required ID to System or Component Type cross-check record where the RequiredTestCode is equal to the RequiredTestCode in the event record.

If found,

Set QA Cert Event Valid System or Component Type to the SystemOrComponentType in the retrieved cross-check record.

Set QA Cert Event Required ID Code to the RequiredIDCode in the retrieved cross-check record.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal

Usage:

1	Other QA Evaluation Report QA Certification Event Evaluation
2	QA and Certification Data Entry Screen Evaluation QA Certification Event Evaluation

Check Code: QACERT-9

Check Name: QA Cert Event Conditional Begin Hour Consistent with Event Hour

Related Former Checks:

Applicability: General Check

Specifications:

For the QA Cert Event with a valid QACertEventDate and QACertEventHour and a non-null and valid ConditionalBeginDate/Hour:

If the QACertEventDate and QACertEventHour is later than the ConditionalBeginDate and ConditionalBeginHour,

return result A.

else if QACertEventCode is equal to 800, and the month and day of the QACertEventDate is not equal to May 1or July 31,

If the ConditionalBeginDate and ConditionalBeginHour is not equal to QACertEventDate, or QACertEventDate is not in the month of April or July,

return result B.

Results:

Result	Description	Severity
A	You reported [datefield2] and [hourfield2], which is prior to [datefield1] and [hourfield1] for [key].	Critical Error Level 1
B	The QACertEventDate reported for [key] is not appropriate for this event. It must be equal to the earlier of the ConditionalBeginDate or to the QA test deadline (May 1 or July 31).	Critical Error Level 1

Usage:

1	Other QA Evaluation Report QA Certification Event Evaluation
2	QA and Certification Data Entry Screen Evaluation QA Certification Event Evaluation

Check Code: QACERT-10

Check Name: QA Cert Event Completion Test Hour Consistent with Event and Conditional Hour

Related Former Checks:

Applicability: General Check

Specifications:

For the QA Cert Event with a valid QACertEventDate and QACertEventHour and a non-null and valid CompletionTestDate/Hour:

If ConditionalBeginDate/Hour is non-null and valid,

If the ConditionalBeginDate and ConditionalBeginHour is later than the CompletionTestDate and CompletionTestHour,

return result A.

Otherwise,

If the QACertEventDate and QACertEventHour is later than the CompletionTestDate and CompletionTestHour,

return result B.

Results:

Result	Description	Severity
A	You reported [datefield2] and [hourfield2], which is prior to [datefield1] and [hourfield1] for [key].	Critical Error Level 1
B	You reported [datefield2] and [hourfield2] which is prior to [datefield] and [hourfield] for [key].	Critical Error Level 1

Usage:

1	Other QA Evaluation Report QA Certification Event Evaluation
2	QA and Certification Data Entry Screen Evaluation QA Certification Event Evaluation

Check Code: QACERT-11

Check Name: Duplicate QA Cert Event

Related Former Checks:

Applicability: General Check

Specifications:

For the QA Cert Event with a non-null QACertEventDate, QACertEventHour, and QACertEventCode:

Locate another QA Cert Event record for the location with an QACertEventCode, QACertEventHour, QACertEventDate, MonitoringSystemID, and ComponentID that are equal to the corresponding fields in the current record.

If found,

return result A.

Results:

Result	Description	Severity
A	Another [recordtype] record already exists with the same [fieldnames].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation QA Certification Event Evaluation

Check Code: QACERT-12

Check Name: QA Cert Event System/Component Type Consistent with Event Code

Related Former Checks: ARP-37, 38C

Applicability: General Check

Specifications:

For the QA Cert Event record:

If QA Cert Event System Type is NOT equal to "HG", "ST", "HCL", or "HF" AND QA Cert Event Component Type is NOT equal to "HG", "STRAIN", "HCL", or "HF",

Set QA Cert Event and Type Consistent to false.

If the EventCode is equal to 700 or 950,

If the MonitoringSystemID is not null or the ComponentID is not null,

return result A.

Otherwise,

Locate the Event Code to System or Component Type cross-check record where EventCode1 is equal to the EventCode in the current event and EventCode2 is null, or EventCode1 is less than or equal to the EventCode in the current event and EventCode2 is greater than or equal to the EventCode in the current event.

If found,

If the SystemOrComponentType in the retrieved record is equal to "CONC",

If QA Cert Event System Type is not null and QA Cert Event Required ID Code is equal to "B" or "S",

If QA Cert Event System Type is not equal to "SO2", "SO2R", "NOXC", "NOX", "CO2", "O2", "H2O", or "H2OM",

return result B.

If QA Cert Event Component Type is not null and QA Cert Event Required ID Code is equal to "B" or "C",

If QA Cert Event Component Type is not equal to "SO2", "NOX", "CO2", or "O2",

return result B.

else if QA Cert Event System Type is equal to "NOXP",

If SystemOrComponentType does not contain "NOXP",

return result B.

else i f the SystemOrComponentType in the retrieved record begins with "CEM",

If QA Cert Event System Type is not null and QA Cert Event Required ID Code is equal to "B" or "S",

If QA Cert Event System Type is not equal to "SO2", "SO2R", "NOXC", "NOX", "CO2", "O2", "FLOW", "H2O", or "H2OM",

return result B.

If QA Cert Event Component Type is not null and QA Cert Event Required ID Code is equal to "B" or "C",

If QA Cert Event Component Type is not equal to "SO2", "NOX", "CO2", "O2", or "FLOW",

return result B.

else i f the SystemOrComponentType in the retrieved record is equal to "FFM",

If QA Cert Event System Type is not null and QA Cert Event Required ID Code is equal to "B" or "S",

If QA Cert Event System Type is not equal to "OILV", "OILM", "GAS", "LTOL", or "LTGS",

return result B.

If QA Cert Event Component Type is not null and QA Cert Event Required ID Code is equal to "B" or "C",

If QA Cert Event Component Type is not equal to "OFFM" or "GFFM",

return result B.

else i f the SystemOrComponentType in the retrieved record is equal to "FLOW",

If QA Cert Event System Type is not null and QA Cert Event Required ID Code is equal to "B" or "S",

If QA Cert Event System Type is not equal to "FLOW",

return result B.

If QA Cert Event Component Type is not null and QA Cert Event Required ID Code is equal to "B" or "C",

If QA Cert Event Component Type is not equal to "FLOW",

return result B.

else i f the SystemOrComponentType in the retrieved record is equal to "NOX",

If QA Cert Event System Type is not null and QA Cert Event Required ID Code is equal to "B" or "S",

If QA Cert Event System Type is not equal to "NOX" or "NOXC",

return result B.

If QA Cert Event Component Type is not null and QA Cert Event Required ID Code is equal to "B" or "C",

If QA Cert Event Component Type is not equal to "NOX",

return result B.

else i f the SystemOrComponentType in the retrieved record is equal to "SO2",

If QA Cert Event System Type is not null and QA Cert Event Required ID Code is equal to "B" or "S",

If QA Cert Event System Type is not equal to "SO2" or "SO2R",

return result B.

If QA Cert Event Component Type is not null and QA Cert Event Required ID Code is equal to "B" or "C",

If QA Cert Event Component Type is not equal to "SO2",

return result B.

else i f the SystemOrComponentType in the retrieved record is equal to "NOXE" ,

If QA Cert Event System Type is not null and QA Cert Event Required ID Code is equal to "B" or "S",

If QA Cert Event System Type is not equal to "NOXE" ,

return result B.

else i f the SystemOrComponentType in the retrieved record is equal to "DAHS" or "H2O",

If QA Cert Event Component Type is not null and QA Cert Event Required ID Code is equal to "B" or "C",

If QA Cert Event Component Type is not equal to the SystemOrComponentType in the retrieved record,

return result B.

else i f the SystemOrComponentType in the retrieved record is equal to " OP " ,

If QA Cert Event System Type is not null and QA Cert Event Required ID Code is equal to "B" or "S",

If QA Cert Event System Type is not equal to "OP" or "PM",

return result B.

//if no result

Set QA Cert Event and Type Consistent to true.

Results:

Result	Description	Severity
A	You reported a MonitoringSystemID or ComponentID, but this is not appropriate for the [fieldname] reported in the event record for [key].	Critical Error Level 1
B	The QACertEventCode is not appropriate for the system or component reported in the event record for [key].	Critical Error Level 1

Usage:

1	Other QA Evaluation Report QA Certification Event Evaluation

Check Code: QACERT-13

Check Name: QA Cert Event Required Test Code Consistent with System and Component

Related Former Checks: ARP-49

Applicability: General Check

Specifications:

For a QA Certification Event:ne

If QA Cert Event System Type is NOT equal to "HG", "ST", "HCL", or "HF" AND QA Cert Event Component Type is NOT equal to "HG", "STRAIN", "HCL" or "HF",

If RequiredTestCode is equal to 76 or 77,

If ComponentID is not null or MonitoringSystemID is not null,

return result A.

Otherwise,

If QA Cert Event Valid System Or Component is equal to "CONC",

If QA Cert Event System Type is not null and QA Cert Event Required ID Code is equal to "B" or "S",

If QA Cert Event System Type is not equal to "SO2", "SO2R", "NOXC", "NOX", "CO2", "O2", "H2O", or "H2OM",

return result B.

If QA Cert Event Component Type is not null and QA Cert Event Required ID Code is equal to "B" or "C",

If QA Cert Event Component Type is not equal to "SO2", "NOX", "CO2", or "O2",

return result B.

If QA Cert Event Valid System Or Component is equal to "CEM",

If QA Cert Event System Type is not null and QA Cert Event Required ID Code is equal to "B" or "S",

If QA Cert Event System Type is not equal to "SO2", "SO2R", "NOXC", "NOX", "CO2", "O2", "FLOW", "H2O", or "H2OM",

return result B.

If QA Cert Event Component Type is not null and QA Cert Event Required ID Code is equal to "B" or "C",

If QA Cert Event Component Type is not equal to "SO2", "NOX", "CO2", "O2", or "FLOW",

return result B.

If QA Cert Event Valid System Or Component is equal to " RATA ",

If QA Cert Event System Type is not null and QA Cert Event Required ID Code is equal to "B" or "S",

If QA Cert Event System Type is not equal to "SO2", "SO2R", "NOXC", "NOX", "CO2", "O2", "FLOW", "H2O", or "H2OM",

return result B.

If QA Cert Event Valid System Or Component is equal to "FFM",

If QA Cert Event System Type is not null and QA Cert Event Required ID Code is equal to "B" or "S",

If QA Cert Event System Type is not equal to "OILV", "OILM", "GAS", "LTOL", or "LTGS",

return result B.

If QA Cert Event Component Type is not null and QA Cert Event Required ID Code is equal to "B" or "C",

If QA Cert Event Component Type is not equal to "OFFM" or "GFFM",

return result B.

If QA Cert Event Valid System Or Component is equal to "FLOW",

If QA Cert Event System Type is not null and QA Cert Event Required ID Code is equal to "B" or "S",

If QA Cert Event System Type is not equal to "FLOW",

return result B.

If QA Cert Event Component Type is not null and QA Cert Event Required ID Code is equal to "B" or "C",

If QA Cert Event Component Type is not equal to "FLOW",

return result B.

If QA Cert Event Valid System Or Component is equal to "NOXE" or "NOXP",

If QA Cert Event System Type is not null and QA Cert Event Required ID Code is equal to "B" or "S",

If QA Cert Event System Type is not equal to the QA Cert Event Valid System or Component,

return result B.

If QA Cert Event Valid System Or Component is equal to " OP ",

If QA Cert Event System Type is not null and QA Cert Event Required ID Code is equal to "B" or "S",

If QA Cert Event System Type is not equal to "OP" or "PM" ,

return result B.

If QA Cert Event Valid System Or Component is equal to "DAHS",

If QA Cert Event Component Type is not null and QA Cert Event Required ID Code is equal to "B" or "C",

If QA Cert Event Component Type is not equal to "DAHS",

return result B.

Results:

Result	Description	Severity
A	You reported a MonitoringSystemID or ComponentID, but this is not appropriate for the [fieldname] reported in the event record for [key].	Critical Error Level 1
B	The RequiredTestCode is not appropriate for the system or component in the event record reported for [key].	Critical Error Level 1

Usage:

1	Other QA Evaluation Report QA Certification Event Evaluation

Check Code: QACERT-14

Check Name: QA Cert Event Date Consistent with Other Data

Related Former Checks:

Applicability: General Check

Specifications:

For a QA Certification Event with a valid date and hour:

If QACertEventCode is equal to 20,

Locate an Control record for the location where the ParameterCode is equal to "SO2" and the InstallDate is not null and is on or prior to the QACertEventDate.

If not found,

return result A.

else if QACertEventCode is equal to 25 or 26,

Locate an Control record for the location where the ParameterCode is equal to "NOX" and the InstallDate is not null and is on or prior to the QACertEventDate.

If not found,

return result B.

else if QACertEventCode is equal to 30 and ComponentID is not null,

Locate an Analyzer Range record for the component where the AnalyzerRangeCode is equal to "A" or "L", and the BeginDate and BeginHour is equal to the QACertEventDate and QACertEventHour.

If not found,

return result C.

else if QACertEventCode is equal to 35 and ComponentID is not null,

Locate an Analyzer Range record for the component where the AnalyzerRangeCode is equal to "A" or "H", and the BeginDate and BeginHour is equal to the QACertEventDate and QACertEventHour.

If not found,

return result D.

else if QACertEventCode is equal to 50 or 51,

Locate an Operating Status record for the location where the OpStatusCode is equal to " LTCS ", and the BeginDate is prior to the QACertEventDate.

If not found,

return result E.

If found,

Locate an Operating Status record for the location where the OpStatusCode is equal to "OPR", and the BeginDate is on or before the QACertEventDate and is after the BeginDate of the retrieved LTCS Operating Status record.

If not found,

return result E.

else if QACertEventCode is equal to 170 , 171, or 172, and the QA Cert Event Component Type is equal to "SO2", "NOX", "CO2", or "O2",

Locate an Analyzer Range record for the component where the BeginDate and BeginHour is on or before the QACertEventDate and QACertEventHour, and the EndDate is null or the EndDate and EndHour is on or after the QACertEventDate and QACertEventHour

If found,

If the AnalyzerRangeCode is equal to "A",

Locate a Span record for the location where the ComponentTypeCode is equal to the QA Cert Event Component Type and the BeginDate and BeginHour is equal to the QACertEventDate and QACertEventHour,

If not found,

return result F.

Otherwise,

Locate a Span record for the location where the ComponentTypeCode is equal to the QA Cert Event Component Type, the SpanScaleCode is equal to the AnalyzerRangeCode in the retrieved Analyzer Range record, and the BeginDate and BeginHour is equal to the QACertEventDate and QACertEventHour,

If not found,

return result F.

else if QACertEventCode is equal to 800,

Locate a Reporting Frequency record for the location where the ReportingFrequencyCode is equal to "Q", where the BeginQuarter is on or before the QACertEventDate, and the EndQuarter is null or is on or after the QACertEventDate.

If found,

return result G.

Results:

Result	Description	Severity
A	You reported a QA Certification Event record for [key], indicating the installation of add-on SO2 controls, but you have not reported an applicable SO2 control record in your monitoring plan.	Critical Error Level 1
B	You reported a QA Certification Event record for [key], indicating the installation of add-on NOx controls, but you have not reported an applicable NOX control record in your monitoring plan.	Critical Error Level 1
C	You reported a QA Certification Event record for [key], indicating the addition of a low-scale measurement range, but you have not reported an applicable Analyzer Range record for the component in your monitoring plan.	Critical Error Level 1
D	You reported a QA Certification Event record for [key], indicating the addition of a high-scale measurement range, but you have not reported an applicable Analyzer Range record for the component in your monitoring plan.	Critical Error Level 1
E	You reported a QA Certification Event record for [key], which is intended to report the recommencement of operation following a period of long-term cold storage or following an outage that prevented the completion of monitoring system certification testing by the compliance deadline. If this situation applies, please contact ECMPS technical support for assistance with this	Critical Error Level 1

	matter.	
F	You reported a QA Certification Event record for [key], indicating a change in span value, but you have not reported an applicable Span record for this component type in your monitoring plan.	Critical Error Level 1
G	You reported a QA Certification Event record for [key], indicating that this location is an ozone-season-only reporter, but the Monitor Plan Reporting Frequency records indicate that this location is an annual reporter.	Critical Error Level 1

Usage:

1	Other QA Evaluation Report QA Certification Event Evaluation

Check Code: QACERT-15

Check Name: QA Cert Event Code Consistent with Required Test Code

Related Former Checks:

Applicability: CEM Check

Specifications:

For a QA Certification Event where QA Cert Event AND Type Consistent is true AND RequiredTestCode is not null AND QA Cert Event System Type is NOT equal to "HG" or "ST" AND QA Cert Event Component Type is NOT equal to "HG" or "STRAIN",

Set QA Cert Event Missing Test Types to null.

If the QA Cert Event System Type is equal to 'NOXP" and QA Cert Event Code is between 40 and 51 (inclusive),

Locate a Test Type to Required Test Code records where the Test Type Code is equal to "RATA" and the Required Test Code is equal to the RequiredTestCode in QA Certification Event record.

If not found,

append "RATA" to QA Cert Event Missing Test Types.

else if the QACertEventCode is equal to "312",

Locate Test Type to Required Test Code records where TestTypeCode begins with "RATA" or is equal to "AF2LCHK", and RequireTestCode is equal to the RequiredTestCode in QA Certification Event record.

If not found,

Set QA Cert Event Missing Test Types to "AF2LCHK or RATA".

else if (the QACertEventCode is less than 20, OR the QACertEventCode is greater than 26, OR (the QACertEventCode is equal to 20 and the QA Cert Event System Type begins with "SO2") OR (the QACertEventCode is equal to 25 or 26, and the QA Cert Event System Type begins with "NOX"),

Locate all Event Code to Test Type Codes cross-check record s where EventCode1 is equal to the EventCode in the current event and EventCode2 is null, or EventCode1 is less than or equal to the EventCode in the current event and EventCode2 is greater than or equal to the EventCode in the current event.

For each cross-check record found,

If TestTypeCode in the retrieved cross-check record is equal to "LEAK",

If QA Cert Event System Type is equal to "FLOW" and QA Cert Event Acquisition Method is equal to "DP",

Locate Test Type to Required Test Code records where the Test Type Code is equal to "LEAK" and the Required Test Code is equal to the RequiredTestCode in the QA Certification Event record.

If not found,

append "LEAK" to QA Cert Event Missing Test Types.

Else If (QA Cert Event System Type is not equal to "FLOW" or TestTypeCode in the retrieved cross-check record is not equal to "LINE") AND (QA Cert Event System Type is not equal to "H2OM" OR TestTypeCode in the retrieved cross-check record is equal to "RATA")

Locate a Test Type to Required Test Code records where the Test Type Code begins with the TestTypeCode in the retrieved cross-check record and the Required Test Code is equal to the RequiredTestCode in QA Certification Event record.

If not found,

If TestTypeCode in the retrieved cross-check record is equal to "7DAY",

Set SpanExemption = false.

If QACertEventCode is equal to 125, and QA Cert Event Component Type is equal to "NOX" or "SO2",

Locate an Analyzer Range record for the component where the BeginDate and BeginHour is on or before the QACertEventDate and QACertEventHour, and the EndDate is null or the EndDate and EndHour is on or after the QACertEventDate and QACertEventHour

If the DualRangeIndicator is equal to 0,

Locate a Span record for the location where the ComponentTypeCode is equal to the QA Cert Event Component Type, the SpanScaleCode is equal to the AnalyzerRangeCode in the retrieved Analyzer Range record, and the BeginDate and BeginHour is on or before the QACertEventDate and QACertEventHour, and the EndDate is null or the EndDate and EndHour is on or after the QACertEventDate and QACertEventHour,

If found and the SpanValue is less than or equal to 50 ppm,

Set SpanExemption = true.

If SpanExemption is equal to false,

If the associated UnitStackPipeID begins with "CS" or "MS",

Locate all UnitStackConfiguration records where the stack/pipe location is the current location, the BeginDate is on or before the Event Date, and the EndDate is null or is on or after the Event Date.

For each UnitStackConfiguration record found,

Locate a MonitorQualification record where the unit is the unit location in the UnitStackConfiguration record, the QualificationTypeCode is equal to "PK" or "SK", the BeginDate is on or before the Event Date and the EndDate is null or is on or after the Event Date.

If not found,

append "7DAY" to QA Cert Event Missing Test Types.

Otherwise,

Locate a MonitorQualification record for the location where the QualificationTypeCode is equal to "PK" or "SK", the BeginDate is on or before the Event Date and the EndDate is null or is on or after the Event Date.

If not found,

append "7DAY" to QA Cert Event Missing Test Types.

Otherwise,

append the TestTypeCode in the retrieved cross-check record to QA Cert Event Missing Test Types.

Otherwise,

If QA Cert Event Code is equal to 800,

Set QA Cert Event Missing Test Types to null.

exit loop.

If QA Cert Event Missing Test Types is not null,

return result A.

Results:

Result	Description	Severity
A	Based on the EventCode in the record for [key], the certification event requires the following test types: [testtypes]. However, you have reported a RequiredTestCode that does not include these types of tests.	Critical Error Level 2

Usage:

1	Other QA Evaluation Report QA Certification Event Evaluation

Check Code: QACERT-16

Check Name: Monitor Plan Evaluation Check

Related Former Checks:

Applicability: General Check

Specifications:

For the QA Certification Event:

Locate all Monitoring Plan Location records for the location where the SeverityLevelCd of the associated Monitoring Plan is equal to "CRIT1" or "FATAL", and the End Quarter of the associated Monitoring Plan is null or is on or after the QACertEventDate of the event.

If found,

return result A.

Otherwise,

Locate all Monitoring Plan Location records for the location where the MustSubmitFlag and NeedsEvalFlag of the associated Monitoring Plan are equal to "Y", and the End Quarter of the associated Monitoring Plan is null or is on or after the QACertEventDate of the event.

If found,

return result B.

Results:

Result	Description	Severity
A	A Monitoring Plan associated with this [entity] has critical errors. You must correct all active and future Monitoring Plans containing the location in this [entity] in order to submit this [entity] to be loaded on EPA's host system.	Critical Error Level 1
B	A Monitoring Plan associated with this [entity] has not been evaluated. You must evaluate all active and future Monitoring Plans containing the location in this [entity] in order to complete the evaluation of this [entity].	Critical Error Level 1

Usage:

1	Other QA Evaluation Report QA Certification Event Evaluation

Check Category:

RATA

Check Code: RATA-1

Check Name: Determine RATA Run Sequence

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA:

Set Rounded Flow RATA Values to true.

Set RATA Zero Value to false.

Set Highest RATA CEM Value to null.

Set Highest RATA Run Number to 0.

If there are no runs associated with the RATA,

Set the RATA Begin Date, Begin Hour, Begin Minute, End Date, End Hour, and End Minute to null.

Set RATA Run Times Valid to false.

Otherwise,

set RATA Run Times Valid to true.

Proceed through the RATA run records for the test in Run Begin Date/Hour/Minute order.

Append the associated Operating Level Code for the run to the RATA Level List.

If RunNumber is greater than the Highest RATA Run Number,

set Highest RATA Run Number to RunNumber.

If RunStatusCode is equal to "RUNUSED",

If CEMValue is greater than Highest RATA CEM Value,

set Highest RATA CEM Value to CEMValue.

If CEMValue is equal to 0 or RATAReferenceValue is equal to 0,

set RATA Zero Value to true.

If associated SystemType is equal to "FLOW",

If CEMValue is greater than 0 and not rounded to 1000 or RATAReferenceValue is greater than 0 and nc rounded to 1000,

set Rounded Flow RATA Values to false.

If any Run Begin Date, Hour, Minute or Run End Date, Hour, Minute is invalid,

Set RATA Run Times Valid to false, and Simultaneous RATA Runs to null.

Otherwise,

Set the RATA Begin Date, Begin Hour, and Begin Minute to the Run BeginDate, BeginHour, and BeginMinute of the first run.

If the BeginDate, BeginHour, or BeginMinute of any run is earlier than the EndDate, EndHour, and

EndMinute of the previous run,

append the Operating Level and Run Number to Simultaneous RATA Runs.

Set the RATA End Date, End Hour, and End Minute to the latest EndDate, EndHour, and EndMinute of any run.

Usage:

1 QA and Certification Data Entry Screen Evaluation RATA Run Evaluation

2 QA Test Evaluation Report RATA Evaluation (Pass 1)

Condition: RATA Aborted*Equals* false

Check Code: RATA-2

Check Name: System Type Valid

Related Former Checks: RATA-1

Applicability: CEM Check

Specifications:

For the RATA:

If the MonitoringSystemID is null,

set RATA System Valid to false, and return result A.

Otherwise,

If the SystemTypeCode of the associated system is equal to "SO2", "NOX", "CO2", "FLOW", "SO2R", "O2", "H2O", "H2OM", "NOXC", "NOXP", "HG", "HCL", "HF", or "ST",

set RATA System Valid to true.

Otherwise,

set RATA System Valid to false, and return result B.

If RATA System is invalid, do not perform checks for all other RATA categories except RATA Evaluation (Pass 2). Set the calculated values in all associated RATA Summary, RATA Run, Flow Run, and RATA Traverse records to null.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	According to the monitoring system record, the RATA was conducted for a [sys type] system. This type of system does not require a RATA.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report RATA Evaluation (Pass 1)

Check Code: RATA-3

Check Name: Aborted RATA Not Evaluated

Related Former Checks: RATA-2

Applicability: CEM Check

Specifications:

For the RATA:

If the TestResultCode is equal to "ABORTED",

Proceed through the RATA Summary records for the test .

Append the associated Operating Level Code for the run to the RATA Level List.

S et RATA Result to "ABORTED", RATA Aborted to true, and return result A.

Do not perform checks for all other RATA categories except RATA Evaluation (Pass 2).

Set the calculated values in all associated RATA Summary, RATA Run, Flow Run, and RATA Traverse records to null.

Otherwise,

set RATA Aborted to false.

Results:

Result	Description	Severity
A	The TestResultCode indicates that the test was aborted. [Children] records for this test will not be evaluated. If the test was aborted for a reason not related to monitor performance, you should not report the test.	Informational Message

Usage:

1 QA Test Evaluation Report RATA Evaluation (Pass 1)

Condition: RATA System Valid*Equals* true

Check Code: RATA-4

Check Name: Test Reason Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the TestSummary record:

If TestReasonCode is null,

return result A.

If TestReasonCode is not in the TestReasonCode lookup table,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Evaluation
2	QA Test Evaluation Report RATA Evaluation (Pass 1)
	Condition: RATA System Valid *Equals* true

Check Code: RATA-5

Check Name: Simultaneous Runs

Related Former Checks: RATA-4

Applicability: CEM Check

Specifications:

For the RATA:

If Simultaneous RATA Runs is not null,

return result A.

Results:

Result	Description	Severity
A	The following runs had a begin and end time that overlapped another run in the RATA: [runs].	Critical Error Level 1

Usage:

1	QA Test Evaluation Report RATA Evaluation (Pass 1) *Condition:* RATA Aborted*Equals* false

Check Code: RATA-6

Check Name: CEM Value Consistent with MPC/MPF/MER

Related Former Checks: RATA-56, 57

Applicability: CEM Check

Specifications:

For a RATA with valid dates, an associated SystemTypeCode equal to "NOX", "NOXC", "SO2", "FLOW", "HG", "HCL", or "HF" , and Highest RATA CEM Value greater than 0:

If the associated SystemTypeCode is equal to "NOX",

Locate a MonitorDefault record for the location where the ParameterCode is equal to "NORX", the FuelCode is equal to "NFS", OperatingConditionCode is equal to "U" or "A", the BeginDate / Hour is on or before the later of the Begin Date/Hour of the associated system and the BeginDate / Hour of the test , and the EndDate is null or the EndDate / Hour is on or after later of the Begin Date/Hour of the associated system and the End Date / Hour of the test.

If one record is found,

If Highest RATA CEM Value is greater than the DefaultValue in the retrieved record,

return result A.

If not found,

return result B.

If more than one record is found,

return result C.

If the associated SystemTypeCode is equal to "NOXC",

Locate a MonitorSpan record for the location where the ComponentTypeCode is equal to "NOX", the SpanScale is equal to "H", the BeginDate / Hour is on or before the later of the Begin Date/Hour of the associated system and the BeginDate / Hour of the test , and the EndDate is null or the EndDate / Hour is on or after later of the Begin Date/Hour of the associated system and the End Date / Hour of the test.

If one record is found,

If Highest RATA CEM Value is greater than the MPCValue in the retrieved record,

return result D.

If not found,

return result E.

If more than one record is found,

return result F.

If the associated SystemTypeCode is equal to "SO2",

Locate a MonitorSpan record for the location where the ComponentTypeCode is equal to "SO2", the SpanScale is equal to "H", the BeginDate / Hour is on or before the later of the Begin Date/Hour of the associated system and the BeginDate / Hour of the test , and the EndDate is null or the EndDate / Hour is on or after later of the Begin Date/Hour of the associated system and the End Date / Hour of the test.

If one record is found,

If Highest RATA CEM Value is greater than the MPCValue in the retrieved record,

return result D.

If not found,

return result E.

If more than one record is found,

return result F.

If the associated SystemTypeCode is equal to "FLOW",

Locate a MonitorSpan record for the location where the ComponentTypeCode is equal to "FLOW", the BeginDate / Hour is on or before the later of the Begin Date/Hour of the associated system and the BeginDate / Hour of the test , and the EndDate is null or the EndDate / Hour is on or after later of the Begin Date/Hour of the associated system and the End Date / Hour of the test.

If one record is found,

If Highest RATA CEM Value is greater than the MPFValue in the retrieved record,

return result D.

If not found,

return result E.

If more than one record is found,

return result F.

If the associated SystemTypeCode is equal to "HG",

Locate a MonitorSpan record for the location where the ComponentTypeCode is equal to "HG", the SpanScale is equal to "H", the BeginDate / Hour is on or before the later of the Begin Date/Hour of the associated system and the BeginDate / Hour of the test , and the EndDate is null or the EndDate / Hour is on or after later of the Begin Date/Hour of the associated system and the End Date / Hour of the test.

If one record is found,

If Highest RATA CEM Value is greater than the MPCValue in the retrieved record,

return result D.

If not found,

return result E.

If more than one record is found,

return result F.

Results:

Result	Description	Severity
A	For one or more runs of this RATA the value from the NOX system being tested is greater than the maximum emission rate defined in the NORX default record.	Non-Critical Error
B	You have not reported a valid NORX default record that was active during the test.	Critical Error Level 1

C	You have reported more than one NORX default record that was active during the test.	Critical Error Level 1
D	For one or more runs of this RATA the value from the CEM system being tested is greater than the MPC/MPF value defined in the span record.	Non-Critical Error
E	You have not reported a valid monitoring plan span record that was active during the test.	Critical Error Level 1
F	You reported more than one monitoring plan span record that was active during the test.	Critical Error Level 1
G	For one or more runs of this RATA the value from the system being tested is greater than the maximum HG concentration defined in the HGX default record.	Non-Critical Error
H	You have not reported a valid HG span or HGX default record that was active during the test.	Non-Critical Error
I	You have reported more than one HGX default record that was active during the test.	Non-Critical Error

Usage:

1	QA Test Evaluation Report RATA Evaluation (Pass 1) *Condition:* RATA Aborted*Equals* false

Check Code: RATA-7

Check Name: Flow Values Rounded

Related Former Checks: RATA-55

Applicability: CEM Check

Specifications:

For a RATA with an associated SystemTypeCode equal to "FLOW":

If Rounded Flow RATA Values is equal to false,

return result A.

Results:

Result	Description	Severity
A	For one or more runs of this flow RATA the CEM Value and/or Reference Value was not rounded to the nearest 1000 scfh.	Non-Critical Error

Usage:

1	QA Test Evaluation Report RATA Evaluation (Pass 1) *Condition:* RATA Aborted*Equals* false

Check Code: RATA-8

Check Name: Test Claim Code Valid

Related Former Checks: SLF-1

Applicability: CEM Check

Specifications:

For the Test Qualification record:

Set RATA Claim Code Valid to false.

If the TestClaimCode is null,

return result A.

If the TestClaimCode is not equal to "SLC", "NLE", or "ORE",

return result B.

If the TestClaimCode is equal to "SLC",

If the associated SystemTypeCode is not equal to "FLOW",

return result C.

If RATA Level List contains more than one Operating Level Code,

return result D.

Otherwise,

Locate a Monitor Plan Reporting Frequency record for the location where the Begin Quarter is on or before the quarter of the EndDate in the Test Summary record, and the EndQuarter is null or is on or after the quarter of the EndDate in the Test Summary record.

If not found,

Locate the Monitor Plan Reporting Frequency record for the location with the earliest Begin Quarter where the EndQuarter is null or is on or after the quarter of the EndDate in the Test Summary record.

If a Monitor Plan Reporting Frequency record is found above, and the ReportingFrequencyCode is equal to "Q",

set Test Claim Code Valid to true.

If RATA Claim Code is equal to "NLE",

set RATA Claim Code to "SLC", and return result E.

Otherwise,

set RATA Claim Code to "SLC".

Otherwise,

return result F.

If the TestClaimCode is equal to "NLE",

If RATA Level List contains more than one Operating Level Code,

return result D.

If RATA Claim Code is equal to "SLC",

return result E.

Otherwise,

set RATA Claim Code Valid to true, and RATA Claim Code to "NLE".

If the TestClaimCode is equal to "ORE",

If the associated SystemTypeCode is not equal to "FLOW",

return result C.

If RATA Level List contains less than two Operating Level Codes,

return result G.

Otherwise,

set RATA Claim Code Valid to true, and RATA Claim Code to "ORE".

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1
C	The Test Claim [value] for this RATA is invalid, because this claim only applies to a FLOW monitoring system.	Critical Error Level 1
D	The Test Claim [value] is invalid, because this claim only applies to a single-level RATA.	Critical Error Level 1
E	You have reported both an SLC and an NLE test claim for this single-level FLOW RATA. You do not need to report a normal-load exemption claim if you are reporting a single-load claim. The NLE claim will be ignored.	Non-Critical Error
F	The Test Claim [value] for this RATA is invalid, because this claim only applies to year-round reporters, but the Monitoring Plan Reporting Frequency records do not indicate that this location is a year-round reporter.	Critical Error Level 1
G	The Test Claim [value] is invalid, because this claim only applies to a multi-level Flow RATA.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- RATA Claim

Check Code: RATA-9

Check Name: Single-Level Claim High Load Percentage Valid

Related Former Checks: SLF-2, 3C

Applicability: CEM Check

Specifications:

For a TestQualification record:

If TestClaimCode equal to "SLC":

If HighLoadPercentage is null,

return result A.

If HighLoadPercentage is less than 0 or greater than 100,

return result B.

If RATA Level List is equal to "H",

If HighLoadPercentage is less than 85,

return result C.

If RATA Level List is equal to "L",

If HighLoadPercentage + MidLoadPercentage + LowLoadPercentage is less than 99 or greater than 101,

return result D.

Otherwise,

If HighLoadPercentage is not null,

return result E.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1
C	You indicated that this unit/stack qualifies for a single load flow RATA at [level] level, but [fieldname] is less than the minimum value of 85%.	Critical Error Level 2
D	The sum of the percentages provided for Low, Mid and High load levels does not represent 100% of the range of operation.	Critical Error Level 1
E	You have reported [fieldname] for [key], but this value does not apply to this type of claim.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Test Qualification Evaluation *Condition:* RATA Test Claim Code Valid *Equals* true
2	QA Test Evaluation Report --- RATA Claim *Condition:* RATA Claim Code Valid *Equals* true

Check Code: RATA-10

Check Name: Single-Level Claim Mid Load Percentage Valid

Related Former Checks: SLF-2, 3B

Applicability: CEM Check

Specifications:

For a TestQualification record:

If TestClaimCode equal to "SLC":

If MidLoadPercentage is null,

return result A.

If MidLoadPercentage is less than 0 or greater than 100,

return result B.

If RATA Level List is equal to "M",

If MidLoadPercentage is less than 85,

return result C.

If RATA Level List is equal to "H",

If HighLoadPercentage + MidLoadPercentage + LowLoadPercentage is less than 99 or greater than 101,

return result D.

Otherwise,

If MidLoadPercentage is not null,

return result E.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1
C	You indicated that this unit/stack qualifies for a single load flow RATA at [level] level, but [fieldname] is less than the minimum value of 85%.	Critical Error Level 2
D	The sum of the percentages provided for Low, Mid and High load levels does not represent 100% of the range of operation.	Critical Error Level 1
E	You have reported [fieldname] for [key], but this value does not apply to this type of claim.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Test Qualification Evaluation *Condition:* RATA Test Claim Code Valid *Equals* true
2	QA Test Evaluation Report --- RATA Claim *Condition:* RATA Claim Code Valid *Equals* true

Check Code: RATA-11

Check Name: Single-Level Claim Low Load Percentage Valid

Related Former Checks: SLF-2, 3A

Applicability: CEM Check

Specifications:

For a TestQualification record:

If TestClaimCode equal to "SLC":

If LowLoadPercentage is null,

return result A.

If LowLoadPercentage is less than 0 or greater than 100,

return result B.

If RATA Level List is equal to "L",

If LowLoadPercentage is less than 85,

return result C.

If RATA Level List is equal to "M",

If HighLoadPercentage + MidLoadPercentage + LowLoadPercentage is less than 99 or greater than 101,

return result D.

Otherwise,

If LowLoadPercentage is not null,

return result E.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1
C	You indicated that this unit/stack qualifies for a single load flow RATA at [level] level, but [fieldname] is less than the minimum value of 85%.	Critical Error Level 2
D	The sum of the percentages provided for Low, Mid and High load levels does not represent 100% of the range of operation.	Critical Error Level 1
E	You have reported [fieldname] for [key], but this value does not apply to this type of claim.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Test Qualification Evaluation *Condition:* RATA Test Claim Code Valid *Equals* true
2	QA Test Evaluation Report --- RATA Claim *Condition:* RATA Claim Code Valid *Equals* true

Check Code: RATA-12

Check Name: Single-Level Claim Begin Date Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a valid TestQualification record:

If TestClaimCode equal to "SLC":

Set SLC Collection Period to null.

If BeginDate is null,

return result A.

If BeginDate is earlier than 1/1/1993,

return result B.

If Test End Date Valid is true,

Locate the latest QASuppAttribute record for the location where the associated SystemTypeCode is equal to "FLOW", the associated TestTypeCode is equal to "RATA", the associated TestResultCode is equal to "PASSED" o "PASSAPS", the associated EndDate is less than the EndDate of the TestSummary record of this RATA, and either the Attribute_Name is equal to "OP_LEVEL_CD_LIST" and the Attribute_Value contains more than one level or the Attribute_Name is equal to "TEST_CLAIM_CD" and the Attribute_Value is equal to "SLC".

If found,

If the BeginDate in the TestQualification record is equal to the EndDate in the QASuppData record,

set SLC Collection Period to "Standard".

Otherwise,

If the BeginDate in the TestQualification record is equal to the first day of the quarter of the either the BeginDate or the EndDate in the QASuppData record,

set SLC Collection Period to "Alternative".

Otherwise,

return result C.

Otherwise,

If BeginDate is not null,

return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported a [Fieldname] of [Date], which is outside the range of acceptable values for this date for [key].	Critical Error Level 1

C	The BeginDate in the single-level claim for this RATA does not correspond tc the completion date of the last annual flow RATA for the system.	Critical Error Level 1
D	You have reported [fieldname] for [key], but this value does not apply to this type of claim.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- RATA Claim

Check Code: RATA-13

Check Name: Single-Level Claim End Date Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a valid TestQualification record:

If TestClaimCode equal to "SLC":

If EndDate is null,

return result A.

If SLC Collection Period is equal to "Standard",

If the EndDate is more than 21 days prior to the BeginDate of the TestSummary record of this RATA,

return result B.

If SLC Collection Period is equal to "Alternative",

If the EndDate is not equal to the last day of the quarter prior to the BeginDate of the TestSummary record of this RATA,

return result B.

Otherwise,

If EndDate is not null,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The EndDate in the single-level claim for this RATA is not within 21 days of the begin date of this RATA.	Critical Error Level 1
C	You have reported [fieldname] for [key], but this value does not apply to this type of claim.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- RATA Claim

Check Code: RATA-14

Check Name: Initialize RATA Summary Variables

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA summary record:

If Simultaneous RATA Runs is null,

Set RATA Level Valid to true.

Otherwise,

Set RATA Level Valid to false.

Set RATA Run Count, RATA Unused Run Count, RATA WAF Run Count, RATA Sum WAF, RATA Sum Differences, RA Sum Square Differences, RATA Sum Gross Unit Load, RATA Sum CEM Values, RATA Sum Reference Values, RATA Maximum Traverse Point Count, RATA Maximum Traverse Point Count for All Runs, and Last RATA Run Number to 0.

Set RATA Minimum Traverse Point Count to 999.

Set Calculate Average Gross Unit Load and Flow RATA Level Valid to true.

Set RATA Stack Diameter Valid to true.

Set RATA Calc Stack Area, RATA Calc Level WAF, and RATA Invalid Probes to null.

Set RATA Stack Flow Array as a null decimal array with a dimension equal to Highest RATA Run Number + 1.

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation
2	QA and Certification Data Entry Screen Evaluation RATA Run Evaluation
3	QA and Certification Data Entry Screen Evaluation RATA Summary Evaluation
4	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation
5	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Code: RATA-15

Check Name: Operating Level Valid

Related Former Checks: RATA-10

Applicability: CEM Check

Specifications:

For the RATA Summary record:

If the OperatingLevelCode is null,

set RATA Level Valid to false, and return result A.

If the OperatingLevelCode is not in the OperatingLevelCode lookup table,

set RATA Level Valid to false, and return result B.

If Test Dates Consistent is equal to true, and the associated SystemTypeCode is not equal to "NOXP",

If the associated UnitStackPipeID begins with "CS" or "MS",

Locate all UnitStackConfiguration records where the stack/pipe location is the RATA location, the BeginDate is on or before the Test BeginDate, and the EndDate is null or is on or after the Test EndDate.

For each UnitStackConfiguration record found,

Locate a MonitorQualification record where the unit is the unit location in the UnitStackConfiguration record, the QualificationTypeCode is equal to "PK" or "SK", the BeginDate is on or before the Test BeginDate and the EndDate is null or is on or after the Test EndDate.

If found for all units,

If the OperatingLevelCode is equal to "N",

set RATA Claim Code to "PEAK".

Otherwise,

return result D.

else if the OperatingLevelCode is equal to "N",

return result C.

Otherwise,

Locate a MonitorQualification record where the location is RATA location, the QualificationTypeCode is equal to "PK" or "SK", the BeginDate is on or before the Test BeginDate and the EndDate is null or is on or after the Test EndDate.

If not found, and the OperatingLevelCode is equal to "N",

return result C.

If found,

If the OperatingLevelCode is equal to "N",

set RATA Claim Code to "PEAK".

Otherwise,

return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1
C	The OperatingLevelCode in the RATA Summary record should not be 'N'. Operating levels should be identified as 'N' only for peaking units or for stacks associated only with peaking units.	Critical Error Level 1
D	You reported a RATA for a peaking unit (or a stack associated only with peaking units), but reported operating level code [value] in the RATA Summary record instead of "N" for normal. For peaking unit (or stack) RATAs include an "N" rather than L, M, or H, because the entire range of operation is considered normal.	Non-Critical Error

Usage:

1	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Code: RATA-16

Check Name: Reference Method Code Valid

Related Former Checks: RATA-33B

Applicability: CEM Check

Specifications:

For the RATA Summary record:

Set RATA Reference Method Valid to true.

If the associated SystemTypeCode of the RATA is not equal to "FLOW",

If the ReferenceMethodCode is null,

If the test EndDate is on or after ECMPS MP Begin Date ,

return result A.

Otherwise,

return result D.

If the ReferenceMethodCode is not in the ReferenceMethodCode lookup table,

return result B.

If ReferenceMethodCode contains "20" and the test EndDate is on or after the ECMPS MP Begin Date,

return result E.

If the ParameterCode in the ReferenceMethodCode lookup table does not contain the associated SystemTypeCode,

If the test EndDate is on or after ECMPS MP Begin Date ,

return result C.

Otherwise,

return result D.

Otherwise,

Set ***RATA Ref Method Code*** to the ReferenceMethodCode.

Otherwise,

If the ReferenceMethodCode is null,

set RATA Level Valid and RATA Reference Method Valid to false, and return result A.

If the ReferenceMethodCode is not in the ReferenceMethodCode lookup table,

set RATA Level Valid and RATA Reference Method Valid to false, and return result B.

If the ParameterCode in the ReferenceMethodCode lookup table does not contain the associated SystemTypeCode,

set RATA Level Valid and RATA Reference Method Valid to false, and return result C.

If RATA Reference Method Valid is false, do not perform checks in RATA Run, Flow RATA Run (Pass 1 and 2 and Method 2H), RATA Traverse, and RATA Summary (Method 2H) categories.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
C	The ReferenceMethodCode [value] in the RATA Summary Data record for [key] is not appropriate for a RATA conducted for a [system type] system.	Critical Error Level 1
D	The ReferenceMethodCode in the RATA Summary Data record for [key] is null or is not appropriate for a RATA conducted for a [system type] system.	Non-Critical Error
E	You reported a reference method of "20" in the RATA Summary Data record for [key], but this method is no longer acceptable.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Summary Evaluation
2	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Code: RATA-17

Check Name: Mean CEM Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA summary record:

If MeanCEMValue is null,

return result A.

Else if SystemTypeCode is equal to "HG", "ST", "HCL" or "SO2" AND MeanCEMValue is equal to zero,

return result C.

Else i f MeanCEMValue is NOT greater than zero,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
C	You reported a [fieldname] of zero for [key].	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Summary Evaluation
2	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Code: RATA-18

Check Name: Mean Reference Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA summary record:

If MeanRATAReferenceValue is null,

return result A.

If MeanRATAReferenceValue is not greater than zero,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Summary Evaluation
2	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Code: RATA-19

Check Name: Mean Difference Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA summary record:

If MeanDifference is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Summary Evaluation
2	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Code: RATA-20

Check Name: Standard Deviation Difference Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA summary record:

If StandardDeviationDifference is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Summary Evaluation
2	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Code: RATA-21

Check Name: Confidence Coefficient Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA summary record:

If ConfidenceCoefficient is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Summary Evaluation
2	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Code: RATA-22

Check Name: T-Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA Summary record:

If TValue is null,

return result A.

Results:

Result	Description	Severity
A	You have not reported the required value in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Summary Evaluation
2	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Code: RATA-23

Check Name: Average Gross Unit Load Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA summary record:

If AverageGrossUnitLoad in the RATA Summary record is null,

return result A.

If AverageGrossUnitLoad in the RATA Summary record is less than or equal to 0,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Summary Evaluation
2	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Code: RATA-24

Check Name: Relative Accuracy Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a RATA summary record.

If RelativeAccuracy is null,

return result A.

If RelativeAccuracy is less than 0,

return result B.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Summary Evaluation
2	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Code: RATA-25

Check Name: Run Number Valid

Related Former Checks: RATA-8

Applicability: CEM Check

Specifications:

For the RATA run:

If RunNumber is null,

set RATA Level Valid to false, and return result A.

If RunNumber is not greater than or equal to 1 and less than or equal to 99,

set RATA Level Valid to false, and return result B.

If Test Dates Consistent is equal to true and Last RATA Run Number is greater than or equal to 0,

If RunNumber is not one greater than the Last Run Number,

set Last RATA Run Number to -1, RATA Level Valid to false, and return result C.

Otherwise,

set Last RATA Run Number to RunNumber.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1
C	There are duplicate, missing or non-sequential run numbers when the run records are time ordered by run end date and time for operating level [level].	Critical Error Level 1

Usage:

1	QA Test Evaluation Report ------ RATA Run

Check Code: RATA-26

Check Name: Gross Unit Load Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a RATA run with a RunStatusCode equal to "RUNUSED":

If GrossUnitLoad is null,

set Calculate Average Gross Unit Load to false, and return result A.

If GrossUnitLoad is less than or equal to 0,

set Calculate Average Gross Unit Load to false, and return result B.

Otherwise,

add GrossUnitLoad to RATA Sum Gross Unit Load.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Run Evaluation
2	QA Test Evaluation Report ------ RATA Run

Check Code: RATA-27

Check Name: CEM Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a RATA run with a RunStatusCode equal to "RUNUSED":

If CEMValue is null,

set RATA Level Valid to false, and return result A.

If CEMValue is less than 0,

set RATA Level Valid to false, and return result B.

Otherwise,

add CEMValue to RATA Sum CEM Value.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Run Evaluation
2	QA Test Evaluation Report ------ RATA Run

Check Code: RATA-28

Check Name: Flow Run Record Valid

Related Former Checks: RATA-33B, 34

Applicability: CEM Check

Specifications:

For the RATA run:

If the Flow RATA Run ID is not null.

Set Flow RATA Run Valid to true.

If the associated ReferenceMethodCode does not begin with "2F", "2G", or "M2H",

set Flow RATA Run Valid to false, and return result A.

Else i f the RunStatusCode is equal to "NOTUSED",

set Flow RATA Run Valid to false .

If Flow RATA Run Valid is false, do not perform checks in Flow RATA Run (Pass 1 and Pass 2) and RATA Traverse categories.

Otherwise,

Set Flow RATA Run Valid to false.

If the associated ReferenceMethodCode begins with "2F" or "2G", and the RunStatusCode is equal to "RUNUSED",

set RATA Level Valid to false, and return result C.

Results:

Result	Description	Severity
A	You reported a Flow RATA Run record for [key], which is not appropriate for a RATA conducted using ReferenceMethodCode [method].	Critical Error Level 1
B	You reported a Flow RATA Run record for [key], which is not appropriate for a run with a RunStatusCode equal to "NOTUSED". You should only report Flow RATA records for runs that are used in the calculation of relative accuracy.	Non-Critical Error
C	You did not report a Flow Run record for [key]. When a RATA is performed using method 2F or 2G, Flow Run record must be reported for each run used in the relative accuracy calculation.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report ------ RATA Run

Check Code: RATA-29

Check Name: Run Status Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA run:

If the RunStatusCode is null,

set RATA Level Valid to false, and return result A.

If RunStatusCode is equal to "RUNUSED",

add 1 to RATA Used Run Count.

If RunStatusCode is equal to "NOTUSED",

add 1 to RATA Unused Run Count.

Otherwise,

set RATA Level Valid to false, and return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Run Evaluation
2	QA Test Evaluation Report ------ RATA Run

Check Code: RATA-30

Check Name: Run Begin Time Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA run:

If the RunBeginDate is null, or the RunBeginHour is null or not between 0 and 23, or the RunBeginMinute is null or not between 0 and 59.

set RATA Run Begin Time Valid to false, RATA Level Valid to false, and return result A.

Otherwise,

set RATA Run Begin Time Valid to true.

Results:

Result	Description	Severity
A	The BeginDate, BeginHour, and/or BeginMinute for [key] is invalid.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Run Evaluation
2	QA Test Evaluation Report ------ RATA Run

Check Code: RATA-31

Check Name: Run End Time Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA run:

Set RATA Run End Time Valid to true

If the RunEndDate is null, or the RunEndHour is null or not between 0 and 23, or the RunEndMinute is null or not between 0 and 59.

set RATA Run End Time Valid to false, RATA Level Valid to false, and return result A.

If RATA Run Begin Time Valid is true, and the Run BeginDate, Hour, and Minute is later than the Run EndDate, Hour, and Minute,

Set RATA Level Valid to false, and return result B.

Results:

Result	Description	Severity
A	The EndDate, EndHour, and/or EndMinute for [key] are invalid.	Critical Error Level 1
B	The run End Time is earlier than the run Begin Time for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Run Evaluation
2	QA Test Evaluation Report ------ RATA Run

Check Code: RATA-32

Check Name: Run Length Valid

Related Former Checks: RATA-11, 12

Applicability: CEM Check

Specifications:

For a RATA run with valid begin and end times and a RunStatusCode equal to "RUNUSED":

If the associated SystemTypeCode of the RATA is equal to "FLOW",

If the difference between the Run Begin Time and End Time is less than 4 minutes,

return result A.

If the associated SystemTypeCode of the RATA does not begin with "HG",

If the difference between the Run Begin Time and End Time is less than 20 minutes,

return result B.

Otherwise,

If the associated ReferenceMethodCode is equal to "30A",

If the difference between the Run Begin Time and End Time is less than 10 minutes,

return result D.

If the associated ReferenceMethodCode is equal to "30B",

If the difference between the Run Begin Time and End Time is less than 29 minutes,

return result C.

Results:

Result	Description	Severity
A	The run for [key] was less than five minutes. Each run must be at least five minutes in duration.	Critical Error Level 2
B	The run for [key] was less than 21 minutes. Each run must be at least 21 minutes in duration.	Critical Error Level 2
C	The run for [key] was less than 30 minutes. Each run must be at least 30 minutes in duration.	Critical Error Level 2
D	The run for [key] was less than 10 minutes. Each run must be at least 10 minutes in duration.	Critical Error Level 2

Usage:

1	QA Test Evaluation Report ------ RATA Run

Check Code: RATA-33

Check Name: Reference Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a RATA run with a RunStatusCode equal to "RUNUSED":

If RATAReferenceValue is null,

set RATA Level Valid to false, and return result A.

If RATAReferenceValue is less t han 0,

set RATA Level Valid to false, and return result B.

Otherwise,

If Flow RATA Run Valid is equal to false,

Add RATAReferenceValue to RATA Sum Reference Values.

If the CEMValue is greater than or equal to 0,

Add (RATAReferenceValue - CEMValue) to RATA Sum Differences.

Add the square of (RATAReferenceValue - CEMValue) to RATA Sum Square Differences.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Run Evaluation
2	QA Test Evaluation Report ------ RATA Run

Check Code: RATA-34

Check Name: Run Count Valid

Related Former Checks: RATA-6, 7

Applicability: CEM Check

Specifications:

For the operating level of a RATA:

Set Calculate RATA Level to RATA Level Valid.

If the RATA Used Run Count is less than 9,

set Calculate RATA Level to false.

If RATA Unused Run Count is greater than 3,

return result A.

Otherwise,

return result B.

Otherwise,

If the RATA Unused Run Count is greater than 3,

set Calculate RATA Level to false, and return result C.

Results:

Result	Description	Severity
A	The RATA for [key] contains fewer than nine RATA run records with a run status of "RUNUSED" and more than three RATA run records with a run status of "NOTUSED". A minimum of nine runs are required for each complete operating level test; only three runs may be excluded from a test at each operating level.	Critical Error Level 1
B	The RATA for [key] contains fewer than nine RATA run records with a run status of "RUNUSED". A minimum of nine runs are required for each complete operating level test.	Critical Error Level 1
C	There are more than three RATA run records for [key] with a run status of "NOTUSED" which indicates runs excluded from the data analysis. Only three runs may be excluded from a test at each operating level.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- RATA Summary (Pass 2)

Check Code: RATA-35

Check Name: Calculate Relative Accuracy

Related Former Checks: RATA-13, 27

Applicability: CEM Check

Specifications:

For the RATA summary record:

If Calculate RATA Level is true,

If RATA Sum Reference Value is greater than 0, AND (RATA Sum CEM Value is not equal to 0, OR SystemTypeCode is equal to "HG", "ST", "HCL" or "SO2"),

If the SystemTypeCode of the associated system is equal to "FLOW",

If OperatingLevelCode is equal to "H" or "N",

set High Sum Reference Value to RATA Sum Reference Value,

set High Run Count to RATA Used Run Count

If OperatingLevelCode is equal to "M",

set Mid Sum Reference Value to RATA Sum Reference Value,

set Mid Run Count to RATA Used Run Count

If OperatingLevelCode is equal to "L",

set Low Sum Reference Value to RATA Sum Reference Value,

set Low Run Count to RATA Used Run Count

Calculate RATA Summary Mean CEM Value = RATA Sum CEM Value / RATA Used Run Count.

Calculate RATA Summary Mean Reference Value = RATA Sum Reference Value / RATA Used Run Count.

Calculate RATA Summary Mean Difference = RATA Sum Differences / RATA Used Run Count.

Calculate Tempval = RATA Sum Square Differences - ((RATA Sum Differences ** 2) / RATA Used Run Count)

If Tempval = 0

set RATA Summary Standard Deviation = 0

Otherwise,

calculate RATA Summary Standard Deviation = SQRT(Tempval / (RATA Run Count - 1))

If RATA Used Run Count is greater than 31,

set RATA Summary TValue to 1.

Otherwise,

Locate TValues cross-check record where Number of Items is equal to RATA Used Run Count - 1.

Set RATA Summary TValue to the TValue in the cross-check record.

Calculate RATA Summary Confidence Coefficient = (RATA TValue * RATA Standard Deviation) / SQRT(RATA Used Run Count).

Calculate Tempval = ((ABS(RATA Summary Mean Difference) + ABS(RATA Summary Confidence Coefficient)) RATA Summary Mean Reference Value * 10000.

Round Tempval to the nearest integer.

Calculate RATA Summary Relative Accuracy = min(Tempval / 100, 999.9 9).

If RATA Result is not equal to "INVALID",

If Overall Relative Accuracy is null or is less than RATA Summary Relative Accuracy,

set Overall Relative Accuracy to RATA Summary Relative Accuracy.

If the Relative Accuracy in the RATA Summary record is greater than or equal to 0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "RelativeAccuracy".

If the absolute value of the difference between the RATA Summary Relative Accuracy and the Relative Accuracy in the RATA Summary record is greater than the tolerance in the cross-check record,

return result A.

If the SystemTypeCode is equal to "HG", "ST", "HCL" or "SO2" and the RATA Sum CEM Value is equal to 0

return result D

Otherwise,

Set Calculate RATA Level to false, RATA Result to "INVALID", RATA Summary Mean CEM Value, RATA Summary Mean Reference Value, RATA Summary Mean Difference, RATA Summary Confidence Coefficient, RATA Summary Standard Deviation, RATA Summary TValue, and RATA Summary Relative Accuracy, and Overall Relative Accuracy to null, and return result C .

Otherwise,

Set RATA Result to "INVALID", RATA Summary Mean CEM Value, RATA Summary Mean Reference Value, RATA Summary Mean Difference, RATA Summary Confidence Coefficient, RATA Summary Standard Deviation, RATA Summary TValue, and RATA Summary Relative Accuracy, and Overall Relative Accuracy to null, and return result B.

Results:

Result	Description	Severity
A	The values reported for [fieldname] in the RATA summary record for [key] are inconsistent with the values that have been recalculated from the run records.	Critical Error Level 1
B	The software could not evaluate the [test] calculations reported for [key], because of the errors listed above.	Informational Message
C	The software could not evaluate the RATA calculations reported for [key], because the sum of the reference values is less than or equal to 0 or the sum of the CEM values is equal to 0.	Critical Error Level 1
D	You reported a RATA Summary CEMS Value of zero for [key].	Informational Message

Usage:

1	QA Test Evaluation Report --- RATA Summary (Pass 2)

Check Code: RATA-36

Check Name: Calculate Average Gross Unit Load

Related Former Checks: RATA-25

Applicability: CEM Check

Specifications:

For the RATA summary record:

If Calculate RATA Level is true and Calculate Average Gross Unit Load is equal to true:

If the SystemTypeCode of the associated system is equal to "FLOW",

If OperatingLevelCode is equal to "H" or "N",

set High Sum Gross Unit Load to RATA Sum Gross Unit Load.

If OperatingLevelCode is equal to "M",

set Mid Sum Gross Unit Load to RATA Sum Gross Unit Load.

If OperatingLevelCode is equal to "L",

set Low Sum Gross Unit Load to RATA Sum Gross Unit Load.

Calculate RATA Summary Average Gross Unit Load = RATA Sum Gross Unit Load / RATA Used Run Count.

Round RATA Summary Average Gross Unit Load to the nearest integer.

If OperatingLevelCode is equal to "H",

set High Average Gross Unit Load to RATA Summary Average Gross Unit Load.

If OperatingLevelCode is equal to "M",

set Mid Average Gross Unit Load to RATA Summary Average Gross Unit Load.

If OperatingLevelCode is equal to "L",

set Low Average Gross Unit Load to RATA Summary Average Gross Unit Load.

If the the AverageGrossUnitLoad in the RATA Summary record is greater than 0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescriptio is equal to "AverageGrossUnitLoad".

If the absolute value of the difference between the RATA Summary Average Gross Unit Load and the AverageGrossUnitLoad in the RATA Summary record is greater than the tolerance in the cross-check record,

return result A.

Otherwise,

If RATA Summary Average Gross Unit Load is not equal to the AverageGrossUnitLoad in the RATA Summa record,

If OperatingLevelCode is equal to "H",

set High Average Gross Unit Load to the AverageGrossUnitLoad in the RATA Summary record.

If OperatingLevelCode is equal to "M",

set Mid Average Gross Unit Load to the AverageGrossUnitLoad in the RATA Summary record

If OperatingLevelCode is equal to "L",

set Low Average Gross Unit Load to the AverageGrossUnitLoad in the RATA Summary record.

Otherwise,

set RATA Summary Average Gross Unit Load to null.

Results:

Result	Description	Severity
A	The RATA summary record for [key] contains an average gross unit load which is inconsistent with the average gross unit load recalculated from the run records used in the calculation of results.	Non-Critical Error

Usage:

1	QA Test Evaluation Report --- RATA Summary (Pass 2)

Check Code: RATA-37

Check Name: Determine Operating Level Results

Related Former Checks: RATA-14, 26

Applicability: CEM Check

Specifications:

For the RATA summary record:

If Calculate RATA Level is true,

If the associated SystemTypeCode is equal to "SO2" or "NOXC",

If the RATA Summary Relative Accuracy (rounded to 1 decimal) is less than or equal to 7.5,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

If the RATA Summary Mean Reference Value (rounded to 1 decimal) is less than or equal to 250.0 and the absolute value of the RATA Summary Mean Difference (rounded to 1 decimal) is less than or equal to 8.0,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

If the RATA Summary Mean Reference Value (rounded to 1 decimal) is less than or equal to 250.0 and the absolute value of the RATA Summary Mean Difference (rounded to 1 decimal) is less than or equal to 12.0 and the associated TestEndDate is on or after 6/25/1999,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

If the RATA Summary Relative Accuracy (rounded to 1 decimal) is less than or equal to 10.0,

set tempresult to "PASSED" and tempfrequency to "2QTRS".

If the RATA Summary Mean Reference Value (rounded to 1 decimal) is less than or equal to 250.0 and the absolute value of the RATA Summary Mean Difference (rounded to 1 decimal) is less than or equal to 15.0,

set tempresult to "PASSAPS" and tempfrequency to "2QTRS".

Otherwise,

set tempresult to "FAILED" and tempfrequency to null.

If tempfrequency is equal to "2QTRS",

If APSIndicator in the RATA Summary record is NOT equal to 1, the RelativeAccuracy in the RATA Summary Record is greater than or equal to 0 and less than or equal to 7.5,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "RelativeAccuracy".

If the absolute value of the difference between the RelativeAccuracy and the RATA Summary Relative Accuracy (rounded to 2 decimal places) is less than or equal to the tolerance in the cross-check record,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

If APSIndicator in the RATA Summary record is equal to 1, and the RATA Summary Mean Reference Value (rounded to 1 decimal) is less than or equal to 250.0, and the MeanDifference in the RATA Summary record is greater than or equal to 0 and less than or equal to 12.0,

If the MeanDifference in the RATA Summary record is less than or equal to 8.0 or the associated TestEndDate is on or after 6/25/1999,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "MeanDifferencePPM".

If the absolute value of the difference between the MeanDifference and the RATA Summary Mean Difference (rounded to one decimal) is less than or equal to the tolerance in the cross-check record,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

else if tempresult is equal to "FAILED",

If APSIndicator in the RATA Summary record is NOT equal to 1, the RelativeAccuracy in the RATA Summary Record is greater than or equal to 0 and less than or equal to 10.0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "RelativeAccuracy".

If the absolute value of the difference between the RelativeAccuracy and the RATA Summary Relative Accuracy (rounded to 2 decimal places) is less than or equal to the tolerance in the cross-check record,

If the RelativeAccuracy in the RATA Summary Record is less than or equal to 7.5,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

Otherwise,

set tempresult to "PASSED" and tempfrequency to "2QTRS".

If APSIndicator in the RATA Summary record is equal to 1, and the RATA Summary Mean Reference Value (rounded to 1 decimal) is less than or equal to 250.0, and the MeanDifference in the RATA Summary record is greater than or equal to 0 and less than or equal to 15.0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "MeanDifferencePPM".

If the absolute value of the difference between the MeanDifference and the RATA Summary Mean Difference (rounded to one decimal) is less than or equal to the tolerance in the cross-check record,

If the MeanDifference in the RATA Summary record is less than or equal to 8.0,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

If the MeanDifference in the RATA Summary record is less than or equal to 12.0, and the associated TestEndDate is on or after 6/25/1999,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

Otherwise,

set tempresult to "PASSAPS" and tempfrequency to "2QTRS".

If the associated SystemTypeCode is equal to "NOX" or "NOXP",

If the RATA Summary Relative Accuracy (rounded to 1 decimal) is less than or equal to 7.5,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

If the RATA Summary Mean Reference Value (rounded to 3 decimal) is less than or equal to 0.20 0 and the absolute value of the RATA Summary Mean Difference (rounded to 2 decimal) is less than or equal to 0.01,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

If the RATA Summary Mean Reference Value (rounded to 3 decimal) is less than or equal to 0.20 0 and the absolute value of the RATA Summary Mean Difference (rounded to 3 decimal) is less than or equal to 0.015 and the associated TestEndDate is on or after 6/25/1999,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

If the RATA Summary Relative Accuracy (rounded to 1 decimal) is less than or equal to 10.0,

set tempresult to "PASSED" and tempfrequency to "2QTRS".

If the RATA Summary Mean Reference Value (rounded to 3 decimal) is less than or equal to 0.20 0 and the absolute value of the RATA Summary Mean Difference (rounded to 2 decimal) is less than or equal to 0.02,

set tempresult to "PASSAPS" and tempfrequency to "2QTRS".

Otherwise,

set tempresult to "FAILED" and tempfrequency to null.

If tempfrequency is equal to "2QTRS",

If APSIndicator in the RATA Summary record is NOT equal to 1, the RelativeAccuracy in the RATA Summary Record is greater than or equal to 0 and less than or equal to 7.5,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "RelativeAccuracy".

If the absolute value of the difference between the RelativeAccuracy and the RATA Summary Relative Accuracy (rounded to 2 decimal places) is less than or equal to the tolerance in the cross-check record,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

If APSIndicator in the RATA Summary record is equal to 1, and the RATA Summary Mean Reference Value (rounded to 3 decimal) is less than or equal to 0.20 0 , and the MeanDifference in the RATA Summary record is greater than or equal to 0 and less than or equal to 0.015,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "MeanDifferenceRATE".

If the absolute value of the difference between the MeanDifference and the RATA Summary Mean Difference (rounded to two decimal places) is less than or equal to the tolerance in the cross-check record, and the MeanDifference in the RATA Summary record is less than or equal to 0.01,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

If the absolute value of the difference between the MeanDifference and the RATA Summary Mean Difference (rounded to three decimal places) is less than or equal to the tolerance in the cross-check record, and the MeanDifference in the RATA Summary record is less than or equal to 0.015, and the associated TestEndDate is on or after 6/25/1999,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

else if tempresult is equal to "FAILED",

If APSIndicator in the RATA Summary record is NOT equal to 1, the RelativeAccuracy in the RATA Summary Record is greater than or equal to 0 and less than or equal to 10.0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "RelativeAccuracy".

If the absolute value of the difference between the RelativeAccuracy and the RATA Summary Relative Accuracy (rounded to 2 decimal places) is less than or equal to the tolerance in the cross-check record,

If the RelativeAccuracy in the RATA Summary Record is less than or equal to 7.5,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

Otherwise,

set tempresult to "PASSED" and tempfrequency to "2QTRS".

If APSIndicator in the RATA Summary record is equal to 1, and the RATA Summary Mean Reference Value (rounded to 3 decimal) is less than or equal to 0.20 0 , and the MeanDifference in the RATA Summary record is greater than or equal to 0 and less than or equal to 0.02,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "MeanDifferenceRATE".

If the absolute value of the difference between the MeanDifference and the RATA Summary Mean Difference (rounded to two decimal places) is less than or equal to the tolerance in the cross-check record, and the MeanDifference in the RATA Summary record is less than or equal to 0.01,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

If the absolute value of the difference between the MeanDifference and the RATA Summary Mean Difference (rounded to three decimal places) is less than or equal to the tolerance in the cross-check record, and the MeanDifference in the RATA Summary record is less than or equal to 0.015, and the associated TestEndDate is on or after 6/25/1999,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

If the absolute value of the difference between the MeanDifference and the RATA Summary Mean Difference (rounded to two decimal places) is less than or equal to the tolerance in the cross-check record,

set tempresult to "PASSAPS" and tempfrequency to "2QTRS".

If the associated SystemTypeCode is equal to "CO2" or "O2",

If the RATA Summary Relative Accuracy (rounded to 1 decimal) is less than or equal to 7.5,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

If the absolute value of the RATA Summary Mean Difference (rounded to 1 decimal) is less than or equal to 0.7,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

If the RATA Summary Relative Accuracy (rounded to 1 decimal) is less than or equal to 10.0,

set tempresult to "PASSED" and tempfrequency to "2QTRS".

If the absolute value of the RATA Summary Mean Difference (rounded to 1 decimal) is less than or equal to 1.0,

set tempresult to "PASSAPS" and tempfrequency to "2QTRS".

Otherwise,

set tempresult to "FAILED" and tempfrequency to null.

If tempfrequency is equal to "2QTRS",

If APSIndicator in the RATA Summary record is NOT equal to 1, the RelativeAccuracy in the RATA Summary Record is greater than or equal to 0 and less than or equal to 7.5,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "RelativeAccuracy".

If the absolute value of the difference between the RelativeAccuracy and the RATA Summary Relative Accuracy (rounded to 2 decimal places) is less than or equal to the tolerance in the cross-check record,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

If APSIndicator in the RATA Summary record is equal to 1, and the MeanDifference in the RATA Summary record is greater than or equal to 0 and less than or equal to 0.7,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "MeanDifferencePCT".

If the absolute value of the difference between the MeanDifference and the RATA Summary Mean Difference (rounded to one decimal) is less than or equal to the tolerance in the cross-check record,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

else if tempresult is equal to "FAILED",

If APSIndicator in the RATA Summary record is NOT equal to 1, the RelativeAccuracy in the RATA Summary Record is greater than or equal to 0 and less than or equal to 10.0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "RelativeAccuracy".

If the absolute value of the difference between the RelativeAccuracy and the RATA Summary Relative Accuracy (rounded to 2 decimal places) is less than or equal to the tolerance in the cross-check record,

If the RelativeAccuracy in the RATA Summary Record is less than or equal to 7.5,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

Otherwise,

set tempresult to "PASSED" and tempfrequency to "2QTRS".

If APSIndicator in the RATA Summary record is equal to 1, and the MeanDifference in the RATA Summary record is greater than or equal to 0 and less than or equal to 1.0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "MeanDifferencePCT".

If the absolute value of the difference between the MeanDifference and the RATA Summary Mean Difference (rounded to one decimal) is less than or equal to the tolerance in the cross-check record,

If the MeanDifference in the RATA Summary record is less than or equal to 0.7,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

Otherwise,

set tempresult to "PASSAPS" and tempfrequency to "2QTRS".

If the associated SystemTypeCode is equal to "SO2R",

If the RATA Summary Relative Accuracy (rounded to 1 decimal) is less than or equal to 7.5,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

If the RATA Summary Mean Reference Value (rounded to 2 decimal) is less than or equal to 0.50 and the absolute value of the RATA Summary Mean Difference (rounded to 3 decimal) is less than or equal to 0.016,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

If the RATA Summary Relative Accuracy (rounded to 1 decimal) is less than or equal to 10.0,

set tempresult to "PASSED" and tempfrequency to "2QTRS".

If the RATA Summary Mean Reference Value (rounded to 2 decimal) is less than or equal to 0.50 and the absolute value of the RATA Summary Mean Difference (rounded to 2 decimal) is less than or equal to 0.03,

set tempresult to "PASSAPS" and tempfrequency to "2QTRS".

Otherwise,

set tempresult to "FAILED" and tempfrequency to null.

If tempfrequency is equal to "2QTRS",

If APSIndicator in the RATA Summary record is NOT equal to 1, the RelativeAccuracy in the RATA Summary Record is greater than or equal to 0 and less than or equal to 7.5,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "RelativeAccuracy".

If the absolute value of the difference between the RelativeAccuracy and the RATA Summary Relative Accuracy (rounded to 2 decimal places) is less than or equal to the tolerance in the cross-check record,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

If APSIndicator in the RATA Summary record is equal to 1, and the RATA Summary Mean Reference Value (rounded to 2 decimal) is less than or equal to 0.50, and the MeanDifference in the RATA Summary record is greater than or equal to 0 and less than or equal to 0.016,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "MeanDifferenceRATE".

If the absolute value of the difference between the MeanDifference and the RATA Summary Mean Difference (rounded to three decimal) is less than or equal to the tolerance in the cross-check record,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

else if tempresult is equal to "FAILED",

If APSIndicator in the RATA Summary record is NOT equal to 1, the RelativeAccuracy in the RATA Summary Record is greater than or equal to 0 and less than or equal to 10.0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "RelativeAccuracy".

If the absolute value of the difference between the RelativeAccuracy and the RATA Summary Relative Accuracy (rounded to 2 decimal places) is less than or equal to the tolerance in the cross-check record,

If the RelativeAccuracy in the RATA Summary Record is less than or equal to 7.5,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

Otherwise,

set tempresult to "PASSED" and tempfrequency to "2QTRS".

If APSIndicator in the RATA Summary record is equal to 1, and the RATA Summary Mean Reference Value (rounded to 2 decimal) is less than or equal to 0.50, and the MeanDifference in the RATA Summary record is greater than or equal to 0 and less than or equal to 0.03,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "MeanDifferenceRATE".

If the absolute value of the difference between the MeanDifference and the RATA Summary Mean Difference (rounded to three decimal) is less than or equal to the tolerance in the cross-check record, and the MeanDifference in the RATA Summary record is less than or equal to 0.016,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

If the absolute value of the difference between the MeanDifference and the RATA Summary Mean Difference (rounded to two decimal) is less than or equal to the tolerance in the cross-check record,

set tempresult to "PASSAPS" and tempfrequency to "2QTRS".

If the associated SystemTypeCode begins with "H2O",

If the RATA Summary Relative Accuracy (rounded to 1 decimal) is less than or equal to 7.5,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

If the absolute value of the RATA Summary Mean Difference (rounded to 1 decimal) is less than or equal to 1.0,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

If the RATA Summary Relative Accuracy (rounded to 1 decimal) is less than or equal to 10.0,

set tempresult to "PASSED" and tempfrequency to "2QTRS".

If the absolute value of the RATA Summary Mean Difference (rounded to 1 decimal) is less than or equal to 1.5,

set tempresult to "PASSAPS" and tempfrequency to "2QTRS".

Otherwise,

set tempresult to "FAILED" and tempfrequency to null.

If tempfrequency is equal to "2QTRS",

If APSIndicator in the RATA Summary record is NOT equal to 1, the RelativeAccuracy in the RATA Summary Record is greater than or equal to 0 and less than or equal to 7.5,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "RelativeAccuracy".

If the absolute value of the difference between the RelativeAccuracy and the RATA Summary Relative Accuracy (rounded to 2 decimal places) is less than or equal to the tolerance in the cross-check record,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

If APSIndicator in the RATA Summary record is equal to 1, and the MeanDifference in the RATA Summary record is greater than or equal to 0 and less than or equal to 1.0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "MeanDifferencePCT".

If the absolute value of the difference between the MeanDifference and the RATA Summary Mean Difference (rounded to one decimal) is less than or equal to the tolerance in the cross-check record,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

else if tempresult is equal to "FAILED",

If APSIndicator in the RATA Summary record is NOT equal to 1, the RelativeAccuracy in the RATA Summary Record is greater than or equal to 0 and less than or equal to 10.0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "RelativeAccuracy".

If the absolute value of the difference between the RelativeAccuracy and the RATA Summary Relative Accuracy (rounded to 2 decimal places) is less than or equal to the tolerance in the cross-check record,

If the RelativeAccuracy in the RATA Summary Record is less than or equal to 7.5,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

Otherwise,

set tempresult to "PASSED" and tempfrequency to "2QTRS".

If APSIndicator in the RATA Summary record is equal to 1, and the MeanDifference in the RATA Summary record is greater than or equal to 0 and less than or equal to 1.5,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "MeanDifferencePCT".

If the absolute value of the difference between the MeanDifference and the RATA Summary Mean Difference (rounded to one decimal) is less than or equal to the tolerance in the cross-check record,

If the MeanDifference in the RATA Summary record is \\less than or equal to 1.0,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

Otherwise,

set tempresult to "PASSAPS" and tempfrequency to "2QTRS".

If the associated SystemTypeCode is equal to "FLOW",

If the RATA Summary Relative Accuracy (rounded to 1 decimal) is less than or equal to 7.5,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

If the associated Test EndDate is on or after 1/1/2000,

Set adjustedmeanref to 99999 and adjustedmeandiff to 99999.

Set adjustedreportedmeandiff to 99999.

If Test Dates Consistent is true,

Locate the Monitor Location Attribute record for the location where the BeginDate is on or before the associated Test BeginDate and the EndDate is null or is on or after the associated Test EndDate.

If one record is found, and the StackAreaAtFlowMonitor is greater than 0,

Calculate adjustedmeanref = RATA Summary Mean Reference Value / 3600 / StackAreaAtFlowMonitor.

Calculate adjustedmeandiff = abs(RATA Summary Mean Difference / 3600 / StackAreaAtFlowMonitor.

Round adjustedmeanref and adjustedmeandiff to 1 decimal.

If MeanDifference in the RATA Summary record is greater than or equal to 0,

Calculate adjustedreportedmeandiff = abs(MeanDifference / 3600 / StackAreaAtFlowMonitor, and round the result to 1 decimal.

If adjustedmeanref is less than or equal to 10.0 and adjustedmeandiff is less than or equal to 1.5,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

If the RATA Summary Relative Accuracy (rounded to 1 decimal) is less than or equal to 10.0,

set tempresult to "PASSED" and tempfrequency to "2QTRS".

If adjustedmeanref is less than or equal to 10.0 and adjustedmeandiff is less than or equal to 2.0,

set tempresult to "PASSAPS" and tempfrequency to "2QTRS".

Otherwise,

set tempresult to "FAILED" and tempfrequency to null.

If tempfrequency is equal to "2QTRS",

If APSIndicator in the RATA Summary record is NOT equal to 1, the RelativeAccuracy in the RATA Summary Record is greater than or equal to 0 and less than or equal to 7.5,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "RelativeAccuracy".

If the absolute value of the difference between the RelativeAccuracy and the RATA Summary Relative Accuracy (rounded to 2 decimal places) is less than or equal to the tolerance in the cross-check record,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

If APSIndicator in the RATA Summary record is equal to 1, and the adjustedmeanref is less than or equal to 10.0, and the adjustedreportedmeandiff is less than or equ a l to 1.5,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "MeanDifferenceSCFH".

If the absolute value of the difference between the MeanDifference and the RATA Summary Mean Difference (rounded to the nearest 1000) is less than or equal to the tolerance in the cross-check record,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

else if tempresult is equal to "FAILED",

If APSIndicator in the RATA Summary record is NOT equal to 1, the RelativeAccuracy in the RATA Summary Record is greater than or equal to 0 and less than or equal to 10.0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "RelativeAccuracy".

If the absolute value of the difference between the RelativeAccuracy and the RATA Summary Relative Accuracy (rounded to 2 decimal places) is less than or equal to the tolerance in the cross-check record,

If the RelativeAccuracy in the RATA Summary Record is less than or equal to 7.5,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

Otherwise,

set tempresult to "PASSED" and tempfrequency to "2QTRS".

If APSIndicator in the RATA Summary record is equal to 1, and the adjustedmeanref is less than or equal to 10.0, and the adjustedreportedmeandiff is less than or equ a l to 2.0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "MeanDifferenceSCFH".

If the absolute value of the difference between the MeanDifference and the RATA Summary Mean Difference (rounded to the nearest 1000) is less than or equal to the tolerance in the cross-check record,

If the adjustedreportedmeandiff less than or equal to 1.5,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

Otherwise,

set tempresult to "PASSAPS" and tempfrequency to "2QTRS".

Otherwise,

If the RATA Summary Relative Accuracy (rounded to 1 decimal) is less than or equal to 10.0,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

If the RATA Summary Relative Accuracy (rounded to 1 decimal) is less than or equal to 15.0,

set tempresult to "PASSED" and tempfrequency to "2QTRS".

Otherwise,

set tempresult to "FAILED" and tempfrequency to null.

If tempfrequency is equal to "2QTRS",

If APSIndicator in the RATA Summary record is NOT equal to 1, the RelativeAccuracy in the RATA Summary Record is greater than or equal to 0 and less than or equal to 10.0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "RelativeAccuracy".

If the absolute value of the difference between the RelativeAccuracy and the RATA Summary Relative Accuracy (rounded to 2 decimal places) is less than or equal to the tolerance in the cross-check record,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

else if tempresult is equal to "FAILED",

If APSIndicator in the RATA Summary record is NOT equal to 1, the RelativeAccuracy in the RATA Summary Record is greater than or equal to 0 and less than or equal to 15.0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "RelativeAccuracy".

If the absolute value of the difference between the RelativeAccuracy and the RATA Summary Relative Accuracy (rounded to 2 decimal places) is less than or equal to the tolerance in the cross-check record,

If the RelativeAccuracy in the RATA Summary Record is less than or equal to 10.0,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

Otherwise,

set tempresult to "PASSED" and tempfrequency to "2QTRS".

If the associated SystemTypeCode is equal to "HG" or "ST",

If the RATA Summary Relative Accuracy (rounded to 1 decimal) is less than or equal to 20.0,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

If the RATA Summary Mean Reference Value (rounded to 1 decimal) is less than or equal to 5.0 and the absolute value of the RATA Summary Mean Difference (rounded to 1 decimal) is less than or equal to 1.0,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

Otherwise,

set tempresult to "FAILED" and tempfrequency to null.

If APSIndicator in the RATA Summary record is NOT equal to 1, the RelativeAccuracy in the RATA Summary Record is greater than or equal to 0 and less than or equal to 20.0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "RelativeAccuracy".

If the absolute value of the difference between the RelativeAccuracy and the RATA Summary Relative Accuracy (rounded to 2 decimal places) is less than or equal to the tolerance in the cross-check record,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

If APSIndicator in the RATA Summary record is equal to 1, the RATA Summary Mean Reference Value (rounded to 1 decimal) is less than or equal to 5.0, and the MeanDifference in the RATA Summary record is greater than or equal to 0 and less than or equal to 1.0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "MeanDifferencePCT".

If the absolute value of the difference between the MeanDifference and the RATA Summary Mean Difference (rounded to one decimal) is less than or equal to the tolerance in the cross-check record,

set tempresult to "PASSAPS" and tempfrequency to "4QTRS".

If the associated SystemTypeCode is equal to " HCL",

If the RATA Summary Relative Accuracy (rounded to 1 decimal) is less than or equal to 20.0,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

Otherwise,

set tempresult to "FAILED" and tempfrequency to null.

If APSIndicator in the RATA Summary record is NOT equal to 1, AND the RelativeAccuracy in the RATA Summary Record is greater than or equal to 0 and less than or equal to 20.0,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "RelativeAccuracy".

If the absolute value of the difference between the RelativeAccuracy and the RATA Summary Relative Accuracy (rounded to 2 decimal places) is less than or equal to the tolerance in the cross-check record,

set tempresult to "PASSED" and tempfrequency to "4QTRS".

Else if APSIndicator in the RATA Summary record is equal to 1,

set tempresult to "PASS APS " and tempfrequency to "4QTRS".

If RATA Result is not equal to "INVALID",

If RATA Result is equal to "FAILED" or tempresult is equal to "FAILED"

set RATA Result to "FAILED".

If RATA Result is equal to "PASSAPS" or tempresult is equal to "PASSAPS"

set RATA Result to "PASSAPS".

Otherwise,

set RATA Result to "PASSED".

If RATA Result is equal to "PASSED" or "PASSAPS",

If RATA Frequency is equal to "2QTRS" or tempfrequency is equal to "2QTRS"

set RATA Frequency to "2QTRS".

Otherwise,

set RATA Frequency to "4QTRS".

Otherwise,

set RATA Frequency to null.

If tempresult is equal to "PASSAPS",

set RATA Summary APS Indicator to 1.

If tempresult is equal to "PASSED",

set RATA Summary APS Indicator to 0.

Otherwise,

set RATA Summary APS Indicator to null.

If APS Indicator in the RATA Summary record is equal to null,

return result A.

If RATA Summary APS Indicator is equal to 1 and the APS Indicator in the RATA Summary record is equal to 0,

return result B.

Otherwise,

set RATA Result to "INVALID".

set RATA APS Indicator and RATA Frequency to null.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	For [key] you did not report an APS flag of "1" although EPA applied the alternative performance specification to determine that the test passed the applicable performance specification.	Critical Error Level 1
C	The reported APS Indicator of "1" is not applicable for HCl RATA tests.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- RATA Summary (Pass 2)

Check Code: RATA-38

Check Name: Average Gross Unit Load Consistent with Range of Operation

Related Former Checks: RATA-31

Applicability: CEM Check

Specifications:

For a RATA summary record with :

1) an OperatingLevelCode equal to "L", "H", or "M" , and

2) the SystemTypeCode of the associated system is NOT equal to " HG ", "ST", "HCL", and "HF"

If Calculate RATA Level is equal to true, Test Dates Consistent is equal to true, and RATA Claim Code is not equal to "ORE or is not equal to "NLE" ,

Locate a MonitorLoad record for the location where the BeginDate and BeginHour is on or before the associated Test EndDate and EndHour and the EndDate is null or is on or after the Test BeginDate and BeginHour.

If one record is found, and the LowerOperationBoundary is greater than 0 and the UpperOperationBoundary is greater than the LowerOperationBoundary,

If OperatingLevelCode is equal to "L",

If the RATA Summary Average Gross Unit Load is less than the LowerOperationBoundary or is greater than LowerOperationBoundary + ((UpperOperationBoundary - LowerOperationBoundary) * .3) rounded to an integer ,

return result A.

If OperatingLevelCode is equal to "M",

set Load Upper Boundary to UpperOperationBoundary.

set Load Lower Boundary to LowerOperationBoundary.

If the RATA Summary Average Gross Unit Load is less than or equal to LowerOperationBoundary + ((UpperOperationBoundary - LowerOperationBoundary) * .3) rounded to an integer, or is greater than LowerOperationBoundary + ((UpperOperationBoundary - LowerOperationBoundary) * .6) rounded to an integer ,

return result B.

If OperatingLevelCode is equal to "H",

If the RATA Summary Average Gross Unit Load is less than or equal to LowerOperationBoundary + ((UpperOperationBoundary - LowerOperationBoundary) * .6) rounded to an integer, or is greater than the UpperOperationBoundary,

return result C.

Otherwise,

return result D.

Results:

Result	Description	Severity
A	The average gross unit load recalculated from the values in the run records for [key] is not within the low level operating range defined in the load	Critical Error Level 2

	record.	
B	The average gross unit load recalculated from the values in the run records for [key] is not within the mid level operating range defined in the load record.	Critical Error Level 2
C	The average gross unit load recalculated from the values in the run records for [key] is not within the high level operating ranges defined in the load record.	Critical Error Level 2
D	You did not have one and only one valid Monitor Load record that was active during the test.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- RATA Summary (Pass 2)

Check Code: RATA-39

Check Name: Calculate BAF

Related Former Checks: RATA-15, 19E, 28

Applicability: CEM Check

Specifications:

For the RATA summary record:

If RATA Summary APS Indicator is not null,

If the associated SystemTypeCode is equal to "HG" , "HCL", "HF" "ST", "CO2" or "O2" or begins with "H2O",

set RATA Summary BAF to 1.

If OperatingLevelCode is equal to "H" or "N",

set High BAF to 1.

If OperatingLevelCode is equal to "M",

set Mid BAF to 1.

If OperatingLevelCode is equal to "L",

set Low BAF to 1.

Otherwise,

If the RATA Summary Mean Difference is greater than the absolute value of the RATA Summary Confidence Coefficient,

C alculate tempval = (1.0 + ABS(RATA Summary Mean Difference) / RATA Summary Mean CEM Value) * 1000.

Round tempval to the nearest integer.

Calculate RATA Summary BAF = tempval / 1000.

Otherwise,

set RATA Summary BAF to 1.

Otherwise,

If the RATA Summary BAF is greater than 1.111 and the BiasAdjustmentFactor in the RATA Summary is equal to 1.111,

If the associated SystemTypeCode is equal to "SO2" or "NOXC", and the RATA Summary Mean Reference Value (rounded to 1 decimal) is less than or equal to 250.0,

set RATA Summary BAF to 1.111.

If the associated SystemTypeCode is equal to "NOX", "NOXP", or "SO2R", and the RATA Summary Mean Reference Value (rounded to 3 decimal) is less than or equal to 0.2 0 0,

set RATA Summary BAF to 1.111.

If OperatingLevelCode is equal to "H" or "N",

set High BAF to RATA Summary BAF.

If OperatingLevelCode is equal to "M",

set Mid BAF to RATA Summary BAF.

If OperatingLevelCode is equal to "L",

set Low BAF to RATA Summary BAF.

If the BiasAdjustmentFactor in the RATA Summary record is null,

return result A.

If the BiasAdjustmentFactor in the RATA Summary record is less than 1,

return result B.

If the associated SystemTypeCode is equal to "CO2", "H2O", "H2OM", "O2" , "HG", "HCL", "HF", or "ST" ,

If the BiasAdjustmentFactor in the RATA Summary record is not equal to 1,

return result C.

Otherwise,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescriptio is equal to "BAF".

If the absolute value of the difference between the BiasAdjustmentFactor in the RATA Summary record and the RATA Summary BAF is greater than the tolerance in the cross-check record,

return result D.

Otherwise,

set RATA Summary BAF to null.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The [fieldname] for [key] is not within the range of valid values. This value must be equal to or greater than 1.000.	Critical Error Level 1
C	The BiasAdjustmentFactor in the RATA summary record for [key] was not equal to 1.000. For all CO2, O2, H2O, HG, HCL, HF or ST RATAs there is no bias adjustment factor calculated and the default of 1.000 is used.	Critical Error Level 1
D	The RATA summary record for [key] contains a bias adjustment factor (BAF) which is inconsistent with the BAF recalculated from the run records used in the test (as applicable).	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- RATA Summary (Pass 2)

Check Code: RATA-40

Check Name: Reported RATA Summary Values Consistent with Calculated Values

Related Former Checks: RATA-27

Applicability: CEM Check

Specifications:

For the RATA Summary record:

Set Inconsistent RATA Fields to null.

If RATA Calc Stack Area is not null,

Calculate RATA Calc Stack Area = min(Calculate RATA Stack Area, 99999.9), rounded to one decimal place.

If Calculate RATA Level is true,

Round RATA Summary Mean CEM Value, RATA Summary Mean Reference Value, RATA Summary Mean Difference RATA Summary Confidence Coefficient, and RATA Summary Standard Deviation to 5 decimal places.

If the SystemTypeCode associated with the RATA is equal to "SO2" or "NOXC",

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescriptio is equal to "MeanDifferencePPM".

If the SystemTypeCode associated with the RATA is equal to "FLOW",

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescriptio is equal to "MeanDifferenceSCFH".

If the SystemTypeCode associated with the RATA is equal to "NOX", "NOXP", or "SO2R",

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescriptio is equal to "MeanDifferenceRATE".

If the SystemTypeCode associated with the RATA is equal to "HG",

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescriptio is equal to "MeanDifferenceUGSCM".

Otherwise,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescriptio is equal to "MeanDifferencePCT".

If the MeanDifference in the RATA Summary record is not null, and the absolute value of the difference between the MeanDifference and the RATA Summary Mean Difference is greater than the tolerance in the cross-check record,

add "MeanDifference" to Inconsistent RATA Fields.

If the MeanCEMValue in the RATA Summary record is not null, and the absolute value of the difference between the MeanCEMValue and the RATA Summary Mean CEM Value is greater than the tolerance in the cross-check record,

add "MeanCEMValue" to Inconsistent RATA Fields.

If the MeanRATAReferenceValue in the RATA Summary record is not null, and the absolute value of the difference between the MeanRATAReferenceValue and the RATA Summary Mean Reference Value is greater than the tolerance i the cross-check record,

add "MeanRATAReferenceValue" to Inconsistent RATA Fields.

If Inconsistent RATA Fields is not null,

return result A.

In the QA Evaluation Process, the RATA Summary Mean Reference Value, RATA Summary Mean Measured Value, RATA Summary Relative Accuracy, RATA Summary APS Indicator, RATA Summary BAF, RATA Summary Mean Difference, RATA Summary TValue, RATA Summary Standard Deviation, RATA Summary Confidence Coefficient, RATA Summary Average Gross Unit Load, and RATA Calc Stack Area will be stored in the RATA Summary record for the operating level.

Results:

Result	Description	Severity
A	The values reported for [fieldname] in the RATA summary record for [key] are inconsistent with the values that have been recalculated from the run records.	Non-Critical Error

Usage:

1	QA Test Evaluation Report --- RATA Summary (Pass 2)

Check Code: RATA-41

Check Name: Number of Operating Levels Valid

Related Former Checks: RATA-16, 17

Applicability: CEM Check

Specifications:

For the RATA:

Set RATA Number of Load Levels to the number of items in the RATA Level List.

If RATA Result is not equal to "ABORTED", and RATA System Valid is true,

If RATA Number of Load Levels is equal to 0,

return result A.

Otherwise,

If the associated SystemTypeCode is equal to "FLOW",

If RATA Number of Load Levels is greater than 3,

return result B.

If RATA Number of Load Levels is less than 3, TestReasonCode is equal to "INITIAL", and RATA Claim Code is not equal to "PEAK",

Locate a LocationAttribute record for the location where the BypassIndicator is equal to 1, the BeginDate is on or before the Test BeginDate and the EndDate is null or is on or after the Test EndDate.

If not found,

Locate a MonitorQualification record where the location is the location in the RATA record, the QualificationTypeCode is equal to "PRATA1", the BeginDate is on or before the Test BeginDate and the EndDate is null or is on or after the Test EndDate.

If not found,

If RATA Number of Load Levels is equal to 2,

Locate a MonitorQualification record where the location is the location in the RATA record, the QualificationTypeCode is equal to "PRATA2", the BeginDate is on or before the Test BeginDate and the EndDate is null or is on or after the Test EndDate.

If not found,

return result G.

Otherwise,

return result G.

Otherwise,

If RATA Number of Load Levels is greater than 1,

return result C.

If NumberOfLoadLevels in the RATA record is null,

return result D.

If NumberOfLoadLevels in the RATA record is less than or equal to 0,

return result E.

Otherwise,

If NumberOfLoadLevels in the RATA record does not equal RATA Number of Load Levels,

return result F.

Results:

Result	Description	Severity
A	You did not report any operating level data for this test.	Critical Error Level 1
B	There are more than three operating levels in the test. A maximum of three operating levels can be included in a multi-load RATA. The multi-load relative accuracy for this RATA was not calculated.	Critical Error Level 1
C	There is more than one operating level in the test. Only one operating level is tested in a RATA for this type of system.	Critical Error Level 1
D	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
E	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than zero.	Critical Error Level 1
F	You reported a NumberOfLoadLevels that is not equal to the number of operating levels in the RATA for which a run was conducted.	Critical Error Level 1
G	You reported a TestReasonCode of "INITIAL" indicating that this is an initial certification test, but you did not perform this RATA at minimally acceptable number of operating levels.	Critical Error Level 2

Usage:

1	QA Test Evaluation Report RATA (Pass 2)

Check Code: RATA-42

Check Name: Low Level Gross Unit Load Consistent with Higher Level Gross Unit Load

Related Former Checks: RATA-32A

Applicability: CEM Check

Specifications:

For a RATA where the Low Average Gross Unit Load is not null and either the High Average Gross Unit Load or the Mid Averag Gross Unit Load is not null:

If Mid Average Gross Unit Load is null,

If High Average Gross Unit Load is less than or equal to Low Average Gross Unit Load,

set RATA Higher Level to "H", and return result A.

Otherwise,

If Mid Average Gross Unit Load is less than or equal to Low Average Gross Unit Load,

set RATA Higher Level to "M", and return result A.

If RATA Claim Code is not equal to "ORE", Load Lower Boundary is not null, and Load Upper Boundary is not null.

If Low Average Gross Unit Load is greater than Load Lower Boundary,

If (Mid Average Gross Unit Load - Low Average Gross Unit Load) / (Load Upper Boundary - Load Lower Boundary) < .24,

return result B.

Results:

Result	Description	Severity
A	According to the run records of this RATA, the average gross unit load of Operating Level [level1] is greater than or equal to the average gross unit load of Operating Level [level2].	Critical Error Level 1
B	The separation of the low and mid operating levels for this test does not represent at least 25% of the operating range of the unit or stack.	Non-Critical Error

Usage:

1	QA Test Evaluation Report RATA (Pass 2)
	Condition: RATA Aborted*Equals* false

Check Code: RATA-43

Check Name: High Level Gross Unit Load Consistent with Mid Level Gross Unit Load

Related Former Checks: RATA-32B

Applicability: CEM Check

Specifications:

For a RATA where the High Average Gross Unit Load and Mid Average Gross Unit Load are not null:

If High Average Gross Unit Load is less than or equal to Mid Average Gross Unit Load,

return result A.

If RATA Claim Code is not equal to "ORE", Load Lower Boundary is not null, and Load Upper Boundary is not null.

If Mid Average Gross Unit Load is greater than Load Lower Boundary,

If (High Average Gross Unit Load - Mid Average Gross Unit Load) / (Load Upper Boundary - Load Lower Boundary) < .24,

return result B.

Results:

Result	Description	Severity
A	According to the run records of this RATA, the average gross unit load of Operating Level [level1] is greater than or equal to the average gross unit load of Operating Level [level2].	Critical Error Level 1
B	The separation of the mid and high operating levels for this test does not represent at least 25% of the operating range of the unit or stack.	Non-Critical Error

Usage:

1	QA Test Evaluation Report RATA (Pass 2)
	Condition: RATA Aborted*Equals* false

Check Code: RATA-44

Check Name: RATA Begin Time Consistent with Runs

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA with valid begin time and valid run times:

If BeginDate, BeginHour, and BeginMinute do not equal the BeginDate, BeginHour, and BeginMinute of the earliest run of the RATA,

return result A.

Results:

Result	Description	Severity
A	You reported a test Begin Date, Hour, and Minute that is not the same as the BeginDate, BeginHour, and BeginMinute of the first run in the RATA.	Critical Error Level 1

Usage:

1 QA Test Evaluation Report RATA Evaluation (Pass 1)

Condition: RATA Aborted*Equals* false

Check Code: RATA-45

Check Name: RATA End Time Consistent with Runs

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA with valid end time and run times:

If EndDate, EndHour, and EndMinute do not equal the EndDate, EndHour, and EndMinute of the latest run of the RATA,

return result A.

Results:

Result	Description	Severity
A	You reported a test EndDate, Hour, and Minute that is not the same as the EndDate, Hour, and Minute of the last run in the RATA test.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report RATA Evaluation (Pass 1) *Condition:* RATA Aborted*Equals* false

Check Code: RATA-46

Check Name: RATA Duration Valid

Related Former Checks: RATA-9

Applicability: CEM Check

Specifications:

For the RATA with valid begin and end times:

If Number of Load Levels is equal to 1,

If the associated SystemTypeCode is equal to "HG" or "ST",

Locate a RATA Summary record for the test.

If one record is found, and the ReferenceMethodCode is equal to "29" or "OH",

If the difference between the Begin Date, Hour, and Minute and the End Date, Hour, and Minute of the test is greater than 336 hours,

return result C.

Otherwise,

If the difference between the Begin Date, Hour, and Minute and the End Date, Hour, and Minute of the test is greater than 168 hours,

return result A.

If Number of Load Levels is greater than 1,

If the difference between the Begin Date, Hour, and Minute and the End Date, Hour, and Minute of the test is greater than 720 hours,

return result B.

Results:

Result	Description	Severity
A	The test period for this RATA extended for more than 168 clock hours. This test may not meet the requirement that the test period for each single-load RATA be completed within 168 unit or stack operating hours.	Non-Critical Error
B	The test period for this RATA extended for more than 720 clock hours. This test may not meet the requirement that the test period for a multi-load flow RATA be completed within 720 unit or stack operating hours.	Non-Critical Error
C	The test period for this RATA extended for more than 336 clock hours. This test may not meet the requirement that the test period for each Hg RATA be completed within 336 unit or stack operating hours.	Non-Critical Error

Usage:

1 QA Test Evaluation Report RATA (Pass 2)

Condition: RATA Aborted*Equals* false

Check Code: RATA-47

Check Name: Operating Levels Consistent with Normal Operating Levels

Related Former Checks: RATA-21C-J, 22C, D

Applicability: CEM Check

Specifications:

For a RATA where the RATA Level List is not null and is not equal to "N" and the RATA Claim Code is not equal to "NLE":

Set Normal RATA Operating Levels to null.

Set RATA Frequently Used Levels to null.

Locate a Monitor Load record for the location where the BeginDate and BeginHour are on or before the Test EndDate and EndHour and the EndDate is null or the EndDate and EndHour are on or after the Test BeginDate and BeginHour.

If not found, or if more than one record is found, and the NormalLevelCode, SecondLevelCode, or SecondNormalIndicator are not the same in each Load record,

return result A.

If the NormalLevelCode is null,

return result B.

If the associated SystemTypeCode is equal to "FLOW" and the RATA Number of Load Levels is greater than 1,

If the SecondLevelCode is null,

return result B.

If the NormalLevelCode is not in the RATA Level List,

return result C.

If SecondLevelCode is in the RATA Level List,

Append NormalLevelCode and SecondLevelCode to RATA Frequently Used Levels.

If SecondNormalIndicator is equal to 1,

append NormalLevelCode and SecondLevelCode to Normal RATA Operating Levels.

Otherwise,

set Normal RATA Operating Levels to NormalLevelCode.

Otherwise,

If SecondNormalIndicator is equal to 1, the NormalLevelCode is equal to "H", and the High BAF is greater than 1,

return result C.

If SecondNormalIndicator is equal to 1, the NormalLevelCode is equal to "L", and the Low BAF is greater than 1,

return result C.

If SecondNormalIndicator is equal to 1, the NormalLevelCode is equal to "M", and the Mid BAF is greater than 1,

return result C.

Otherwise,

```
            set Normal RATA Operating Levels to NormalLevelCode, and return result D.
    Otherwise,
        If the NormalLevelCode is not in the RATA Level List,
            If SecondNormalIndicator is equal to 1,
                If the SecondLevelCode is null,
                    return result B.
                else if the SecondLevelCode in not in the RATA Level List,
                    return result E.
            else
                return result E.
```

Results:

Result	Description	Severity
A	You have not reported consistent operating level information in active load records. The program cannot determine if the RATA was performed at the normal operating level(s).	Critical Error Level 1
B	In the active load record for this unit or stack and test you did not designate the normal load levels properly. The correct BAF cannot be determined for this multi-load flow test.	Critical Error Level 1
C	You did not perform the test for one or both of the operating levels that were designated as normal in the active load record. The correct BAF cannot be determined for this multi-load flow test.	Critical Error Level 1
D	You did not perform this multi-load RATA at one of the operating levels that were designated as the two most frequently used operating levels for this unit or stack in the load record.	Critical Error Level 2
E	The load level for this RATA was not designated as a normal load level in the active load record.	Critical Error Level 2

Usage:

1	QA Test Evaluation Report RATA (Pass 2) *Condition:* RATA Aborted*Equals* false

Check Code: RATA-48

Check Name: Overall Relative Accuracy Consistent with Calculated Value

Related Former Checks: RATA-20

Applicability: CEM Check

Specifications:

For the RATA:

If **RATA Result** is equal to "INVALID",

set **RATA Result** to null and **Overall Relative Accuracy** to null.

If **RATA Result** is equal to "ABORTED" or is equal to null,

set **Overall Relative Accuracy** to null.

Otherwise,

If OverallRelativeAccuracy in the RATA record is null,

return result A.

If OverallRelativeAccuracy in the RATA record is less than 0,

return result B.

Otherwise,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescriptio is equal to "RelativeAccuracy".

If the absolute value of the difference between the **Overall Relative Accuracy** and the Relative Accuracy in the RATA record is greater than the tolerance in the cross-check record,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 1
C	The OverallRelativeAccuracy reported in the RATA record is not equal to the highest relative accuracy recalculated from the run records for each operating level.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report RATA (Pass 2)

Check Code: RATA-49

Check Name: Identification of Previously Reported Test or Test Number for RATA

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA with valid end time and a non-null MonitoringSystemID:

set RATA Supp Data ID to null, and Extra RATA to false.

Locate another RATA for the system where End Date, End Hour, and End Min are equal to the End Date, End Hour, and End Min of the current TestSummary record.

If found,

set Extra RATA to true, and return result A.

Otherwise,

Locate an unassociated QASupp record for the location where the TestType Code is equal to "RATA", and the Monitoring System ID, End Date, End Hour, and End Min is equal to Monitoring System ID, End Date, End Hour, and End Min of the current TestSummary record, and the TestNum is not equal to the TestNumber in the current TestSummary record,

If found,

set Extra RATA to true, and return result A.

Otherwise,

Locate a QASupp record for the location where the TestTypeCode is equal to "RATA" and the TestNum equal to the TestNumber in the current TestSummary record.

If found,

Set RATA Supp Data ID to the QA Supp Data ID in the QASupp record.

If CAN_SUBMIT in the QA Supp record is equal to "N",

If this is an unassociated QASupp record, and the Monitoring System ID, End Date, End Hour, and End Min in the QASupp record is not equal to Monitoring System ID, End Date, End Hour, or End Min of the current TestSummary record,

return result B.

Otherwise,

return result C.

Results:

Result	Description	Severity
A	Based on the information in this record, this test has already been submitted with a different test number, or the Client Tool database already contains the same test with a different test number. This test cannot be submitted.	Fatal
B	Another [testtype] with this test number has already been submitted for this location. This test cannot be submitted with this test number. If this is a different test, you should assign it a unique test number.	Fatal

C	This test has already been submitted and will not be resubmitted. If you wish to resubmit this test, please contact EPA for approval.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Evaluation *Condition:* Duplicate RATA*Equals* false
2	QA Test Evaluation Report RATA Evaluation (Pass 1)

Check Code: RATA-50

Check Name: Concurrent RATAs

Related Former Checks: RATA-5

Applicability: CEM Check

Specifications:

For a RATA with valid dates and associated SystemTypeCode not equal to "FLOW":

Locate another RATA for the system where the BeginDate, BeginHour, and BeginMinute is before the EndDate, EndHour, and EndMinute of the current test, and the EndDate, EndHour, and EndMinute is after the BeginDate, BeginHour, and BeginMinute of the current test.

If found,

return result A.

If not found,

Locate a n unassociated QA Supp record for the location where the TestTypeCode is equal to "RATA"; the MonitoringSystemID is equal to MonitoringSystemID of the current test; the BeginDate, BeginHour, and BeginMinute is before the EndDate, EndHour, and EndMinute of the current test, and the EndDate, EndHour, and EndMinute is after the BeginDate, BeginHour, and BeginMinute of the current test; and the TestNum is not equal to the TestNumber in the current test.

If found,

return result A.

Results:

Result	Description	Severity
A	This RATA was conducted at the same time as another RATA for the same UnitStackID and MonitoringSystemID.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report RATA Evaluation (Pass 1)
	Condition: Extra RATA*Equals* false
2	QA Test Evaluation Report RATA Evaluation (Pass 1)
	Condition: RATA System Valid*Equals* true

Check Code: RATA-51

Check Name: Determine Overall BAF

Related Former Checks: RATA-23, 29

Applicability: CEM Check

Specifications:

For the RATA:

If RATA Result is equal to "PASSED" or "PASSAPS",

If the associated SystemTypeCode is equal to "FLOW" and RATA Number of Load Levels is greater than 1,

Set Overall BAF to 1 and Bias Passed to true.

For any item in Normal RATA Operating Levels:

If item is equal to "H" and High BAF is greater than 1, or item is equal to "M" and Mid BAF is greater than 1, or item is equal to "L" and Low BAF is greater than 1,

set Bias Passed to false.

If Bias Passed is equal to false,

For each item in RATA Frequently Used Levels:

If item is equal to "H" and High BAF is greater than Overall BAF,

set Overall BAF to High BAF.

If item is equal to "M" and Mid BAF is greater than Overall BAF,

set Overall BAF to Mid BAF.

If item is equal to "L" and Low BAF is greater than Overall BAF,

set Overall BAF to Low BAF.

Otherwise,

If RATA Level List is equal to "H" or "N",

set Overall BAF to High BAF.

If RATA Level List is equal to "M",

set Overall BAF to Mid BAF.

If RATA Level List is equal to "L",

set Overall BAF to Low BAF.

If OverallBiasAdjustmentFactor is null,

return result A.

If OverallBiasAdjustmentFactor is less than 1,

return result B.

If Overall BAF is not equal to OverallBiasAdjustmentFactor,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescriptio is equal to "BAF".

If the absolute value of the difference between the Overall BAF and the OverallBiasAdjustmentFactor in the RATA record is greater than the tolerance in the cross-check record,

return result C.

Otherwise,

set Overall BAF to null.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The [fieldname] for [key] is not within the range of valid values. This value must be equal to or greater than 1.000.	Critical Error Level 1
C	The reported OverallBiasAdjustmentFactor is inconsistent with the BAF recalculated by EPA.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report RATA (Pass 2)

Check Code: RATA-52

Check Name: RATA Frequency Consistent with Calculated Value

Related Former Checks: RATA-14

Applicability: CEM Check

Specifications:

For the RATA:

If RATA Result is equal to "PASSED" or "PASSAPS",

If RATA Frequency is equal to "2QTRS",

Set *CheckDate* to the end date of the quarter two quarters after the EndDate of the test.

else

Set *CheckDate* to the end date of the quarter four quarters after the EndDate of the test.

Locate the Reporting Frequency record for the location with the latest BeginReportingPeriod where the BeginReportingPeriod is on or before the *CheckDate* and the EndReportingPeriod is null or is on or after the *CheckDate* .

If found,

If the ReportingFrequencyCode is equal to "OS" ,

set RATA Frequency to "OS".

If not found,

Locate the earliest Reporting Frequency record for the location where the BeginReportingPeriod is after the *CheckDate* .

If found, and the ReportingFrequencyCode is equal to "OS" ,

set RATA Frequency to "OS".

If RATA Frequency is not equal to "OS",

If the associated SystemTypeCode is equal to "FLOW", RATA Number of Load Levels is equal to 1, and RATA Claim Code is not equal to "SLC" or "PEAK".

Locate a LocationAttribute record for the location where the BypassIndicator is equal to 1, the BeginDate is on or before the BeginDate of the test and the EndDate is null or is on or after the EndDate of the test.

If not found,

Locate a MonitorQualification record where the location is the location in the RATA record, the QualificationTypeCode is equal to "PRATA1", the BeginDate is on or before the BeginDate of the test and the EndDate is null or is on or after the EndDate of the test.

If not found,

set RATA Frequency to "ALTSL".

If RATAFrequencyCode is equal to "8QTRS", RATA Frequency is not equal to "ALTSL", the associated SystemDesignationCode is equal to "B", and the associated SystemTypeCode does not equal "HG" or "ST",

set RATA Frequency to "8QTRS".

If the RATAFrequencyCode is null,

If the TestEndDate is on or after ECMPS MP Begin Date,

return result A.

Otherwise,

return result B.

If the RATAFrequencyCode is not in the RATAFrequencyCode lookup table,

return result C.

If RATA Frequency is not equal to the RATAFrequencyCode,

return result D.

Otherwise,

set RATA Frequency to null.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You did not provide [fieldname] for [key]. This information will be required for ECMPS submissions.	Non-Critical Error
C	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1
D	You reported a RATAFrequencyCode that is different from the value which was calculated from the runs of the RATA.	Non-Critical Error

Usage:

1	QA Test Evaluation Report RATA (Pass 2)

Check Code: RATA-53

Check Name: RATA Results Valid

Related Former Checks: RATA-14, 30

Applicability: CEM Check

Specifications:

For the TestSummary record:

If TestResultCode is null,

return result A.

If TestResultCode is not equal to "PASSED", "PASSAPS", "FAILED", or "ABORTED",

Locate the TestResultCode in the Test Result Code Lookup table,

If not found,

return result B.

If found,

return result C.

If RATA Result is equal to "FAILED",

If TestResultCode is equal to "PASSED" or "PASSAPS",

return result D.

Otherwise,

return result E.

If RATA Result is equal to "PASSED" or "PASSAPS", and the TestResultCode is equal to "FAILED",

return result F.

In the QA Evaluation Process, the RATA Result, RATA Frequency, RATA Number of Load Levels, Overall Relative Accuracy, and Overall BAF will be stored as calculated values in the Test Summary and RATA records for the test, and (for tests that have not yet been submitted or have been approved for resubmission) the appropriate values will be stored in the QA Supp Data and QA Supp Attribute records for the test.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1
C	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1
D	The TestResultCode indicates a passing test, but the relative accuracy recalculated from the run records indicates a failing test.	Critical Error Level 1
E	You reported a failed RATA. Please check to see that the test was repeated and passed.	Informational Message
F	You reported a TestResultCode of "FAILED", but the results recalculated or determined from the other reported values indicate that the test passed.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report RATA (Pass 2)

Check Code: RATA-54

Check Name: Initialize RATA Variables

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA:

Set RATA Result , RATA Non Invalid Result , RATA Level List, RATA Frequency, RATA Claim Code, and Simultaneous RATA Runs to null.

Set Overall Relative Accuracy, High BAF, Mid BAF, Low BAF, High Average Gross Unit Load, Mid Average Gross Unit Load, and Low Average Gross Unit Load to null.

Set Highest RATA Run Number, High Run Count, High Sum Gross Unit Load, High Sum Reference Value, Mid Run Count, Mid Sum Gross Unit Load, Mid Sum Reference Value, Low Run Count, Low Sum Gross Unit Load, Low Sum Reference Value, Load Lower Boundary, and Load Upper Boundary to null.

Set ***RATA Ref Method Code*** to null.

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation
2	QA and Certification Data Entry Screen Evaluation RATA Run Evaluation
3	QA and Certification Data Entry Screen Evaluation RATA Summary Evaluation
4	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation
5	QA and Certification Data Entry Screen Evaluation Test Qualification Evaluation
6	QA Test Evaluation Report RATA Evaluation (Pass 1)

Check Code: RATA-55

Check Name: CO2/O2 Reference Method Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a RATA Summary record with a valid Reference Method:

If ReferenceMethodCode begins with "2F", "2G" or "M2H",

If the CO2OrO2ReferenceMethodCode is null,

return result A.

If the CO2OrO2ReferenceMethodCode is not equal to "3" or "3A",

return result B.

Otherwise,

If the CO2OrO2ReferenceMethodCode is not null,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1
C	You have provided a value for [fieldname] for [key], which is not appropriate for a test using this reference method.	Non-Critical Error

Usage:

1	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Code: RATA-56

Check Name: Stack Diameter Valid

Related Former Checks: RATA-35A

Applicability: CEM Check

Specifications:

For a RATA Summary record with a valid Reference Method:

If ReferenceMethodCode begins with "2F", "2G" or "M2H",

Set RATA Stack Diameter Valid to true.

If StackDiameter is null,

set RATA Stack Diameter Valid to false, and return result A.

If StackDiameter is less than or equal to 0,

set RATA Stack Diameter Valid to false, and return result B.

If ReferenceMethodCode is equal to "2FH", "2GH", or "M2H" and StackDiameter is less than 3.3,

set RATA Stack Diameter Valid to false, and return result C.

Otherwise,

If StackDiameter is not null,

return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
C	The StackDiameter reported for [key] is less than 3.3 feet. A minimum stack or duct diameter of 3.3 feet is required when Method 2H is used for a flow RATA.	Critical Error Level 1
D	You have provided a value for [fieldname] for [key], which is not appropriate for a test using this reference method.	Non-Critical Error

Usage:

1	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Code: RATA-57

Check Name: Stack Area Valid

Related Former Checks: RATA-35B

Applicability: CEM Check

Specifications:

For a RATA Summary record with a valid Reference Method:

If ReferenceMethodCode begins with "2F", "2G" or "M2H",

If StackDiameter is greater than 0,

Calculate RATA Calc Stack Area = (StackDiameter ** 2) * PI / 4.

If StackArea is null,

return result A.

If StackArea is less than or equal to 0,

return result B.

Otherwise,

If the RATA Calc Stack Area is not null,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "StackArea".

If found, and the absolute value of the difference between the RATA Calc Stack Area (rounded to 1 decimal place) and the StackArea is greater than the Tolerance in the cross-check record,

return result C.

Otherwise,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "StackArea (PCT)".

If found, and the absolute value of the percentage difference between the RATA Calc Stack Area (roundec to 1 decimal place) and the StackArea is greater than the Tolerance in the cross-check record,

return result C.

Otherwise,

If StackArea is not null,

return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
C	The StackArea reported for [key] is inconsistent with the recalculated area based on the StackDiameter.	Critical Error Level 1

D	You have provided a value for [fieldname] for [key], which is not appropriate for a test using this reference method.	Non-Critical Error

Usage:

1	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Code: RATA-58

Check Name: Calculated WAF Valid

Related Former Checks: RATA-36, 37B, D, E, 59D, F, 60C

Applicability: CEM Check

Specifications:

For a RATA Summary record with a valid Reference Method:

If CalculatedWAF is null,

If ReferenceMethodCode is equal to "M2H",

set Flow RATA Level Valid to false, and return result A.

If ReferenceMethodCode is equal to "2J", "2FJ", or "2GJ"

set Flow RATA Level Valid to false, and return result B.

If DefaultWAF is null, and ReferenceMethodCode is equal to "2FH" or "2GH",

set Flow RATA Level Valid to false, and return result C.

Otherwise,

If ReferenceMethodCode is equal to "2", "2F", "2G", or "D2H",

set Flow RATA Level Valid to false, and return result D.

If DefaultWAF is not null,

set Flow RATA Level Valid to false, and return result E.

If CalculatedWAF is less than or equal to 0 or greater than 1,

return result F.

If RATA Rectangular Duct WAF is not null, and CalculatedWAF is not equal to RATA Rectangular Duct WAF,

return result G.

Results:

Result	Description	Severity
A	You did not provide a CalculatedWAF for [key]. You must provide a CalculatedWAF for flow reference method code M2H.	Critical Error Level 1
B	You did not report a value in the [fieldname] field for [key]. This value must be provided for a flow RATA using conditional method CTM-041.	Critical Error Level 1
C	You did not provide a CalculatedWAF or a DefaultWAF for [key]. Either a CalculatedWAF or a DefaultWAF must be provided for a flow RATA using method 2H.	Critical Error Level 1
D	You have provided a value for [fieldname] for [key], which is not appropriate for a test using this reference method.	Critical Error Level 1
E	You provided both a CalculatedWAF and a DefaultWAF for [key]. A CalculatedWAF and a DefaultWAF cannot both be applied to the same RATA.	Critical Error Level 1
F	You reported an invalid value in the CalculatedWAF field for [key]. A WAF must be greater than 0 and less than or equal to 1.	Critical Error Level 1

G	The value reported in the [fieldname] field for [key] is not equal to the [fieldname2] in the active RectangularDuctWAF record for the location.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Code: RATA-59

Check Name: Default WAF Valid

Related Former Checks: RATA-37A, 37C, 54

Applicability: CEM Check

Specifications:

For a RATA Summary record with a valid Reference Method:

IF Default WAF is null,

If ReferenceMethodCode is equal to "D2H",

set Flow RATA Level Valid to false, and return result A.

Otherwise,

If ReferenceMethodCode is not equal to "2FH", "2GH", or "D2H",

set Flow RATA Level Valid to false, and return result B.

Otherwise,

If the EndDate of the test is valid,

Locate all LocationAttribute records for the location where the BeginDate is on or before the TestEndDate and the EndDate is null or is on or after the TestEndDate.

If found, and all the MaterialCodes in the retrieved records are all equal to "BRICK" or all equal to "OTHER",

If the MaterialCode is equal to "BRICK",

If the DefaultWAF is not equal to 0.9900,

set Flow RATA Level Valid to false, and return result C.

Otherwise,

If the DefaultWAF is not equal to 0.9950,

set Flow RATA Level Valid to false, and return result D.

Otherwise,

If the EndDate of the test is on or after ECMPS MP Begin Date,

set Flow RATA Level Valid to false, and return result E.

Otherwise,

If the DefaultWAF is not equal to 0.9900 or .9950,

set Flow RATA Level Valid to false, and return result F.

Results:

Result	Description	Severity
A	You did not provide a DefaultWAF for [key]. You must provide a DefaultWAF for flow reference method code D2H.	Critical Error Level 1

B	You have provided a value for [fieldname] for [key], which is not appropriate for a test using this reference method.	Critical Error Level 1
C	You reported a DefaultWAF that was not equal to 0.9900 for [key]. A DefaultWAF of .9900 is the only allowable value for brick and mortar stacks.	Critical Error Level 1
D	You reported a DefaultWAF that was not equal to 0.9950 for [key]. A DefaultWAF of .9950 is the only allowable value for non-brick-and-mortar stacks.	Critical Error Level 1
E	The software cannot determine the MaterialCode for the stack in an active Location Attribute record. The software cannot determine if you reported a valid DefaultWAF for [key].	Critical Error Level 1
F	You reported a DefaultWAF that was not equal to 0.9900 or 0.9950 for [key]. A DefaultWAF of .9900 or .9950 are the only allowable values.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Code: RATA-60

Check Name: Reference Method Consistent with Rectangular Duct WAF Reporting

Related Former Checks: RATA-59A, B, 60A

Applicability: CEM Check

Specifications:

For a RATA Summary record:

Set RATA WAF Test Traverse Point Count to null and RATA Rectangular Duct WAF to null.

If Reference Method and TestEndDate are valid AND the associated SystemTypeCode is equal to "FLOW":

Locate a RectangularDuctWAF record for the location where the WAFEffectiveDate is on or before the TestEndDate and the EndDate is null or is on or after the TestEndDate.

If found,

If the ReferenceMethodCode is not equal to "2J", "2FJ", or "2GJ",

return result A.

If WAFValue in the retrieved record is greater than 0 and less than or equal to 1,

set RATA Rectangular Duct WAF to WAFValue.

If NumberofTraversePointsWAF in the retrieved record is between 12 and 99,

set RATA WAF Test Traverse Point Count to NumberOfTraversePointsWAF.

Otherwise,

If the ReferenceMethodCode is equal to "2J", "2FJ", or "2GJ",

return result B.

Results:

Result	Description	Severity
A	You have reported a ReferenceMethodCode for [key] that does not indicate the use of a rectangular duct WAF, but you have reported a RectangularDuctWAF record for the location. If you use a rectangular duct WAF, you must report a reference method of2J, 2FJ, or 2GJ.	Informational Message
B	You have reported a ReferenceMethodCode for [key] that indicates the use of a rectangular duct WAF, but you have not reported an active RectangularDuctWAF record for the location.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Code: RATA-61

Check Name: Number of Traverse Points Valid

Related Former Checks: RATA-59E, 60B

Applicability: CEM Check

Specifications:

For a RATA Summary record with a valid Reference Method:

If NumberOfTraversePoints is null,

If ReferenceMethodCode is equal to "2FJ", "2GJ", or "2J"

return result A.

Otherwise,

If ReferenceMethodCode is not equal to "2FJ", "2GJ", or "2J"

return result B.

If NumberOfTraversePoints is not between 12 and 99,

return result C.

If RATA WAF Test Traverse Point Count is not null, and is not equal to the NumberOfTraversePoints,

return result D.

Results:

Result	Description	Severity
A	You did not report a value in the [fieldname] field for [key]. This value must be provided for a flow RATA using conditional method CTM-041.	Critical Error Level 1
B	You have provided a value for [fieldname] for [key], which is not appropriate for a test using this reference method.	Critical Error Level 1
C	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1
D	The value reported in the [fieldname] field for [key] is not equal to the [fieldname2] in the active RectangularDuctWAF record for the location.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Code: RATA-62

Check Name: Initialize Flow Run Variables

Related Former Checks:

Applicability: CEM Check

Specifications:

For a Flow RATA run:

Set Last RATA Traverse Point ID and RATA Probe Types to null.

Set RATA Sum Velocity, RATA Sum Adjusted Velocity, RATA Sum Temperature, RATA Traverse Point Count, RATA Replacement Point Count, and RATA Minimum Wall Points to 0.

Set RATA Traverse Point ID Valid, RATA Calculated WAF Valid, and RATA Wall Points Consistent to true.

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation
2	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation
3	QA Test Evaluation Report --------- Flow RATA Run (Pass 1)

Check Code: RATA-63

Check Name: Barometric Pressure Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Flow RATA Run:

If BarometricPressure is null,

set Flow RATA Run Valid to false, and return result A.

If BarometricPressure less than 20 or greater than 35,

set Flow RATA Run Valid to false, and return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation
2	QA Test Evaluation Report --------- Flow RATA Run (Pass 1)

Check Code: RATA-64

Check Name: Static Stack Pressure Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Flow RATA Run record:

Set RATA Calc Stack Pressure to null.

If StackStaticPressure is null,

set Flow RATA Run Valid to false, and return result A.

If StaticStackPressure is less than - 3 0 or greater than 3 0,

set Flow RATA Run Valid to false, and return result B.

Otherwise,

If BarometricPressure is greater than or equal to 20 and is less than or equal to 35,

Calculate RATA Calc Stack Pressure = BarometricPressure + (StackStaticPressure / 13.6).

If StaticStackPressure is less than - 1 0 or greater than 1 0,

return result C .

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1
C	The value [value] in the StackStaticPressure for [key] is outside the range of normally expected values. Please correct this value if it has been reported in error.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation
2	QA Test Evaluation Report --------- Flow RATA Run (Pass 1)

Check Code: RATA-65

Check Name: Percent CO2 Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Flow RATA Run record:

Set RATA Percent CO2 Valid to true.

If PercentCO2 is null,

set RATA Percent CO2 Valid and Flow RATA Run Valid to false, and return result A.

If PercentCO2 is less than or equal to 0 or greater than 20.0,

set RATA Percent CO2 Valid and Flow RATA Run Valid to false, and return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation
2	QA Test Evaluation Report --------- Flow RATA Run (Pass 1)

Check Code: RATA-66

Check Name: Percent O2 Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Flow RATA Run record:

Set RATA Percent O2 Valid to true.

If PercentO2 is null,

set RATA Percent O2 Valid and Flow RATA Run Valid to false, and return result A.

If PercentO2 is less than or equal to 0 or greater than 22.0,

set RATA Percent O2 Valid and Flow RATA Run Valid to false, and return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation
2	QA Test Evaluation Report --------- Flow RATA Run (Pass 1)

Check Code: RATA-67

Check Name: Percent Moisture Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Flow RATA Run record:

Set RATA Percent Moisture Valid to true.

If PercentMoisture is null,

set RATA Percent Moisture Valid and Flow RATA Run Valid to false, and return result A.

If PercentMoisture is less than or equal to 0 or greater than 75.0,

set RATA Percent Moisture Valid and Flow RATA Run Valid to false, and return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation
2	QA Test Evaluation Report --------- Flow RATA Run (Pass 1)

Check Code: RATA-68

Check Name: Dry Molecular Weight Valid

Related Former Checks: RATA-38A

Applicability: CEM Check

Specifications:

For the Flow RATA Run record:

Set RATA Calc Dry Molecular Weight to null.

If RATA Percent CO2 and RATA Percent O2 are valid,

Calculate RATA Calc Dry Molecular Weight = (.44 * PercentCO2) + (.32 * PercentO2) + (.28 * (100 - PercentCO2 - PercentO2)).

If DryMolecularWeight is null,

return result A.

If DryMolecularWeight is less than 25 or greater than 35,

return result B.

If RATA Calc Dry Molecular Weight is not null,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "MolecularWeight".

If the absolute value of the difference between the DryMolecularWeight and the RATA Calc Dry Molecular Weight (rounded to two decimal places) is greater than the tolerance in the cross-check record,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1
C	The DryMolecularWeight is inconsistent with the value recalculated from the data reported for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation
2	QA Test Evaluation Report --------- Flow RATA Run (Pass 1)

Check Code: RATA-69

Check Name: Wet Molecular Weight Valid

Related Former Checks: RATA-38B

Applicability: CEM Check

Specifications:

For the Flow RATA Run record:

Set RATA Calc Wet Molecular Weight to null.

If RATA Percent CO2 Valid, RATA Percent O2 Valid, and RATA Percent Moisture Valid are true,

Calculate RATA Calc Wet Molecular Weight = (RATA Calc Dry Molecular Weight * (1 - (PercentMoisture / 100))) + (18 * (PercentMoisture / 100)).

If WetMolecularWeight is null,

return result A.

If WetMolecularWeight is less than 25 or greater than 35,

return result B.

If RATA Calc Wet Molecular Weight is not null,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "MolecularWeight".

If the absolute value of the difference between the WetMolecularWeight and the RATA Calc Wet Molecular Weight (rounded to two decimal places) is greater than the tolerance in the cross-check record,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1
C	The WetMolecularWeight is inconsistent with the value recalculated from the data reported for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation
2	QA Test Evaluation Report --------- Flow RATA Run (Pass 1)

Check Code: RATA-70

Check Name: Method Traverse Point ID Valid

Related Former Checks: RATA-40

Applicability: CEM Check

Specifications:

For the RATA Traverse record:

Add 1 to RATA Traverse Point Count.

If the MethodTraversePointID is null,

return result A.

If the MethodTraversePointID is equal to the Last RATA Traverse Point ID,

return result B.

Otherwise,

set Last RATA Traverse Point ID to the MethodTraversePointID.

If RATA Traverse Point ID Valid is equal to true, and the MethodTraversePointID is less than 3 characters or contains non-alphanumeric characters other than "-",

set RATA Traverse Point ID Valid to false, and return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	The RATA Traverse record for [key] contains the same TraversePointID as another record in the run.	Critical Error Level 1
C	The RATA Traverse record for this run contains invalid Traverse Point IDs. All Traverse Point IDs must consist of three alpha-numeric characters. See [key].	Non-Critical Error

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation
2	QA Test Evaluation Report ---------- RATA Traverse Point

Check Code: RATA-71

Check Name: Probe ID Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA Traverse record:

If ProbeID is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation
2	QA Test Evaluation Report ---------- RATA Traverse Point

Check Code: RATA-72

Check Name: Probe Type Valid

Related Former Checks: RATA-41B, C, D

Applicability: CEM Check

Specifications:

For the RATA Traverse record:

Set RATA Traverse Valid to true.

If ProbeTypeCode is null,

set RATA Traverse Valid to false, and return result A.

Otherwise,

Append ProbeTypeCode to RATA Probe Types.

If ProbeTypeCode is an item in the list of RATA Invalid Probes,

set RATA Traverse Valid to false.

Otherwise,

If ReferenceMethodCode begins with "2F",

If ProbeTypeCode is not equal to "PRISM", "PRISM-T", or "SPHERE",

append ProbeTypeCode to RATA Invalid Probes, set RATA Traverse Valid to false, and return result B.

If ReferenceMethodCode begins with "2G",

If ProbeTypeCode is equal to "PRANDT1",

append ProbeTypeCode to RATA Invalid Probes, set RATA Traverse Valid to false, and return result B.

If ReferenceMethodCode is equal to "M2H",

If ProbeTypeCode is not equal to "TYPE-SA", "TYPE-SM" or "PRANDT1",

append ProbeTypeCode to RATA Invalid Probes, set RATA Traverse Valid to false, and return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The ProbeTypeCode [value] in the RATA Traverse record for [key] is not appropriate for a RATA using reference method [method].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation
2	QA Test Evaluation Report ---------- RATA Traverse Point

Check Code: RATA-73

Check Name: Pressure Measure Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA Traverse record:

If the PressureMeasureCode is null,

return result A.

If the PressureMeasureCode is not in the PressureMeasureCode lookup table,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation
2	QA Test Evaluation Report ---------- RATA Traverse Point

Check Code: RATA-74

Check Name: Velocity Calibration Coefficient Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATATraverse record:

If VelocityCalibrationCoefficient is null,

set RATA Traverse Valid to false, and return result A.

If VelocityCalibrationCoefficient is less than 0.5 or greater than 1.5,

set RATA Traverse Valid to false, and return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation
2	QA Test Evaluation Report ---------- RATA Traverse Point

Check Code: RATA-75

Check Name: Last Probe Calibration Date Valid

Related Former Checks: RATA-42

Applicability: CEM Check

Specifications:

For the RATA Traverse record:

If LastProbeDate is null,

return result A.

If the Begin Date of the associated RATA run is not null,

If LastProbeDate is after the BeginDate of the associated run,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The LastProbeDate for [key] does not precede the BeginDate of the run.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation
2	QA Test Evaluation Report ---------- RATA Traverse Point

Check Code: RATA-76

Check Name: Velocity Differential Pressure Valid

Related Former Checks: RATA-43

Applicability: CEM Check

Specifications:

For each RATA Traverse record:

If AvgVelDiffPressure and AvgSquareVelDiffPressure are both null,

set RATA Traverse Valid to false, and return result A.

If AvgVelDiffPressure and AvgSquareVelDiffPressure are both not null,

set RATA Traverse Valid to false, and return result B.

Results:

Result	Description	Severity
A	You did not provide either an AvgVelDiffPressure or AvgSquareVelDiffPressure for [key].	Critical Error Level 1
B	You provided both an AvgVelDiffPressure and AvgSquareVelDiffPressure for [key]. Report only one of these two values for each traverse point.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation
2	QA Test Evaluation Report ---------- RATA Traverse Point

Check Code: RATA-77

Check Name: Stack Temperature Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA Traverse record:

If TStackTemperature is null,

set RATA Traverse Valid to false, and return result A.

If TStackTemperature is less than 0 or greater than 1000,

set RATA Traverse Valid to false, and return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation
2	QA Test Evaluation Report ---------- RATA Traverse Point

Check Code: RATA-78

Check Name: Yaw Angle Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA Traverse record:

If the associated ReferenceMethodCode for the run begins with "2F" or "2G",

If YawAngle is null,

set RATA Traverse Valid to false, and return result A.

If YawAngle is less than -90 or greater than 90,

set RATA Traverse Valid to false, and return result B.

If the associated ReferenceMethodCode for the run is not null,

If YawAngle is not null,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1
C	You have provided a value for [fieldname] for [key], which is not appropriate for a test using this reference method.	Non-Critical Error

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation
2	QA Test Evaluation Report ---------- RATA Traverse Point

Check Code: RATA-79

Check Name: Pitch Angle Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA Traverse record:

Set RATA Traverse Validity Determined to true.

If the associated ReferenceMethodCode for the run begins with "2F",

If PitchAngle is null,

set RATA Traverse Valid to false, and return result A.

If PitchAngle is less than -90 or greater than 90,

set RATA Traverse Valid to false, and return result B.

If the associated ReferenceMethodCode for the run is not null,

If PitchAngle is not null,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1
C	You have provided a value for [fieldname] for [key], which is not appropriate for a test using this reference method.	Non-Critical Error

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation
2	QA Test Evaluation Report ---------- RATA Traverse Point

Check Code: RATA-80

Check Name: Calculate Traverse Point Velocity Without Wall Effects

Related Former Checks: RATA-45A/B

Applicability: CEM Check

Specifications:

For the RATA Traverse record.

Set RATA Traverse Calc Velocity to null.

If either the RATA Calc Stack Pressure or the RATA Calc Wet Molecular Weight is null,

If RATA Sum Velocity is not null,

set RATA Sum Velocity to null, and return result A.

Otherwise,

If RATA Traverse Valid is equal to false,

set RATA Sum Velocity to null, set Flow RATA Run Valid to false, and return result B.

Othe r wise,

If AvgVelDiffPressure is not null,

If the associated ReferenceMethodCode begins with "2F",

Calculate RATA Traverse Calc Velocity = 85.49 * VelocityCalibrationCoefficient * sqrt (AvgVelDiffPressure * (TStackTemperature + 460) / RATA Calc Stack Pressure / RATA Calc Wet Molecular Weight) * cos(YawAngle) * cos(PitchAngle).

If the associated ReferenceMethodCode begins with "2G",

Calculate RATA Traverse Calc Velocity = 85.49 * VelocityCalibrationCoefficient * sqrt (AvgVelDiffPressure * (TStackTemperature + 460) / RATA Calc Stack Pressure / RATA Calc Wet Molecular Weight) * cos(YawAngle) .

Otherwise,

Calculate RATA Traverse Calc Velocity = 85.49 * VelocityCalibrationCoefficient * sqrt (AvgVelDiffPressure * (TStackTemperature + 460) / RATA Calc Stack Pressure / RATA Calc Wet Molecular Weight).

Otherwise

If the associated ReferenceMethodCode begins with "2F",

Calculate RATA Traverse Calc Velocity = 85.49 * VelocityCalibrationCoefficient * AvgSquareVelDiffPressure *sqrt((TStackTemperature + 460) / RATA Calc Stack Pressure / RATA Calc Wet Molecular Weight) * cos(YawAngle) * cos(PitchAngle).

If the associated ReferenceMethodCode begins with "2G",

Calculate RATA Traverse Calc Velocity = 85.49 * VelocityCalibrationCoefficient * AvgSquareVelDiffPressure *sqrt((TStackTemperature + 460) / RATA Calc Stack Pressure / RATA Calc Wet Molecular Weight) * cos(YawAngle).

Otherwise,

Calculate RATA Traverse Calc Velocity = 85.49 * VelocityCalibrationCoefficient * AvgSquareVelDiffPressure *sqrt((TStackTemperature + 460) / RATA Calc Stack Pressure / RATA Calc Wet Molecular Weight).

Add RATA Traverse Calc Velocity to RATA Sum Velocity.

Add TStackTemperature to RATA Sum Temperature.

If the associated ReferenceMethodCode for the run is equal to "2FH", "2GH", or "M2H", and the PointUsedIndicator is not equal to 1,

add RATA Traverse Calc Velocity to RATA Sum Adjusted Velocity.

Results:

Result	Description	Severity
A	Recalculation of the CalculatedVelocity for all traverse points for operating level [level], run number [number] was not performed because of the errors listed above.	Informational Message
B	Recalculation of the CalculatedVelocity for [key] was not performed because of the errors listed above.	Informational Message

Usage:

1	QA Test Evaluation Report ---------- RATA Traverse Point

Check Code: RATA-81

Check Name: Exterior Method 1 Traverse Point Identifier Valid

Related Former Checks: RATA-44A, B, C

Applicability: CEM Check

Specifications:

For the RATATraverse record:

If PointUsedIndicator is equal to 1,

If associated ReferenceMethodCode for the run is equal to "2FH", "2GH", or "M2H",

If ReplacementVelocity is null,

If the associated ReferenceMethodCode is equal to "M2H", or the associated DefaultWAF is null,

set RATA Calculated WAF Valid to false, and return result A.

Otherwise,

return result B.

Otherwise,

add 1 to RATA Replacement Point Count.

If associated ReferenceMethodCode for the run is not equal to null,

return result C.

Results:

Result	Description	Severity
A	You reported a value of 1 as the PointUsedIndicator for [key], but did not provide the ReplacementVelocity. The software cannot determine if this traverse point should be used to recalculate a wall effects adjustment factor for this run.	Critical Error Level 1
B	You reported a value of 1 as the PointUsedIndicator for [key], but did not provide the ReplacementVelocity.	Non-Critical Error
C	You have provided a value for [fieldname] for [key], which is not appropriate for a test using this reference method.	Non-Critical Error

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation
2	QA Test Evaluation Report ---------- RATA Traverse Point

Check Code: RATA-82

Check Name: Number of Wall Effects Points Valid

Related Former Checks: RATA-44D, E

Applicability: CEM Check

Specifications:

For the RATATraverse record:

If the associated ReferenceMethodCode for the run is equal to "2FH", "2GH", or "M2H",

If PointUsedIndicator is equal to 1,

If NumberWallEffectsPoints is null or is less than 2,

If the associated ReferenceMethodCode for the run is equal to "M2H" or the associated DefaultWAF is null,

set RATA Calculated WAF Valid to false, and return result A.

Otherwise,

return result B.

Otherwise,

If RATA Minimum Wall Points is equal to 0 or is equal to NumberWallEffectsPoints,

set RATA Minimum Wall Points to NumberWallEffectsPoints.

Otherwise,

set RATA Wall Points Consistent to false.

If RATA Minimum Wall Points is greater than Number Wall Effects Points,

set RATA Minimum Wall Points to NumberWallEffectsPoints.

Otherwise,

If NumberWallEffectsPoints is not null,

return result C.

If the associated ReferenceMethodCode for the run is not null,

If NumberWallEffectsPoints is not null,

return result D.

Results:

Result	Description	Severity
A	You reported a value of 1 as the PointUsedIndicator for [key], but you did not report a valid value as the NumberWallEffectsPoints. Measurements at two or more wall effects points are required to determine a replacement velocity for an exterior method 1 traverse point. The software cannot determine if this traverse point should be used to recalculate a wall effects adjustment factor for this run.	Critical Error Level 1
B	You reported a value of 1 as the PointUsedIndicator for [key], but you did not report a valid value as the NumberWallEffectsPoints. Measurements at two	Non-Critical Error

	or more wall effects points are required to determine a replacement velocity for an exterior method 1 traverse point.	
C	You reported a value in the NumberWallEffectsPoints for [key]. A value should only be reported in this field if the PointUsedIndicator indicates that this is an exterior Method1 traverse point used to calculate a replacement velocity.	Non-Critical Error
D	You have provided a value for [fieldname] for [key], which is not appropriate for a test using this reference method.	Non-Critical Error

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation
2	QA Test Evaluation Report ---------- RATA Traverse Point

Check Code: RATA-83

Check Name: Replacement Velocity Valid

Related Former Checks: RATA-46

Applicability: CEM Check

Specifications:

For the RATATraverse record:

Set RATA Adjusted Velocity Determined to true.

If the associated ReferenceMethodCode for the run is equal to "2FH", "2GH", or "M2H",

If the PointUsedIndicator is equal to 1,

If the ReplacementVelocity is null,

set RATA Calculated WAF Valid to false, and return result A.

If the ReplacementVelocity is less than or equal to 0,

set RATA Calculated WAF Valid to false, and return result B.

Otherwise,

add ReplacementVelocity to RATA Sum Adjusted Velocity.

Otherwise,

If the ReplacementVelocity is not null,

If the associated ReferenceMethodCode for the run is equal to "M2H" or the associated DefaultWAF is null,

set RATA Calculated WAF Valid to false, and return result C.

Otherwise,

return result D.

If the associated ReferenceMethodCode for the run is not null,

If the ReplacementVelocity is not null,

return result E.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
C	You reported a ReplacementVelocity for [key], but did not identify this traverse point as an exterior method 1 traverse point. The software cannot determine if this traverse point should be used to recalculate a wall effects adjustment factor for this run.	Critical Error Level 1
D	You reported a ReplacementVelocity for [key], but did not identify this traverse point as an exterior method 1 traverse point.	Non-Critical Error
E	You have provided a value for [fieldname] for [key], which is not appropriate	Non-Critical Error

for a test using this reference method.

Usage:

1 QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation

2 QA Test Evaluation Report ---------- RATA Traverse Point

Check Code: RATA-84

Check Name: Calculated Velocity Valid

Related Former Checks: RATA-45C

Applicability: CEM Check

Specifications:

For the RATA Traverse record:

If CalculatedVelocity is null,

return result A.

If CalculatedVelocity is less than or equal to 0,

return result B.

If RATA Traverse Calc Velocity is not null,

Calculate RATA Traverse Calc Velocity = min(RATA Traverse Calc Velocity, 9999.99), rounded to 2 decimal places. (I QA Evaluation process, store this value in the RATA Traverse record.)

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "Velocity".

If found, and the absolute value of the difference between the RATA Traverse Calc Velocity and the CalculatedVelocity is greater than the Tolerance in the cross-check record,

return result C.

Otherwise,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescriptio is equal to "Velocity (PCT)".

If found, and the absolute value of the percentage difference between the RATA Traverse Calc Velocity and the CalculatedVelocity is greater than the Tolerance in the cross-check record,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
C	The [fieldname] for [key] reported is not within 0.5% of the value calculated from run and point data reported in Flow RATA Run and RATA Traverse records.	Critical Error Level 1

Usage:

1 QA Test Evaluation Report ---------- RATA Traverse Point

Condition: RATA Adjusted Velocity Determined *Equals* true

Check Code: RATA-85

Check Name: Number of Traverse Points Valid

Related Former Checks: RATA-39, 47

Applicability: CEM Check

Specifications:

For the Flow RATA Run:

If RATA Stack Diameter Valid is equal to false,

set Flow RATA Run Valid to false.

Set Calculate Run Velocity to Flow RATA Run Valid.

If NumberOfTraversePoints is null,

set Calculate Run Velocity and Flow RATA Level Valid to false, and return result A.

If NumberOfTraversePoints is less than 12,

set Calculate Run Velocity and Flow RATA Level Valid to false, and return result B.

If the associated ReferenceMethodCode for the run is equal to "2FH", "2GH", or "M2H", and the RATA Replacement Point Count is greater than 0, and NumberOfTraversePoints is less than 16,

set Calculate Run Velocity and Flow RATA Run Valid to false, and return result C.

If RATA Traverse Point Count is greater than or equal to 0,

If NumberOfTraversePoints is not equal to RATA Traverse Point Count,

set Calculate Run Velocity and Flow RATA Run Valid to false, and return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The NumberOfTraversePoints reported for [key] is less than the minimum value of 12.	Critical Error Level 1
C	The NumberOfTraversePoints reported for [key] is less than 16. A minimum of 16 traverse points is required for a flow RATA run in which method 2H is used to calculate a wall effects adjustment factor.	Critical Error Level 1
D	The NumberOfTraversePoints reported for [key] does not correspond to the number of traverse points identified in RATA Traverse records.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation
2	QA Test Evaluation Report --------- Flow RATA Run (Pass 2)

Check Code: RATA-87

Check Name: Calculate Average Run Velocity Without Wall Effects

Related Former Checks: RATA-48

Applicability: CEM Check

Specifications:

For the Flow RATA Run:

If Calculate Run Velocity is equal to false,

If RATA Calculated WAF Valid is equal to true,

return result A.

Otherwise

return result B.

Otherwise,

Calculate RATA Calc Average Velocity = RATA Sum Velocity / NumberOfTraversePoints.

If the associated ReferenceMethodCode begins with "2F", and the RATA Calc Average Velocity (rounded to 2 decimal places) is less than 20,

set Flow RATA Run Valid to false, and return result C.

Results:

Result	Description	Severity
A	Recalculation of the AvgVelocityWithoutWallEffects and AverageStackFlowRate for [key] was not performed because of the errors listed above.	Informational Message
B	Recalculation of the AvgVelocityWithoutWallEffects, AverageVelocityWithWallEffects, CalculatedWAF, and AverageStackFlowRate for [key] was not performed because of the errors listed above.	Informational Message
C	The average velocity for [key] recalculated from the values in Flow RATA Run and RATA Traverse records is less than 20 ft/sec. A minimum average velocity of 20.0 ft/sec is required to use Method 2F for a flow RATA. Recalculation of the average stack flow for this run was not performed.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --------- Flow RATA Run (Pass 2)

Check Code: RATA-88

Check Name: Calculate Average Run Velocity With Wall Effects and Calculated WAF

Related Former Checks: RATA-50A/B

Applicability: CEM Check

Specifications:

For a Flow RATA Run record:

Set RATA Calc Calculated WAF and RATA Calc Average Adjusted Velocity to null.

If the associated reference method code is equal to "2FH", "2GH", or "M2H", the associated DefaultWAF is null, and the RATA Replacement Point Count is greater than 0,

If Calculate Run Velocity is equal to false,

set RATA Calculated WAF Valid to false.

Otherwise,

If RATA Calculated WAF Valid is equal to false,

return result A.

If the RATA Replacement Point Count is not equal to 4,

set RATA Calculated WAF Valid to false, and return result B.

Otherwise,

Calculate RATA Calc Average Adjusted Velocity = RATA Sum Adjusted Velocity / NumberOfTraversePoints.

Calculate RATA Calc Calculated WAF = RATA Calc Average Adjusted Velocity / RATA Calc Average Veloc

Results:

Result	Description	Severity
A	Recalculation of the AverageVelocityWithWallEffects and the CalculatedWAI for [key] was not performed because of the errors listed above.	Informational Message
B	You identified [key] as a run to be used in the calculation of a wall effects adjustment factor, but you did not identify the correct number of exterior method 1 traverse points for this run. Four exterior method 1 traverse points are required to calculate a wall effects adjustment factor. Recalculation of the AverageVelocityWithWallEffects and CalculatedWAF was not performed.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --------- Flow RATA Run (Pass 2)

Check Code: RATA-89

Check Name: Average Run Velocity with Wall Effects Valid

Related Former Checks: RATA-49, 50 C/D

Applicability: CEM Check

Specifications:

For the Flow RATA Run record:

If the associated ReferenceMethodCode is equal to "2FH", "2GH", or "M2H",

If RATA Calc Average Adjusted Velocity is not null,

Calculate RATA Calc Average Adjusted Velocity = min(RATA Calc Average Velocity, 9999,99), rounded to 2 decimal places.

If the AverageVelocityWithWallEffects is null,

If the RATA Replacement Point Count is greater than 0,

return result A.

Otherwise,

If the RATA Replacement Point Count is equal to 0,

return result B.

Otherwise,

If RATA Calc Average Adjusted Velocity is not null,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "Velocity".

If found, and the absolute value of the difference between the RATA Calc Average Adjusted Velocity and the AverageVelocityWithWallEffects is greater than the Tolerance in the cross-check record,

return result C.

Otherwise,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "Velocity (PCT)".

If found, and the absolute value of the percentage difference between the RATA Calc Average Adjusted Velocity and the AverageVelocityWithWallEffects is greater than the Tolerance in the cross-check record,

return result C.

Otherwise,

If the AverageVelocityWithWallEffects is not null,

return result D.

Results:

Result	Description	Severity

A	You identified [key] as a run to be used in the calculation of a wall effects adjustment factor, but you did not report a [fieldname].	Critical Error Level 1
B	You reported [fieldname] for [key], but you did not identify any exterior method 1 traverse points for this run. Four exterior method 1 traverse points are required to calculate a [fieldname].	Non-Critical Error
C	The [fieldname] for [key] reported is not within 0.5% of the value calculated from run and point data reported in Flow RATA Run and RATA Traverse records.	Critical Error Level 1
D	You have provided a value for [fieldname] for [key], which is not appropriate for a test using this reference method.	Non-Critical Error

Usage:

1	QA Test Evaluation Report --------- Flow RATA Run (Pass 2)

Check Code: RATA-90

Check Name: Average Velocity Without Wall Effects Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Flow RATA Run record:

If RATA Calc Dry Molecular Weight is not null,

Calculate RATA Calc Dry Molecular Weight = min(RATA Calc Dry Molecular Weight, 999.99), rounded to 2 decimal places.

If RATA Calc Wet Molecular Weight is not null,

Calculate RATA Calc Wet Molecular Weight = min(RATA Calc Wet Molecular Weight, 999.99), rounded to 2 decimal places.

If RATA Calc Average Velocity is not null,

Calculate RATA Calc Average Velocity = min(RATA Calc Average Velocity, 9999.99), rounded to 2 decimal places.

If AvgVelocityWithoutWallEffects is null,

return result A.

If AvgVelocityWithoutWallEffects is less than or equal to 0,

return result B.

If Calculate Run Velocity is equal to true,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "Velocity".

If found, and the absolute value of the difference between the RATA Calc Average Velocity and the AvgVelocityWithoutWallEffects is greater than the Tolerance in the cross-check record,

return result C.

Otherwise,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescriptio is equal to "Velocity (PCT)".

If found, and the absolute value of the percentage difference between the RATA Calc Average Velocity and the AvgVelocityWithoutWallEffects is greater than the Tolerance in the cross-check record,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
C	The [fieldname] for [key] reported is not within 0.5% of the value calculated from run and point data reported in Flow RATA Run and RATA Traverse	Critical Error Level 1

records.

Usage:

1 QA Test Evaluation Report --------- Flow RATA Run (Pass 2)

Check Code: RATA-91

Check Name: Calculate Adjusted WAF for the Run

Related Former Checks: RATA-50G

Applicability: CEM Check

Specifications:

For a Flow RATA Run:

Set RATA Adjusted WAF Determined to true.

If Flow RATA Level Valid is true,

If the RATA Calculated WAF Valid is false,

set Flow RATA Level Valid to false.

Otherwise,

If NumberOfTraversePoints is greater than the RATA Maximum Traverse Point Count for All Runs,

set RATA Maximum Traverse Point Count for All Runs to NumberOfTraversePoints.

If RATA Calc Calculated WAF is not null,

Add 1 to RATA WAF Run Count.

If NumberOfTraversePoints is less than the RATA Minimum Traverse Point Count,

set RATA Minimum Traverse Point Count to NumberOfTraversePoints.

If NumberOfTraversePoints is greater than the RATA Maximum Traverse Point Count,

set RATA Maximum Traverse Point Count to NumberOfTraversePoints.

If RATA Calc Calculated WAF is greater than .9800,

add RATA Calc Calculated WAF to RATA Sum WAF.

Otherwise,

If RATA Stack Diameter Valid is true,

Calculate wallpoints = min(int (6 * StackDiameter * (1 - sqrt(1 - (4 / NumberOfTraversePoints)))), 12)

If StackDiameter >= 16.5,

add 1 to wallpoints.

If wallpoints <= RATA Minimum Wall Points,

If RATA Calc Calculated WAF is greater than .9700,

add RATA Calc Calculated WAF to RATA Sum WAF.

Otherwise,

add .9700 to RATA Sum WAF.

Otherwise,

add .9800 to RATA Sum WAF.

If RATA Wall Points Consistent is equal to false,

return result A.

Results:

Result	Description	Severity
A	The NumberWallEffectsPoints reported in the RATA Traverse records for [key] are inconsistent. Therefore, it is assumed that a partial wall effects traverse was performed.	Informational Message

Usage:

1	QA Test Evaluation Report --------- Flow RATA Run (Pass 2)

Check Code: RATA-92

Check Name: Calculated WAF for the Run Valid

Related Former Checks: RATA-50E, F

Applicability: CEM Check

Specifications:

For the Flow RATA Run record:

If the associated ReferenceMethodCode is not equal to "2FH", "2GH", or "M2H",

If the CalculatedWAF is not null,

return result A.

Otherwise,

If RATA Calc Sum WAF is not null,

Calculate RATA Calc Calculated WAF = min(RATA Sum WAF, 99.9999), rounded to 4 decimal places.

If the CalculatedWAF is null,

If the RATA Replacement Point Count is greater than 0,

return result B.

Otherwise,

If the RATA Replacement Point Count is equal to 0,

return result C.

Otherwise,

If RATA Sum WAF is not null,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "WAF".

If found, and the absolute value of the difference between the RATA Sum WAF and the CalculatedWAF i greater than the Tolerance in the cross-check record,

return result D.

Results:

Result	Description	Severity
A	You have provided a value for [fieldname] for [key], which is not appropriate for a test using this reference method.	Non-Critical Error
B	You identified [key] as a run to be used in the calculation of a wall effects adjustment factor, but you did not report a [fieldname].	Critical Error Level 1
C	You reported [fieldname] for [key], but you did not identify any exterior method 1 traverse points for this run. Four exterior method 1 traverse points are required to calculate a [fieldname].	Non-Critical Error
D	The reported CalculatedWAF for [key] is inconsistent with the value recalculated from the velocity values.	Critical Error Level 1

Usage:

1 QA Test Evaluation Report --------- Flow RATA Run (Pass 2)

Condition: RATA Adjusted WAF Determined *Equals* true

Check Code: RATA-93

Check Name: Calculate Average Wet Stack Flow

Related Former Checks: RATA-52C

Applicability: CEM Check

Specifications:

For the Flow RATA Run record:

Set RATA Calc Average Stack Flow to null.

If Calculate Run Velocity is equal to false,

set RATA Level Valid to false.

If Flow RATA Level Valid is equal to false, RATA Calc Stack Area is null, or RATA Calc Stack Pressure is null,

set RATA Level Valid to false, and return result A.

Otherwise,

Calculate RATA Calc Average Stack Flow = 3600 * RATA Calc Average Velocity * RATA Calc Stack Area * 528 / ((RATA Sum Temperature /NumberOfTraversePoints) + 460) * RATA Calc Stack Pressure / 29.92.

If the associated ReferenceMethodCode is equal to "2FJ" or "2GJ",

Calculate RATA Calc Average Stack Flow = RATA Calc Average Stack Flow * CalculatedWAF (in the RATA Summary record).

If the associated ReferenceMethodCode is equal to "2F", "2FJ", "2G", or "2GJ",

Calculate RATA Calc Average Stack Flow = min(RATA Calc Average Stack Flow, 9999999999.999), rounded to the nearest 1000.

If AverageStackFlowRate is not null and is greater than 0, and AverageStackFlowRate is not equal to RATA Calc Average Stack Flow,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "StackFlow".

If found, and the absolute value of the difference between the RATA Calc Average Stack Flow and the AverageStackFlowRate is greater than the Tolerance in the cross-check record,

If the associated CEMValue is greater than or equal to 0,

Add (RATA Calc Average Stack Flow - CEMValue) to RATA Sum Differences.

Add the square of (RATA Calc Average Stack Flow - CEMValue) to RATA Sum Square Differences

Add RATA Calc Average Stack Flow to RATA Sum Reference Values, and return result B.

Otherwise,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "Stack Flow (PCT)".

If found, and the absolute value of the percentage difference between the RATA Calc Average Stack Flow and the AverageStackFlowRate is greater than the Tolerance in the cross-check record,

If the associated CEMValue is greater than or equal to 0,

Add (RATA Calc Average Stack Flow - CEMValue) to RATA Sum Differences.

Add the square of (RATA Calc Average Stack Flow - CEMValue) to RATA Sum Square Differences.

Add RATA Calc Average Stack Flow to RATA Sum Reference Values, and return result B.

Otherwise,

Add AverageStackFlowRate to RATA Sum Reference Values.

If the associated CEMValue is greater than or equal to 0,

Add (AverageStackFlowRate - CEMValue) to RATA Sum Differences.

Add the square of (AverageStackFlowRate - CEMValue) to RATA Sum Square Differences.

Otherwise,

Add RATA Calc Average Stack Flow to RATA Sum Reference Values.

If the associated CEMValue is greater than or equal to 0,

Add (RATA Calc Average Stack Flow - CEMValue) to RATA Sum Differences.

Add the square of (RATA Calc Average Stack Flow - CEMValue) to RATA Sum Square Differences.

In the QA Evaluation process, store the calculated values for the run in the Flow RATA Run and RATA Run records.

Otherwise,

store RATA Calc Average Stack Flow in the associated RunNumber element of RATA Stack Flow Array.

Results:

Result	Description	Severity
A	Recalculation of the AverageStackFlowRate for [key] was not performed because of the errors listed above.	Informational Message
B	The AverageStackFlowRate reported for [key] is inconsistent with the value recalculated from the Flow Rata Run and RATA Traverse records.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --------- Flow RATA Run (Pass 2)

Check Code: RATA-94

Check Name: Average Wet Stack Flow Rate Valid

Related Former Checks: RATA-53

Applicability: CEM Check

Specifications:

For the Flow RATA Run:

If AverageStackFlowRate is null,

return result A.

If AverageStackFlowRate is less than or equal to 0,

return result B.

If the associated RATAReferenceValue for the run is not null, and the AverageStackFlowRate is not equal to the associated RATAReferenceValue for the run,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
C	The AverageStackFlowRate reported for [key] does not equal the RATAReferenceValue for the run.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation
2	QA Test Evaluation Report --------- Flow RATA Run (Pass 2)

Check Code: RATA-95

Check Name: Calculate WAF for Operating Level

Related Former Checks: RATA-33F, 51B, C, D, E, H

Applicability: CEM Check

Specifications:

For the RATA Summary record :

Set RATA WAF Calculated to true.

If Flow RATA Level Valid is equal to true:

If RATA WAF Run Count is equal to 0,

If the associated ReferenceMethodCode is equal to "M2H",

set Flow RATA Level Valid to false, and return result A.

If the DefaultWAF is null,

set Flow RATA Level Valid to false, and return result B.

Otherwise,

If DefaultWAF is null,

If RATA Maximum Traverse Point Count - RATA Minimum Traverse Point Count is greater than 3,

set RATA Level Valid to false, and return result C.

Otherwise,

Calculate RATA Calc Level WAF = RATA Sum WAF / RATA WAF Count .

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "WAF".

If found, and the absolute value of the difference between the RATA Calc Level WAF (round ed to 4 decimal places) and the CalculatedWAF is greater than the Tolerance in the cross-check record,

return result D.

If DefaultWAF is not null, and RATA Maximum Traverse Point Count for All Runs is greater than 16,

set Flow RATA Level Valid to false, and return result E.

Note: This category and Flow RATA Run (Method 2H) are only performed when reference method is equal to "2FH", "M2H", "2GH", or "D2H".

Results:

Result	Description	Severity
A	You reported that a flow RATA was performed using method M2H for [key], but you did not identify runs for the purpose of calculating a wall effects adjustment factor. When using these methods, you must identify at least one run for the purpose of calculating a WAF.	Critical Error Level 1
B	You reported that a flow RATA was performed using method [method] for [key], but you did not identify any runs for the purpose of calculating a wall effects adjustment factor (WAF). When using methods 2FH or 2GH, you	Critical Error Level 1

	must report a default WAF or identify at least one run for the purpose of calculating a WAF.	
C	The number of traverse points for the runs used to calculate the wall effects adjustment factor for [key] varies by more than 3. This suggests that the wall sector areas for these runs are not equal. The wall sector areas for each run used to calculate a WAF should be equal.	Critical Error Level 1
D	The reported CalculatedWAF for [key] is inconsistent with the value recalculated from the velocity values.	Critical Error Level 1
E	You reported the use of a default wall effects adjustment factor for [key]. However, at least one of the runs of this RATA had more than 16 traverse points. You cannot use a default WAF if there are more than 16 traverse points.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- RATA Summary (Method 2H)

Check Code: RATA-96

Check Name: Calculated WAF for Operating Level Reasonable

Related Former Checks: RATA-51 F, G

Applicability: CEM Check

Specifications:

For the RATA Summary record where Flow RATA Level Valid is equal to true, DefaultWAF is null, RATA Maximum Traverse Point Count for All Runs is less than or equal to 16, and RATA Calc Level WAF is greater than .9900,

If RATA Calc Level WAF is greater than .9950,

return result A.

Otherwise,

If the TestEndDate is valid,

Locate a LocationAttribute record for the location where the BeginDate is on or before the TestEndDate and the EndDate is null or is on or after the TestEndDate.

If found, and MaterialCode is equal to "BRICK",

return result B.

Results:

Result	Description	Severity
A	You have indicated the use of calculated wall effects adjustment factor for [key], but the WAF calculated from the data in the Flow RATA Run and RATA Traverse records is greater than .9950. It may be advantageous for you to use a default WAF in your RATA calculations.	Informational Message
B	You have indicated the use of calculated wall effects adjustment factor for [key], but the WAF calculated from the data in the Flow RATA Run and RATA Traverse records is greater than .9900. It may be advantageous for you to use a default WAF in your RATA calculations.	Informational Message

Usage:

1	QA Test Evaluation Report --- RATA Summary (Method 2H)

Check Code: RATA-97

Check Name: Determine WAF Applicability

Related Former Checks: RATA-52B

Applicability: CEM Check

Specifications:

For a RATA Run:

Set RATA Applicable WAF to null.

If Flow RATA Level Valid is equal to true and the stack flow value in the RATA Stack Flow Array for the run is not zero:

If the DefaultWAF is not null,

set RATA Applicable WAF to the Default WAF.

Otherwise,

If NumberOfTraversePoints - RATA Maximum Traverse Point Count is greater than 3,

set RATA Applicable WAF to 1, and return result A.

Otherwise,

set RATA Applicable WAF to RATA Calc Level WAF.

Results:

Result	Description	Severity
A	The NumberOfTraversePoints reported for [key] is more than 3 greater than the number of traverse points in the run(s) used to calculate the wall effects adjustment factor. This suggests that the wall sector area for this run is less than the wall sector area in the run(s) used to calculate the WAF. A calculated WAF cannot be applied to a run whose wall sector area is less than the wall sector area in the run(s) used to calculate the WAF.	Non-Critical Error

Usage:

1	QA Test Evaluation Report --------- RATA Run (Method 2H)

Check Code: RATA-98

Check Name: Calculate Average Wet Stack Flow for Method 2H

Related Former Checks: RATA-52C

Applicability: CEM Check

Specifications:

For the RATA Run:

Set RATA Calc Average Stack Flow 2H to null.

If Flow RATA Level Valid is equal to false,

set RATA Level Valid to false.

Otherwise,

If the stack flow value in the RATA Stack Flow Array for the run is not zero,

Calculate RATA Calc Average Stack Flow 2H = min(RATA Stack Flow Array [RunNumber] * RATA Applicable WAF, 9999999999.999), rounded to the nearest 1000.

Round the RATA Applicable WAF to 4 decimal places.

If AverageStackFlowRate is null, is less than or equal to 0, or the AverageStackFlowRate is equal to RATA Calc Average Stack Flow 2H ,

If the associated CEMValue is greater than or equal to 0,

Add (RATA Calc Average Stack Flow 2H - CEMValue) to RATA Sum Differences.

Add the square of (RATA Calc Average Stack Flow 2H - CEMValue) to RATA Sum Square Differences.

Add RATA Calc Average Stack Flow 2H to RATA Sum Reference Values.

Otherwise,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "StackFlow".

If found, and the absolute value of the difference between the RATA Calc Average Stack Flow 2H and the AverageStackFlowRate is greater than the Tolerance in the cross-check record,

If the associated CEMValue is greater than or equal to 0,

Add (RATA Calc Average Stack Flow 2H - CEMValue) to RATA Sum Differences.

Add the square of (RATA Calc Average Stack Flow 2H - CEMValue) to RATA Sum Square Differences.

Add RATA Calc Average Stack Flow 2H to RATA Sum Reference Values, and return result A.

Otherwise,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "RATA" and the FieldDescription is equal to "Stack Flow (PCT)".

If found, and the absolute value of the percentage difference between the RATA Calc Average Stack Flow 2H and the AverageStackFlowRate is greater than the Tolerance in the cross-check record,

If the associated CEMValue is greater than or equal to 0,

Add (RATA Calc Average Stack Flow 2H - CEMValue) to RATA Sum Differences.

Add the square of (RATA Calc Average Stack Flow 2H - CEMValue) to RATA Sum Square Differences.

Add RATA Calc Average Stack Flow 2H to RATA Sum Reference Values, and return result A.

Otherwise,

If the associated CEMValue is greater than or equal to 0,

Add (AverageStackFlowRate - CEMValue) to RATA Sum Differences.

Add the square of (AverageStackFlowRate - CEMValue) to RATA Sum Square Differences.

Add AverageStackFlowRate to RATA Sum Reference Values.

In the QA Evaluation process, store the calculated values for the run in the Flow RATA Run and RATA Run records.

Results:

Result	Description	Severity
A	The AverageStackFlowRate reported for [key] is inconsistent with the value recalculated from the Flow Rata Run and RATA Traverse records.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --------- RATA Run (Method 2H)

Check Code: RATA-100

Check Name: Test Result Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the TestSummary record:

If TestResultCode is null,

return result A.

If TestResultCode is not equal to "PASSED", "PASSAPS", "FAILED", or "ABORTED",

Locate the TestResultCode is not in the Test Result Code Lookup table,

If not found,

return result B.

If found,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
C	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Evaluation

Check Code: RATA-101

Check Name: RATA Run Values Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA Run with a RunStatusCode equal to "RUNUSED":

If associated SystemTypeCode of the RATA is equal to "FLOW", and either the CEMValue is greater than 0 and not rounded to 1000 or the RATAReferenceValue is greater than 0 and not rounded to 1000,

return result A.

If either the CEMValue is equal to 0 or the RATAReferenceValue is equal to 0,

return result B.

Results:

Result	Description	Severity
A	The CEM Value and/or Reference Value for [key] was not rounded to the nearest 1000 scfh.	Non-Critical Error
B	Your reported CEM Value and/or Reference Value for [key] is less than or equal to zero.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Run Evaluation

Check Code: RATA-102

Check Name: Number of Load Levels Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA:

If the NumberOfLoadLevels is null,

return result A.

If the SystemTypeCode of the associated system is equal to "FLOW",

If the NumberOfLoadLevels is not between 1 and 3,

return result B.

Otherwise,

If the NumberOfLoadLevels is not equal to 1,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1
C	The value [value] in the field [fieldname] for [key] is not within the range of valid values.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Evaluation

Check Code: RATA-103

Check Name: Overall Relative Accuracy Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA:

If the TestResultCode is equal to "ABORTED",

If the RelativeAccuracy is not equal to null,

return result A.

If the TestResultCode is equal to "PASSED", "PASSAPS", or "FAILED",

If the RelativeAccuracy is null,

return result B.

If the RelativeAccuracy is less than 0,

return result C.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Evaluation

Check Code: RATA-104

Check Name: Overall BAF Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA:

If the TestResultCode is equal to "FAILED" or "ABORTED",

If the OverallBiasAdjustmentFactor is not equal to null,

return result A.

If the TestResultCode is equal to "PASSED" or "PASSAPS",

If the OverallBiasAdjustmentFactor is null,

return result B.

If the OverallBiasAdjustmentFactor is less than 1,

return result C.

Results:

Result	Description	Severity
A	You reported [fieldname], which is not appropriate for [testtype].	Critical Error Level 1
B	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
C	The [fieldname] for [key] is not within the range of valid values. This value must be equal to or greater than 1.000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Evaluation

Check Code: RATA-105

Check Name: RATA Frequency Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA:

If the TestResultCode is equal to "FAILED" or "ABORTED",

If the RATAFrequencyCode is not equal to null,

return result A.

If the TestResultCode is equal to "PASSED" or "PASSAPS",

If the RATAFrequencyCode is null,

return result B.

If the RATAFrequencyCode is not in the RATAFrequencyCode lookup table,

return result C.

If RATAFrequencyCode is equal to "8QTRS",

If the SystemDesignationCode of the associated system is not equal to "B",

return result C.

If RATAFrequencyCode is equal to "ALTSL",

If the SystemTypeCode of the associated system is not equal to "FLOW",

return result C.

Results:

Result	Description	Severity
A	You reported [fieldname], which is not appropriate for [testtype].	Critical Error Level 1
B	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
C	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Evaluation

Check Code: RATA-106

Check Name: Duplicate RATA

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA with a valid TestNumber:

Locate another TestSummary record for the location where the TestTypeCode = "RATA" and the TestNumber is equal to the TestNumber in the current record.

If found,

return result A.

Otherwise,

Locate an unassociated QA Supp record for the location where the TestTypeCode is equal to " RATA " and the TestNumber is equal to the TestNumber in the current record.

If found,

return result B.

Results:

Result	Description	Severity
A	Another [testtype] with this test number already exists. You must assign a different test number.	Fatal
B	You cannot change the TestNumber to the value that you have entered, because a [testtype] with this TestNumber has already been submitted. If this is a different test, you should assign it a different TestNumber. If you are trying to resubmit this test, you should delete this test, and either reimport this test with its original TestNumber or retrieve the original test from the EPA host system.	Fatal

Usage:

1 QA and Certification Data Entry Screen Evaluation RATA Evaluation

Condition: Test Number Valid*Equals* true

Check Code: RATA-107

Check Name: Duplicate RATA Summary

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA Summary record with a valid OperatingLevelCode:

Locate another RATA Summary record for the test where the OperatingLevelCode is equal to the OperatingLevelCode in the current record.

If found,

return result A.

Results:

Result	Description	Severity
A	Another [recordtype] record already exists with the same [fieldnames].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Summary Evaluation

Check Code: RATA-108

Check Name: Duplicate RATA Run

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA Run record with a valid OperatingLevelCode and RunNumber:

Locate another RATA Run record for the test where the associated OperatingLevelCode is equal to the associated OperatingLevelCode in the current record and the Run Number is equal to the Run Number in the current record.

If found,

return result A.

Results:

Result	Description	Severity
A	Another [recordtype] record already exists with the same [fieldnames].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Run Evaluation

Check Code: RATA-109

Check Name: Duplicate Flow RATA Run

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Flow RATA Run record with a valid OperatingLevelCode and RunNumber:

Locate another Flow RATA Run record for the test where the associated OperatingLevelCode is equal to the associated OperatingLevelCode in the current record and the associated RunNumber is equal to the associated RunNumber in the current record.

If found,

return result A.

Results:

Result	Description	Severity
A	Another [recordtype] record already exists with the same [fieldnames].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation

Check Code: RATA-110

Check Name: Duplicate RATA Traverse

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA Traverse record with a valid OperatingLevelCode, RunNumber, and a non-null MethodTraversePointID:

Locate another RATA Traverse record for the test where the associated OperatingLevelCode is equal to the associated OperatingLevelCode in the current record, the Run Number is equal to the Run Number in the current record, and the MethodTraversePointID is equal to the MethodTraversePointID in the current record.

If found,

return result A.

Results:

Result	Description	Severity
A	Another [recordtype] record already exists with the same [fieldnames].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation

Check Code: RATA-111

Check Name: Reported Calculated Velocity Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA Traverse record:

If CalculatedVelocity is null,

return result A.

If CalculatedVelocity is less than or equal to 0,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation

Check Code: RATA-112

Check Name: Reported Operating Level Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the current record:

If the OperatingLevelCode is null,

return result A.

If the Ope r atingLevelCode is not in the OperatingLevelCode lookup table,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You reported a [fieldname] that is not in the list of valid values.	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation
2	QA and Certification Data Entry Screen Evaluation RATA Run Evaluation
3	QA and Certification Data Entry Screen Evaluation RATA Summary Evaluation
4	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation

Check Code: RATA-113

Check Name: Reported Run Number Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the current RATA:

If RunNumber is null,

return result A.

If RunNumber is not greater than or equal to 1 and less than or equal to 99,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation
2	QA and Certification Data Entry Screen Evaluation RATA Run Evaluation
3	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation

Check Code: RATA-114

Check Name: Reported Average Velocity With Wall Effects Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Flow RATA Run record:

Set RATA Traverse Point Count to -1.

If the AverageVelocityWithWallEffects is not null,

If the associated ReferenceMethodCode for the run is equal to "2F", "2G", "2FJ", or "2GJ",

return result A.

If the AverageVelocityWithWallEffects is less than or equal to 0,

return result B.

Otherwise,

If the associated ReferenceMethodCode for the run is equal to "M2H", or the CalculatedWAF is not null,

return result C.

Results:

Result	Description	Severity
A	You have provided a value for [fieldname] for [key], which is not appropriate for a test using this reference method.	Non-Critical Error
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1
C	You identified [key] as a run to be used in the calculation of a wall effects adjustment factor, but you did not report a [fieldname].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation

Check Code: RATA-115

Check Name: Reported Average Velocity Without Wall Effects Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Flow RATA Run record:

If AvgVelocityWithoutWallEffects is null,

return result A.

If AvgVelocityWithoutWallEffects is less than or equal to 0,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation

Check Code: RATA-116

Check Name: Reported WAF for the Run Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Flow RATA Run record:

If the CalculatedWAF is not null,

If the associated ReferenceMethodCode is equal to "2F", "2G", "2FJ" or "2GJ",

return result A.

If the CalculatedWAF is less than 0 or is greater than 1,

return result B.

Otherwise,

If the associated ReferenceMethodCode for the run is equal to "M2H", or the AverageVelocityWithWallEffects is not null,

return result C.

Results:

Result	Description	Severity
A	You have provided a value for [fieldname] for [key], which is not appropriate for a test using this reference method.	Non-Critical Error
B	You reported an invalid value in the CalculatedWAF field for [key]. A WAF must be greater than 0 and less than or equal to 1.	Critical Error Level 1
C	You identified [key] as a run to be used in the calculation of a wall effects adjustment factor, but you did not report a [fieldname].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation

Check Code: RATA-117

Check Name: System ID Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA:

If the MonitoringSystemID is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Evaluation

Check Code: RATA-118

Check Name: Test Claim Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Test Qualification record:

If the TestClaimCode is null,

set RATA Test Claim Code Valid to false, and return result A.

If the TestClaimCode is not equal to "SLC", "NLE", or "ORE",

set RATA Test Claim Code Valid to false, and return result B.

Otherwise,

set RATA Test Claim Code Valid to true.

If the TestClaimCode is equal to "SLC",

If the associated SystemTypeCode for the RATA is not equal to "FLOW",

return result C.

If the associated NumberOfLoadLevels for the RATA is greater than 1,

return result D.

If the TestClaimCode is equal to "ORE",

If the associated SystemTypeCode for the RATA is not equal to "FLOW",

return result C.

If the associated NumberOfLoadLevels for the RATA is less than 2,

return result E.

If the TestClaimCode is equal to "NLE",

If the associated NumberOfLoadLevels for the RATA is greater than 1,

return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You reported a [fieldname] that is not in the list of valid values.	Critical Error Level 1
C	The Test Claim [value] for this RATA is invalid, because this claim only applies to a FLOW monitoring system.	Critical Error Level 1
D	The Test Claim [value] is invalid, because this claim only applies to a single-level RATA.	Critical Error Level 1
E	The Test Claim [value] is invalid, because this claim only applies to a multi-level Flow RATA.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Test Qualification Evaluation

Check Code: RATA-119

Check Name: Single-Level Claim Begin Date Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a valid TestQualification record with a TestClaimCode equal to "SLC":

If BeginDate is null,

return result A.

If BeginDate is earlier than 1/1/1993,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported a [Fieldname] of [Date], which is outside the range of acceptable values for this date for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Test Qualification Evaluation

Check Code: RATA-120

Check Name: Single-Level Claim End Date Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For a valid TestQualification record with a TestClaimCode equal to "SLC":

If EndDate is null,

return result A.

If the EndDate is later than the BeginDate of the TestSummary record of this RATA,

return result B.

If the BeginDate is not null and the EndDate is on or before the BeginDate,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The EndDate in the single-level claim for this RATA is not prior to the begin date of this RATA.	Critical Error Level 1
C	You reported [datefield2] which is prior to [datefield1] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Test Qualification Evaluation

Check Code: RATA-121

Check Name: Duplicate Test Claim

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Test Qualification record with a valid Test Claim Code:

Locate another Test Qualification record for the test where the TestClaimCode is equal to the TestClaimCode in the current record.

If found,

return result A.

Results:

Result	Description	Severity
A	Another [recordtype] record already exists with the same [fieldnames].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Test Qualification Evaluation

Check Code: RATA-122

Check Name: Zero Value Reported

Related Former Checks:

Applicability: CEM Check

Specifications:

For a RATA:

If RATA Zero Value is equal to true ,

If SystemTypeCode is equal to "HG", "ST", or "SO2"

return result B.

Else

return result A.

Results:

Result	Description	Severity
A	For one or more runs of this RATA the CEM Value and/or Reference Value was equal to zero.	Critical Error Level 1
B	For one or more runs of this RATA the CEM Value and/or Reference Value was equal to zero.	Informational Message

Usage:

1	QA Test Evaluation Report RATA Evaluation (Pass 1)
	Condition: RATA Aborted*Equals* false

Check Code: RATA-123

Check Name: APS Indicator Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA summary record:

If APSIndicator is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Summary Evaluation

Check Code: RATA-124

Check Name: Flow RATA Record Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the record:

If the associated ReferenceMethodCode is not null and does not begin with "2F","2G", or "M2H",

set Flow RATA Record Valid to false, and return result A.

Otherwise,

set Flow RATA Record Valid to true.

If the RunStatusCode is equal to "NOTUSED",

return result B.

Results:

Result	Description	Severity
A	This record is not appropriate for a RATA conducted using this reference method.	Critical Error Level 1
B	This record should not be reported, because the RunStatusCode is equal to "NOTUSED". You should only report Flow RATA Run and RATA Traverse records for runs that are used in the calculation of relative accuracy.	Non-Critical Error

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Evaluation
2	QA and Certification Data Entry Screen Evaluation RATA Traverse Evaluation

Check Code: RATA-125

Check Name: Calculate RATA Summary Values

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA summary record:

Set RATA Calc Mean CEM, RATA Calc Mean RV, RATA Calc Mean Diff, RATA Calc SD, RATA Calc CC, RATA Calc TValue,

RATA Calc Average GUL, RATA Calc RA, RATA Calc BAF, RATA Calc APS, and RATA Calc Area to null.

If the OperatingLevelCode is not equal to "H", "L", "M", or "N",

return result A.

Otherwise,

Set TotalRV, TotalCEM, TotalGUL, SumDiff, SumSqDiff, UsedCt, and NotUsedCt to 0.

Sort the RATA Run records for the OperatingLevelCode in EndDate, EndHour, and EndMinute order.

For each RATA run record:

If the Begin Date is null, the Begin Hour is null or not between 0 and 23, the Begin Minute is null or not between 0 and 59, the End Date is null, the End Hour is null or not between 0 and 23, the End Minute is null or not between 0 and 59, or the BeginDate/BeginHour/BeginMinute is on or after the EndDate/EndHour/EndMinute.

return result A.

Otherwise,

If the BeginDate/BeginHour/BeginMinute is before the EndDate/EndHour/EndMinute of the previous run,

return result A.

Otherwise,

If RunStatusCode is equal to "NOTUSED",

add 1 to NotUsedCt.

If NotUsedCt is greater than 3,

return result B.

If RunStatusCode is equal to "RUNUSED",

add 1 to UsedCt.

If CEMValue is null or less than 0, RATAReferenceValue is null or less than 0, or GrossUnitLoad is null or less than 0,

return result A.

Otherwise,

Add CEMValue to TotalCEM.

Add RATAReferenceValue to TotalRV.

Add GrossUnitLoad to TotalGUL.

Add (RATAReferenceValue - CEMValue) to SumDiff.

Add the square of (RATAReferenceValue - CEMValue) to SumSqDiff.

If RunStatusCode is not equal to "RUNUSED" or "NOTUSED",

return result A.

Otherwise,

If RunNumber is not equal to UsedCt + NotUsedCt,

return result C.

If the associated SystemTypeCode of the RATA is equal to "FLOW", and the ReferenceMethodCode is null, or the ReferenceMethodCode is not in the ReferenceMethodCode lookup table, or the ParameterCode in the ReferenceMethodCode lookup table is not equal to "FLOW",

return result A.

If the associated SystemTypeCode of the RATA is equal to "FLOW", the ReferenceMethodCode begins with "2F" or "2G" or is equal to "M2H", and the StackDiameter is null or is less than 0,

return result A.

If UsedCt is less than 9,

return result D.

Else If TotalRV is less than or equal to 0, or TotalCEM is equal to 0 AND SystemTypeCode is NOT equal to "HG", "ST or "SO2",

return result E.

Otherwise,

Calculate RATA Calc Average GUL = TotalGUL / UsedCt, and round the result to the nearest integer.

Calculate RATA Calc Mean CEM = TotalCEM / UsedCt.

Calculate RATA Calc Mean RV = TotalRV / UsedCt.

Calculate RATA Calc Mean Diff = SumDiff / UsedCt.

Calculate Tempval = SumSqDiff - ((SumDiff ** 2) / UsedCt).

If Tempval = 0

set RATA Calc SD = 0

Otherwise,

calculate RATA Calc SD = SQRT(Tempval / (UsedCt - 1))

If UsedCt is greater than 31,

set RATA Calc TValue to 1.

Otherwise,

Locate TValues cross-check record where Number of Items is equal to UsedCt - 1.

Set RATA Calc TValue to the TValue in the cross-check record.

If the associated SystemTypeCode is equal to "FLOW", AND ReferenceMethodCode begins with "2F", "2G" or "M2H",

Calculate RATA Calc Area = (StackDiameter ** 2) * PI / 4, and round the result to 1 decimal place.

Calculate RATA Calc CC = (RATA Calc TValue * RATA Calc SD) / SQRT(UsedCt).

Calculate Tempval = ((ABS(RATA Calc Mean Diff) + ABS(RATA Calc CC)) / RATA Calc Mean RV * 10000.

Round Tempval to the nearest integer.

Calculate RATA Calc RA = min(Tempval / 100, 999. 9 9).

If the RATA Calc RA (rounded to 1 decimal) is less than or equal to 7.5 ,

Set RATA Calc APS to 0.

Otherwise,

If the associated SystemTypeCode is equal to "SO2" or "NOXC",

If the RATA Calc Mean RV (rounded to 1 decimal) is less than or equal to 250.0 and the absolute value of the RATA Calc Mean Diff (rounded to 1 decimal) is less than or equal to 8 .0,

Set RATA Calc APS to 1 .

else i f the RATA Calc Mean RV (rounded to 1 decimal) is less than or equal to 250.0 and the absolute value of the RATA Calc Mean Diff (rounded to 1 decimal) is less than or equal to 12 .0, and the a s sociated TestEndDate is on or after 6/25/1999,

Set RATA Calc APS to 1 .

else i f the RATA Calc RA (rounded to 1 decimal) is less than or equal to 10.0 ,

Set RATA Calc APS to 0.

else i f the RATA Calc Mean RV (rounded to 1 decimal) is less than or equal to 250.0 and the absolute value of the RATA Calc Mean Diff (rounded to 1 decimal) is less than or equal to 15.0,

Set RATA Calc APS to 1.

If the associated SystemTypeCode is equal to "NOX" or "NOXP",

If the RATA Calc Mean RV (rounded to 3 decimal s) is less than or equal to 0.200 and the absolute value of the RATA Calc Mean Diff (rounded to 2 decimal s) is less than or equal to 0.01 ,

Set RATA Calc APS to 1 .

else i f the RATA Calc Mean RV (rounded to 3 decimal s) is less than or equal to 0.200 and the absolute value of the RATA Calc Mean Diff (rounded to 3 decimal s) is less than or equal to 0.015 , and the a s sociated TestEndDate is on or after 6/25/1999,

Set RATA Calc APS to 1 .

else i f the RATA Calc RA (rounded to 1 decimal) is less than or equal to 10.0 ,

Set RATA Calc APS to 0.

else i f the RATA Calc Mean RV (rounded to 3 decimal) is less than or equal to 0.20 0 and the absolute value of the RATA Calc Mean Diff (rounded to 2 decimal) is less than or equal to 0.02,

Set RATA Calc APS to 1.

If the associated SystemTypeCode is equal to "CO2" or "O2",

If the absolute value of the RATA Calc Mean Diff (rounded to 1 decimal) is less than or equal to 0.7 ,

Set RATA Calc APS to 1 .

else i f the RATA Calc RA (rounded to 1 decimal) is less than or equal to 10.0 ,

Set RATA Calc APS to 0.

else i f the absolute value of the RATA Calc Mean Diff (rounded to 1 decimal) is less than or equal to 1.0,

Set RATA Calc APS to 1.

If the associated SystemTypeCode is equal to "SO2R",

If the RATA Calc Mean RV (rounded to 2 decimal s) is less than or equal to 0.50 and the absolute value of the RATA Calc Mean Diff (rounded to 3 decimal s) is less than or equal to 0.016 ,

Set RATA Calc APS to 1 .

else i f the RATA Calc RA (rounded to 1 decimal) is less than or equal to 10.0 ,

Set RATA Calc APS to 0.

else i f the RATA Calc Mean RV (rounded to 2 decimal) is less than or equal to 0.50 and the absolute value of the RATA Calc Mean Diff (rounded to 2 decimal) is less than or equal to 0.03,

Set RATA Calc APS to 1.

If the associated SystemTypeCode begins with "H2O",

If the absolute value of the RATA Calc Mean Diff (rounded to 1 decimal) is less than or equal to 1.0 ,

Set RATA Calc APS to 1 .

else i f the RATA Calc RA (rounded to 1 decimal) is less than or equal to 10.0 ,

Set RATA Calc APS to 0.

else i f the absolute value of the RATA Calc Mean Diff (rounded to 1 decimal) is less than or equal to 1.5,

Set RATA Calc APS to 1.

If the associated SystemTypeCode is equal to "FLOW",

If the associated Test EndDate is on or after 1/1/2000,

Set adjustedmeanref to 99999 and adjustedmeandiff to 99999.

If EndDate of the test is on or after the BeginDate of the test,

Locate the Monitor Location Attribute record for the location where the BeginDate is on or before the associated Test BeginDate and the EndDate is null or is on or after the associated Test EndDate.

If one record is found, and the StackAreaAtFlowMonitor is greater than 0,

Calculate adjustedmeanref = RATA Calc Mean RV / 3600 / StackAreaAtFlowMonitor.

Calculate adjustedmeandiff = abs(RATA Calc Mean Diff / 3600 / StackAreaAtFlowMonitor.

Round adjustedmeanref and adjustedmeandiff to 1 decimal.

If adjustedmeanref is less than or equal to 10.0 and adjustedmeandiff is less than or equal to 1.5 ,

set RATA Calc APS to 1.

else i f the RATA Calc RA (rounded to 1 decimal) is less than or equal to 10.0 ,

s et RATA Calc APS to 0.

else i f adjustedmeanref is less than or equal to 10.0 and adjustedmeandiff is less than or equal to 2.0,

set RATA Calc APS to 1.

Otherwise,

If the RATA Calc RA (rounded to 1 decimal) is less than or equal to 15.0,

set RATA Calc APS to 0.

If the associated SystemTypeCode is equal to "HG" or "ST",

If the RATA Calc RA (rounded to 1 decimal) is less than or equal to 20 .0,

set RATA Calc APS to 0.

else i f the RATA Calc Mean RV (rounded to 1 decimal) is less than or equal to 5.0 and the absolute valu of the RATA Calc Mean Diff (rounded to 1 decimal) is less than or equal to 1.0,

Set RATA Calc APS to 1.

If RATA Calc APS is null,

set RATA Calc APS to 0.

Otherwise,

If the associated SystemTypeCode is equal to "CO2" , "O2" , "HG" or "ST", or begins with "H2O",

set RATA Calc BAF to 1.

Otherwise,

If the RATA Calc Mean Diff is greater than the absolute value of the RATA Calc CC,

Calculate tempval = (1.0 + ABS(RATA Calc Mean Diff) / RATA Calc Mean CEM) * 1000.

Round tempval to the nearest integer.

Calculate RATA Calc BAF = tempval / 1000.

Otherwise,

If the RATA Calc BAF is greater than 1.111,

If the associated SystemTypeCode is equal to "SO2" or "NOXC", and the RATA Calc Mean RV (rounded to 1 decimal) is less than or equal to 250.0,

set RATA Calc BAF to 1.111.

If the associated SystemTypeCode is equal to "NOX", "NOXP", or "SO2R", and the RATA Calc Mean RV (rounded to 2 decimal) is less than or equal to 0.20,

set RATA Calc BAF to 1.111.

Otherwise,

set RATA Calc BAF to 1.

Round RATA Calc Mean CEM, RATA Calc Mean RV, RATA Calc Mean Diff, RATA Calc CC, and RATA Calc S
to 5 decimal places.

Results:

Result	Description	Severity
A	The values in this record could not be calculated because of invalid data.	Critical Error Level 1
B	There are more than three RATA run records for [key] with a run status of "NOTUSED" which indicates runs excluded from the data analysis. Only three runs may be excluded from a test at each operating level.	Critical Error Level 1
C	There are duplicate, missing or non-sequential run numbers when the run records are time ordered by run end date and time for operating level [level].	Critical Error Level 1
D	The RATA for [key] contains fewer than nine RATA run records with a run status of "RUNUSED". A minimum of nine runs are required for each complete operating level test.	Critical Error Level 1
E	The software could not evaluate the RATA calculations reported for [key], because the sum of the reference values is less than or equal to 0 or the sum of the CEM values is equal to 0.	Critical Error Level 1

Usage:

1 QA and Certification Data Entry Screen Evaluation RATA Summary Calculations

Check Code: RATA-126

Check Name: Calculate Overall RATA Values

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA:

Set RATA Calc Overall RATA and RATA Calc Overall BAF to null.

If the TestResultCode is not equal to "ABORTED",

If the MonitoringSystemID is null, or the TestResultCode is not equal to "PASSED", "PASSAPS", or "FAILED",

return result A.

If the BeginDate is null or is before 1/1/1993, or the BeginHour is not between 0 and 23, or the EndDate is null or is after the current date, or the EndHour is not between 0 and 23, or the BeginDate and BeginHour is after the EndDate and EndHour,

return result A.

If the SystemTypeCode of the associated system is equal to "FLOW" and NumberOfLoadLevels is not between 1 and 3; or the SystemTypeCode is not equal to "FLOW" and NumberOfLoadLevels is not equal to 1,

return result A.

Otherwise,

set levelCt, maxRA, and maxBAF to 0.

set levelList to null.

For each RATA Summary record in the test:

Add OperatingLevelCode to levelList.

Add 1 to levelCt.

If RelativeAccuracy in the RATA Summary record is null or is less than 0,

return result A.

Otherwise,

If RelativeAccuracy in the RATA Summary record is greater than maxRA,

set maxRA to RelativeAccuracy.

If TestResultCode of the test is equal to "PASSED" or "PASSAPS",

If BiasAdjustmentFactor is null or is less than 1,

return result A.

Otherwise,

If BiasAdjustmentFactor is greater than maxBAF,

set maxBAF to BiasAdjustmentFactor.

If OperatingLevelCode is equal to "H",

set highBAF to BiasAdjustmentFactor.

If OperatingLevelCode is equal to "M",

set midBAF to BiasAdjustmentFactor.

If OperatingLevelCode is equal to "L",

set lowBAF to BiasAdjustmentFactor.

If levelCt is not equal to NumberOfLoadLevels,

return result A.

If NumberOfLoadLevels is greater than 1, TestResultCode is equal to "PASSED" or "PASSAPS", and maxBAF is greater than 1,

Locate a Monitor Load record for the location where the BeginDate and BeginHour are on or before the test EndDate and EndHour and the EndDate is null or the EndDate and EndHour are on or after the test BeginDate and BeginHour.

If not found, or if more than one record is found, and the NormalLevelCode, SecondLevelCode, or SecondNormalIndicator are not the same in each Load record,

return result B.

If the NormalLevelCode is null, or is not equal to "H", "L", or "M",

return result B.

If the SecondLevelCode is null, or is not equal to "H", "L", or "M",

return result B.

If the NormalLevelCode is not in the levelList,or the SecondLevelCode is not in the levelList,

return result C.

Otherwise,

set BiasPassed to true.

set RATA Calc Overall RA to maxRA.

set maxBAF to 1.

If NormalLevelCode is equal to "H" or SecondLevelCode is equal to "H",

If highBAF is greater than 1,

If NormalLevelCode is equal to "H" or SecondLevelIndicator is equal to 1,

set BiasPassed to false.

If highBAF is greater than maxBAF,

set maxBAF to highBAF.

If NormalLevelCode is equal to "M" or SecondLevelCode is equal to "M",

If midBAF is greater than 1,

If NormalLevelCode is equal to "M" or SecondLevelIndicator is equal to 1,

set BiasPassed to false.

If midBAF is greater than maxBAF,

set maxBAF to midBAF.

If NormalLevelCode is equal to "L" or SecondLevelCode is equal to "L",

If lowBAF is greater than 1,

If NormalLevelCode is equal to "L" or SecondLevelIndicator is equal to 1,

set BiasPassed to false.

If lowBAF is greater than maxBAF,

set maxBAF to lowBAF.

If BiasPassed is equal to true,

set RATA Calc Overall BAF to 1.

Otherwise,

set RATA Calc Overall BAF to maxBAF.

Otherwise,

set RATA Calc Overall RATA to maxRA.

if TestResultCode is equal to "PASSED" or "PASSAPS",

set RATA Calc Overall BAF to maxBAF.

Results:

Result	Description	Severity
A	The values in this record could not be calculated because of invalid data.	Critical Error Level 1
B	In the active load record for this unit or stack and test you did not designate the normal load levels properly. The correct BAF cannot be determined for this multi-load flow test.	Critical Error Level 1
C	You did not perform the test for one or both of the operating levels that were designated as normal in the active load record. The correct BAF cannot be determined for this multi-load flow test.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Overall RATA Calculations

Check Code: RATA-127

Check Name: Calculate Flow RATA Run Values

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Flow RATA Run record:

Set RATA Calc Dry MW, RATA Calc Wet MW, RATA Calc Run Velocity, RATA Calc Adjusted Run Velocity, RATA Calc WAF, and RATA Calc Run RV to null.

Set RATA Check WAF to false.

If the associated RATA Run ID is null,

return result A.

If the associated ReferenceMethodCode is null or is not in the ReferenceMethodCode lookup table, or does not begin with "2F", "2G", or "M2H",

return result B.

If PercentCO2 is null, is less than or equal to 0, or is greater than 20.0; or PercentO2 is null, is less than or equal to 0, or is greater than 22.0; or PercentMoisture is null, is less than or equal to 0, or is greater than 75.0,

return result C.

Otherwise,

Set TravCt to the number of RATA Traverse records for the run.

Calculate RATA Calc Dry MW = (.44 * PercentCO2) + (.32 * PercentO2) + (.28 * (100 - PercentCO2 - PercentO2)).

Calculate RATA Calc Wet MW = (RATA Calc Dry MW * (1 - (PercentMoisture / 100))) + (18 * (PercentMoisture / 100)).

Calculate RATA Calc Dry MW = min(RATA Calc Dry MW, 999.99), rounded to 2 decimal places.

If TravCt < 12 or (TravCt < NumberOfTraversePoints and NumberOfTraversePoints is greater than or equal to 12),

Calculate RATA Calc Wet MW = min(RATA Calc Wet MW, 999.99), rounded to 2 decimal places.

Otherwise,

If the associated StackDiameter is null or is less than or equal to 0; or the BarometricPressure is null, is less than 20, or is greater than 35; or the StackStaticPressure is null, is less than - 3 0, or is greater than 3 0; or the NumberOfTraversePoints is null or is less than 12; or the RATA Calc Wet MW (rounded to two decimal places) is null, is less than 25, or is greater than 35,

return result C.

If the associated ReferenceMethodCode for the run is equal to "M2H",

If the StackDiameter is null or is less than 3.3,

return result C.

If the DefaultWAF is not null,

return result D.

If the associated ReferenceMethodCode for the run is equal to "2FJ", or "2GJ",

If the associated CalculatedWAF for the operating level is null, or the DefaultWAF is null, is greater than 1, or is less than 0.9400,

return result D.

If the associated ReferenceMethodCode for the run is equal to "2FH" or "2GH",

If the StackDiameter is null or is less than 3.3,

return result C.

If the associated CalculatedWAF for the operating level and DefaultWAF are both not null,

return result D.

If the DefaultWAF is not null and is not equal to 0.9900 or 0.9950,

return result D.

Otherwise,

If either the associated CalculatedWAF for the operating level or the DefaultWAF is not null,

return result D.

set RepCt, TotalVel, TotalRepVel, and TotalTemp to 0.

set minPoints to 99.

calculate tempPressure = BarometricPressure + (StackStaticPressure / 13.6).

For each RATA Traverse record for the run:

If TStackTemperature is null, is less than 0, or is greater than 1000; or the NumberOfWallEffectsPoints is not null and is less than 2; or the ReplacementVelocity is not null and is less than or equal to 0; or the VelocityCalibrationCoefficient is null, is less than 0.5, or is greater than 1.5,

return result C.

If AvgVelDiffPressure and AvgSquareVelDiffPressure are both null or are both not null,

return result C.

Otherwise,

If ReferenceMethodCode begins with "2F",

If YawAngle is null, or is less than -90 or is greater than 90,

return result C.

If PitchAngle is null, or is less than -90 or is greater than 90,

return result C.

Otherwise,

If AvgVelDiffPressure is not null,

Calculate tempPointVel = 85.49 * VelocityCalibrationCoefficient * sqrt (AvgVelDiffPressure * (TStackTemperature + 460) / tempPressure / RATA Calc Wet MW * cos(YawAngle) * cos(PitchAngle).

Otherwise,

Calculate tempPointVel = 85.49 * VelocityCalibrationCoefficient * AvgSquareVelDiffPressure *sqrt((TStackTemperature + 460) / tempPressure / RATA Calc Wet MW) * cos(YawAngle) * cos(PitchAngle).

If ReferenceMethodCode begins with "2G",

If YawAngle is null, or is less than -90 or is greater than 90,

return result C.

If PitchAngle is not null,

return result C.

Otherwise,

If AvgVelDiffPressure is not null,

Calculate tempPointVel = 85.49 * VelocityCalibrationCoefficient * sqrt (AvgVelDiffPressure * (TStackTemperature + 460) / tempPressure / RATA Calc Wet MW * cos(YawAngle).

Otherwise,

Calculate tempPointVel = 85.49 * VelocityCalibrationCoefficient * AvgSquareVelDiffPressure *sqrt((TStackTemperature + 460) / tempPressure / RATA Calc Wet MW) * cos(YawAngle).

If ReferenceMethodCode is equal to "M2H",

If YawAngle is not null, or PitchAngle is not null,

return result C.

Otherwise,

If AvgVelDiffPressure is not null,

Calculate tempPointVel = 85.49 * VelocityCalibrationCoefficient * sqrt (AvgVelDiffPressure * (TStackTemperature + 460) / tempPressure / RATA Calc Wet MW

Otherwise,

Calculate tempPointVel = 85.49 * VelocityCalibrationCoefficient * AvgSquareVelDiffPressure *sqrt((TStackTemperature + 460) / tempPressure / RATA Calc Wet MW).

If PointUsedIndicator is equal to 1, the NumberOfWallEffectsPoints is not null, or the ReplacementVelocity is not null,

If the associated ReferenceMethodCode for the run is not equal to "2FH", "2GH", or "M2H",

return result C.

Otherwise,

If PointUsedIndicator is equal to 1,

If the NumberOfWallEffectsPoints is null or the ReplacementVelocity is null,

return result C.

Otherwise,

If the NumberOfWallEffectsPoints is not null or the ReplacementVelocity is not null,

return result C.

Add TStackTemperature to TotalTemp.

Add TempPointVel to TotalVel.

If the associated ReferenceMethodCode for the run is equal to "2FH", "2GH", or "M2H",

If ReplacementVelocity is not null,

add 1 to RepCt.

add ReplacementVelocity to TotalRepVel.

If NumberOfWallEffectsPoint is less than minPoints,

set minPoints to the NumberOfWallEffectsPoints.

Otherwise,

add TempPointVel to TotalRepVel.

If TravCt is not equal to NumberOfTraversePoints,

return result C.

If RepCt is equal to 4, and TotalVel is less than TotalRepVel,

return result C.

If RepCt is not equal to 0 or 4,

return result E.

If RepCt is equal to 4, and TravCt is less than 16,

return result F.

Otherwise,

Calculate tempVel = TotalVel / TravCt.

If the associated ReferenceMethodCode begins with "2F", and tempVel (rounded to 2 decimal places) is less than 20,

return result G.

Otherwise,

Calculate RATA Calc Wet MW = min(RATA Calc Wet MW, 999.99), rounded to 2 decimal places.

Calculate RATA Calc Run Velocity = min(tempVel, 9999.99), rounded to 2 decimal places.

Calculate tempFlow = 3600 * tempVel * (StackDiameter ** 2) * PI / 4 * 528 / ((TotalTemp / TravCt) + 460) * tempPressure / 29.92.

If the associated ReferenceMethodCode for the run is equal to "2FH", "2GH", or "M2H",

Set RATA Check WAF to true.

Set RATA Calc Run RV to tempFlow.

Otherwise,

If the associated DefaultWAF is not null,

Calculate RATA Calc Run RV = min(tempFlow * DefaultWAF, 9999999999.999), rounded to the nearest 1000.

Otherwise,

Calculate RATA Calc Run RV = min(tempFlow, 9999999999.999), rounded to the nearest 1000.

If RepCt is equal to 4,

Calculate tempRepVel = TotalRepVel / TravCt.

Calculate RATA Calc Adjusted Run Velocity = min(tempRepVel, 9999.99), rounded to 2 decimal places.

Calculate RATA Calc Run WAF = tempRepVel / tempVel , and round the result to 4 decimal places.

Results:

Result	Description	Severity
A	The values in this record could not be calculated because this record has not yet been saved. You will also need to enter a ReferenceMethodCode in the RATA Summary record before these values can be calculated.	Critical Error Level 1
B	You reported a Flow RATA Run record for [key], which is not appropriate for a RATA conducted using ReferenceMethodCode [method].	Critical Error Level 1
C	The values in this record could not be calculated because of invalid data.	Critical Error Level 1
D	The values in this record could not be calculated because the calculated and default WAFs reported in the associated RATA Summary record were not valid.	Critical Error Level 1
E	You identified [key] as a run to be used in the calculation of a wall effects adjustment factor, but you did not identify the correct number of exterior method 1 traverse points for this run. Four exterior method 1 traverse points are required to calculate a wall effects adjustment factor. Recalculation of the AverageVelocityWithWallEffects and CalculatedWAF was not performed.	Critical Error Level 1
F	The NumberOfTraversePoints reported for [key] is less than 16. A minimum of 16 traverse points is required for a flow RATA run in which method 2H is used to calculate a wall effects adjustment factor.	Critical Error Level 1
G	The average velocity for [key] recalculated from the values in Flow RATA Run and RATA Traverse records is less than 20 ft/sec. A minimum average velocity of 20.0 ft/sec is required to use Method 2F for a flow RATA. Recalculation of the average stack flow for this run was not performed.	Critical Error Level 1
H	The AverageStackFlowRate will not be recalculated, because the use of a calculated WAF requires the presence of data from all the runs in the RATA. To determine the AverageStackFlowRate, you should enter all the run data and evaluate the RATA.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Calculations

Check Code: RATA-128

Check Name: Calculate RATA Traverse Point Values

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA Traverse record:

Set RATA Calc Point Velocity to null.

If the associated Flow RATA Run ID is null,

return result A.

If the associated ReferenceMethodCode is null or is not in the ReferenceMethodCode lookup table, or does not begin with "2F", "2G", or "M2H",

return result B.

Otherwise,

If PercentCO2 is null, is less than or equal to 0, or is greater than 20.0; or PercentO2 is null, is less than or equal to 0, or is greater than 22.0; or PercentMoisture is null, is less than or equal to 0, or is greater than 75.0; the BarometricPressure is null, is less than 20, or is greater than 35; or the StackStaticPressure is null, is less than - 3 0, or is greater than 3 0; or the VelocityCalibrationCoefficient is null, is less than 0.5, or is greater than 1.5; or the TStackTemperature is null, is less than 0, or is greater than 1000,

return result C.

If AvgVelDiffPressure and AvgSquareVelDiffPressure are both null or are both not null,

return result C.

Otherwise,

Calculate tempDryMW = (.44 * PercentCO2) + (.32 * PercentO2) + (.28 * (100 - PercentCO2 - PercentO2)).

Calculate tempWetMW = (tempDryMW * (1 - (PercentMoisture / 100))) + (18 * (PercentMoisture / 100)).

if temp WetM W is less than 25, or is greater than 35;

return result C.

Otherwise,

If ReferenceMethodCode begins with "2F",

If YawAngle is null, or is less than -90 or is greater than 90,

return result C.

If PitchAngle is null, or is less than -90 or is greater than 90,

return result C.

If ProbeTypeCode is not equal to "PRISM", "PRISM-T", or "SPHERE",

return result C.

Otherwise,

If AvgVelDiffPressure is not null,

Calculate tempVel = 85.49 * VelocityCalibrationCoefficient * sqrt(AvgVelDiffPressure * (TStackTemperature + 460) / (BarometricPressure + (StackStaticPressure / 13.6)) / tempWetMW) * cos(YawAngle) * cos(PitchAngle).

Otherwise,

Calculate tempVel = 85.49 * VelocityCalibrationCoefficient * AvgSquareVelDiffPressure *sqrt((TStackTemperature + 460) / (BarometricPressure + (StackStaticPressure / 13.6)) / tempWetMW) * cos(YawAngle) * cos(PitchAngle).

Calculate RATA Calc Point Velocity = min(tempVel, 9999.99), and round the result to 2 decimal places.

If ReferenceMethodCode begins with "2G",

If YawAngle is null, or is less than -90 or is greater than 90,

return result C.

If PitchAngle is not null,

return result C.

If ProbeTypeCode is equal to "PRANDT1",

return result C.

Otherwise,

If AvgVelDiffPressure is not null,

Calculate tempVel = 85.49 * VelocityCalibrationCoefficient * sqrt(AvgVelDiffPressure * (TStackTemperature + 460) / (BarometricPressure + (StackStaticPressure / 13.6)) / tempWetMW) * cos(YawAngle).

Otherwise,

Calculate tempVel = 85.49 * VelocityCalibrationCoefficient * AvgSquareVelDiffPressure *sqrt((TStackTemperature + 460) / (BarometricPressure + (StackStaticPressure / 13.6)) / tempWetMW) * cos(YawAngle).

Calculate RATA Calc Point Velocity = min(tempVel, 9999.99), and round the result to 2 decimal places.

If ReferenceMethodCode is equal to "M2H",

If YawAngle is not null, or PitchAngle is not null,

return result C.

If ProbeTypeCode is not equal to "TYPE-SA", "TYPE-SM" or "PRANDT1",

return result C.

Otherwise,

If AvgVelDiffPressure is not null,

Calculate tempVel = 85.49 * VelocityCalibrationCoefficient * sqrt(AvgVelDiffPressure * (TStackTemperature + 460) / (BarometricPressure + (StackStaticPressure / 13.6)) / tempWetMW).

Otherwise,

Calculate tempVel = 85.49 * VelocityCalibrationCoefficient * AvgSquareVelDiffPressure *sqrt((TStackTemperature + 460) / (BarometricPressure + (StackStaticPressure / 13.6)) / tempWetMW).

Calculate RATA Calc Point Velocity = min(tempVel, 9999.99), and round the result to 2 decimal places.

Results:

Result	Description	Severity
A	The values in this record could not be calculated because this record has not yet been saved. You will also need to enter a ReferenceMethodCode in the RATA Summary record before these values can be calculated.	Critical Error Level 1
B	The values in this record could not be recalculated, because this record is not appropriate for a RATA conducted using ReferenceMethodCode [method].	Critical Error Level 1
C	The values in this record could not be calculated because of invalid data.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Traverse Point Calculations

Check Code: RATA-129

Check Name: Calculate Run Reference Value for Method 2H RATA

Related Former Checks:

Applicability: CEM Check

Specifications:

For the Flow RATA Run record where RATA Check WAF is equal to true:

If RATA Calc Run WAF is null,

set RunCt to 0

set sumWAF to 0

set RATA WAF Run Numbers to null.

Otherwise,

set RunCt to 1

set sumWAF to RATA Calc Run WAF.

set RATA WAF Run Numbers to the RunNumber in the current Flow RATA Run record.

Set tempFlow to RATA Calc Run RV.

Set RATA Calc Overall WAF and RATA Calc Run RV to null.

Locate all Flow RATA Run records where the OperatingLevelCode is equal to the OperatingLevelCode in the current Flow RATA Run record, the RunNumber is not equal to the RunNumber in the current Flow RATA Run record, the RunStatusFlag is equal to "RUNUSED", and the AverageVelocityWithWallEffects is not null .

For each Flow RATA Run record found,

If PercentCO2 is null, is less than or equal to 0, or is greater than 20.0; or PercentO2 is null, is less than or equal to 0, or is greater than 22.0; or PercentMoisture is null, is less than or equal to 0, or is greater than 75.0,

return result A .

else

Calculate temp DryMW = (.44 * PercentCO2) + (.32 * PercentO2) + (.28 * (100 - PercentCO2 - PercentO2)).

Calculate temp WetMW = (temp DryMW * (1 - (PercentMoisture / 100))) + (18 * (PercentMoisture / 100)).

i f the associated StackDiameter is null or is less than 3.3 ; or the BarometricPressure is null, is less than 20, or is greater than 35; or the StackStaticPressure is null, is less than - 3 0, or is greater than 3 0; or the NumberOfTraversePoints is null or is less than 1 6 ; or temp WetMW (rounded to two decimal places) is less than 25 or greater than 35 ,

return result A .

otherwise,

S et TravCt, RepCt, TotalVel, TotalRepVel, and TotalTemp to 0.

S et minPoints to 99.

C alculate tempPressure = BarometricPressure + (StackStaticPressure / 13.6).

Locate all RATA Traverse with OperatingLevelCode and RunNumber equal to the OperatingLevelCode and

RunNumber in the Flow RATA Run record retrieved above.

If not found,

return result B.

otherwise,

For each RATA Traverse record for the run:

If TStackTemperature is null, is less than 0, or is greater than 1000; or the NumberOfWallEffectsPoints is not null and is less than 2; or the ReplacementVelocity is not null and is less than or equal to 0; or the VelocityCalibrationCoefficient is null, is less than 0.5, or is greater than 1.5,

return result A .

else i f AvgVelDiffPressure and AvgSquareVelDiffPressure are both null or are both not null,

return result A .

else i f ReferenceMethodCode is equal to "2F H ",

If YawAngle is null, or is less than -90 or is greater than 90,

return result A .

else i f PitchAngle is null, or is less than -90 or is greater than 90,

return result A .

else i f AvgVelDiffPressure is not null,

Calculate tempPointVel = 85.49 * VelocityCalibrationCoefficient * sqrt (AvgVelDiffPressure * (TStackTemperature + 460) / tempPressure / temp WetMW) * cos (YawAngle) * cos(PitchAngle).

o therwise,

Calculate tempPointVel = 85.49 * VelocityCalibrationCoefficient * AvgSquareVelDiffPressure *sqrt((TStackTemperature + 460) / tempPressure / temp WetMW) * cos(YawAngle) * cos(PitchAngle).

else i f ReferenceMethodCode is equal to "2G H ",

If YawAngle is null, or is less than -90 or is greater than 90,

return result A .

else i f PitchAngle is not null,

return result A .

else i f AvgVelDiffPressure is not null,

Calculate tempPointVel = 85.49 * VelocityCalibrationCoefficient * sqrt (AvgVelDiffPressure * (TStackTemperature + 460) / tempPressure / temp WetMW) * cos (YawAngle).

o therwise,

Calculate tempPointVel = 85.49 * VelocityCalibrationCoefficient * AvgSquareVelDiffPressure *sqrt((TStackTemperature + 460) / tempPressure / temp WetMW) * cos(YawAngle).

else i f ReferenceMethodCode is equal to "M2H",

If YawAngle is not null, or PitchAngle is not null,

return result A .

else i f AvgVelDiffPressure is not null,

Calculate tempPointVel = 85.49 * VelocityCalibrationCoefficient * sqrt (AvgVelDiffPressure * (TStackTemperature + 460) / tempPressure / temp WetMW).

o therwise,

Calculate tempPointVel = 85.49 * VelocityCalibrationCoefficient * AvgSquareVelDiffPressure *sqrt((TStackTemperature + 460) / tempPressure / temp WetMW).

If PointUsedIndicator is equal to 1 and (either the NumberOfWallEffectsPoints is null or the ReplacementVelocity is null) ,

return result A .

else i f PointUsedIndicator is not equal to 1 and (either the NumberOfWallEffectsPoints is not null or the ReplacementVelocity is not null) ,

return result A .

otherwise,

Add TStackTemperature to TotalTemp.

Add TempPointVel to TotalVel.

Add 1 to TravCt.

If ReplacementVelocity is not null,

add 1 to RepCt.

add ReplacementVelocity to TotalRepVel.

If NumberOfWallEffectsPoint is less than minPoints,

set minPoints to the NumberOfWallEffectsPoints.

Otherwise,

add TempPointVel to TotalRepVel.

//if no result

If TravCt is not equal to the NumberOfTraversePoints ,

return result A .

else i f RepCt is equal to 4, and TotalVel is less than TotalRepVel,

return result A .

else i f RepCt is not equal to 4,

return result C .

otherwise,

Calculate tempVel = TotalVel / TravCt, and round the result to 2 decimal places.

Calculate tempRun WAF = Total RepVel / Total Vel.

If temp RunWAF is greater than 0.9800,

Calculate wallpoints = min(int (6 * StackDiameter * (1 - sqrt(1 - (4 / TravCt)))), 12).

If StackDiameter >= 16.5,

add 1 to wallpoints.

If wallpoints <= minPoints,

If temp RunWAF is less than .9700,

set temp RunWAF to .9700.

o therwise,

set temp RunWAF to .9800.

// if no result

add 1 to RunCt.

add tempRunWAF to sumWAF.

append the RunNumber of the retrieved Flow RATA Run record to RATA WAF Run Numbers.

//if no result

If RunCt is equal to 0,

return result D.

Otherwise,

Calculate RATA Calc Overall WAF = sumWAF / RunCt.

If RATA Calc Overall WAF is greater than .9900,

Locate a LocationAttribute record for the location where the BeginDate is on or before the EndDate of the test and the EndDate is null or is on or after the EndDate of the test.

If one and only one record is found, and MaterialCode is equal to "BRICK" or "OTHER"

If MaterialCode is equal to "BRICK",

If the associated ReferenceMethodCode is equal to "M2H",

Calculate RATA Calc Run RV = min(tempFlow * RATA Calc Overall WAF , 9999999999.999), rounded to the nearest 1000.

Round RATA Calc Overall WAF to 4 decimal places.

return result E.

Otherwise,

Calculate RATA Calc Run RV = min(tempFlow * .99 , 9999999999.999), rounded to the nearest 1000.

Set RATA Calc Overall WAF to .99.

return result F.

else if RATA Calc Overall WAF is greater than .9950,

If the associated ReferenceMethodCode is equal to "M2H",

Calculate RATA Calc Run RV = min(tempFlow * RATA Calc Overall WAF , 9999999999.999), rounded to the nearest 1000.

Round RATA Calc Overall WAF to 4 decimal places.

return result E.

Otherwise,

Calculate RATA Calc Run RV = min(tempFlow * .995 , 9999999999.999), rounded to the nearest 1000.

Set RATA Calc Overall WAF to .995.

return result F.

otherwise,

Calculate RATA Calc Run RV = min(tempFlow * RATA Calc Overall WAF , 9999999999.999), rounded to the nearest 1000.

Round RATA Calc Overall WAF to 4 decimal places.

return result G.

Otherwise,

return result H.

Otherwise,

Calculate RATA Calc Run RV = min(tempFlow * RATA Calc Overall WAF , 9999999999.999), rounded to the nearest 1000.

Round RATA Calc Overall WAF to 4 decimal places.

return result G.

Results:

Result	Description	Severity
A	The values in this record could not be recalculated because of invalid data in at least one of the runs used to determine the wall effects adjustment factor.	Critical Error Level 1
B	The values in this record could not be recalculated because at least one of the runs used to determine the wall effects adjustment factor had no traverse point data.	Critical Error Level 1
C	The values in this record could not be recalculated because at least one of the runs used to determine the wall effects adjustment factor did not have four exterior Method 1 traverse points.	Critical Error Level 1
D	The AverageStackFlowRate could not be recalculated because the there were no runs used to determine the wall effects adjustment factor for the operating level.	Informational Message

E	The AverageStackFlowRate was calculated based on wall effects data reported in the following runs: [runs]. If additional wall effects runs are entered, you will need to recalculate the values in this record. Based on the currently entered data, it will be more advantageous to use a default WAF with Method D2H rather than measured WAF of [WAF].	Informational Message
F	Based on the wall effects data reported in runs [runs], the AverageStackFlowRate was calculated using a default wall effects adjustment factor (WAF). If additional wall effects runs are entered, you will need to recalculate the values in this record. You should enter the default WAF of [WAF] on the RATA Summary screen.	Informational Message
G	The AverageStackFlowRate was calculated based on wall effects data reported in the following runs: [runs]. If additional wall effects runs are entered, you will need to recalculate the values in this record. You should enter the calculated WAF of [WAF] on the RATA Summary screen.	Informational Message
H	The values in this record could not be recalculated because there was not a single, active, valid Location Attribute record for the location.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow RATA Run Calculations

Check Code: RATA-130

Check Name: RATA Run valid for HG

Related Former Checks:

Applicability:

Specifications:

For a RATA run with valid begin and end times and a RunStatusCode equal to "RUNUSED":

If the associated SystemTypeCode of the RATA is equal to "FLOW",

If the difference between the Run Begin Time and End Time is less than 4 minutes,

return result A.

If the associated SystemTypeCode of the RATA does not begin with "HG",

If the difference between the Run Begin Time and End Time is less than 20 minutes,

return result B.

Results:

Result	Description	Severity
A	The run for [key] was less than five minutes. Each run must be at least five minutes in duration.	Critical Error Level 2
B	The run for [key] was less than 21 minutes. Each run must be at least 21 minutes in duration.	Critical Error Level 2

Usage:

1	QA and Certification Data Entry Screen Evaluation RATA Run Evaluation

Check Code: RATA-131

Check Name: APS Code Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the ***CurrentRataSummary*** record:

If ***CurrentRataSummary*** .ApsCode is NOT null,

If ***CurrentRataSummary*** .SystemTypeCode is NOT equal to "HCL",

return result A.

Else if ***CurrentRataSummary*** .APSIndicator is NOT equal to 1,

return result B.

Else

Locate the record in ***ApsCodeLookupTable*** where APSCode is equal to ***CurrentRataSummary*** .APSCode.

If not found,

return result C.

Results:

Result	Description	Severity
A	Your reported an APS Code for [key], which is only allowed for RATA tests on an HCl system	Critical Error Level 1
B	Your reported an APS Code for [key], which is only allowed with an APS Indicator of 1.	Critical Error Level 1
C	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- RATA Summary (Pass 1)

Check Category:

7-Day Calibration Test

Check Code: SEVNDAY-1

Check Name: Initialize 7-Day Calibration Test Variables

Related Former Checks:

Applicability: CEM Check

Specifications:

For the calibration test:

Set Calibration Injection Count to 0.

Set Calibration Minimum Zero Reference Value and Calibration Minimum Upscale Reference Value to null.

set Calibration Maximum Zero Reference Value and Calibration Maximum Upscale Reference Value to 0.

Set Calibration Injection Times Appropriate and Calibration Injection Times Valid to true.

Set Calibration Test Begin Date, Calibration Test Begin Hour, Calibration Test Begin Minute, Calibration Test End Date, Calibration Test End Hour, Calibration Test End Minute, Last Calibration Injection Date, Calibration Test Calc Result, and Calibration Upscale Gas Level Code.

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Injection Evaluation
2	QA Test Evaluation Report 7-Day Calibration Test Evaluation (Pass 1)

Check Code: SEVNDAY-2

Check Name: 7-Day Calibration Test Component Type Valid

Related Former Checks: 7DAY-1

Applicability: CEM Check

Specifications:

For the calibration test:

If the ComponentID is null,

set Calibration Test Component Valid to false, and return result A.

Otherwise,

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

set Calibration Test Component Type Valid to true.

Otherwise,

set Calibration Test Component Type Valid to false, and return result B.

If Calibration Test Component is invalid, do not perform checks for Calibration Injection category. Set the calculated values in the associated Calibration Injection records to null.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	The ComponentTypeCode in the monitoring plan is [comptype]. This type of component does not require a calibration test.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report 7-Day Calibration Test Evaluation (Pass 1)

Check Code: SEVNDAY-3

Check Name: 7-Day Calibration Test Reason Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the calibration test:

If the TestReasonCode is null,

return result A.

If the TestReasonCode is not equal to "INITIAL", "RECERT", or "DIAG",

Locate the TestReasonCode is not in the Test Reason Code Lookup table,

If not found,

return result B.

If found,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
C	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Test Evaluation
2	QA Test Evaluation Report 7-Day Calibration Test Evaluation (Pass 1)
	Condition: Calibration Test Component Type Valid*Equals* true

Check Code: SEVNDAY-4

Check Name: Aborted 7-Day Calibration Test Not Evaluated

Related Former Checks:

Applicability: CEM Check

Specifications:

For the calibration test:

If the TestResultCode is equal to "ABORTED",

set Calibration Test Aborted to true, Calibration Test Calc Result to "ABORTED", and return result A.

Do not perform checks for the Calibration Injection category.

Set all calculated values in associated Calibration Injection records to null.

Otherwise,

set Calibration Test Aborted to false.

Results:

Result	Description	Severity
A	The TestResultCode indicates that the test was aborted. [Children] records for this test will not be evaluated. If the test was aborted for a reason not related to monitor performance, you should not report the test.	Informational Message

Usage:

1	QA Test Evaluation Report 7-Day Calibration Test Evaluation (Pass 1)
	Condition: Calibration Test Component Type Valid*Equals* true

Check Code: SEVNDAY-5

Check Name: Identification of Previously Reported Test or Test Number for 7-Day Calibration Test

Related Former Checks:

Applicability: CEM Check

Specifications:

For a 7-day calibration test with valid span scale and end time and a non-null ComponentID:

Set Calibration Test Supp Data ID to null.

Locate another 7-day calibration test for the component where the SpanScale, EndDate, EndHour, and EndMinute is equal to the SpanScale, EndDate, EndHour, and EndMinute of the current TestSummary record.

If found,

return result A.

Otherwise,

Locate an unassociated QASupp record for the location where the TestTypeCode is equal to "7DAY", and the ComponentID, SpanScale, EndDate and EndHour is equal to ComponentID, SpanScale, EndDate and EndHour of the current TestSummary record, and the EndMinute is null or is equal to the EndMinute in the current TestSummary record, and the TestNum is not equal to the TestNumber in the current TestSummary record,

If found,

return result A.

Otherwise,

Locate a QASupp record for the location where the TestTypeCode is equal to "7DAY" and the TestNum equal to the TestNumber in the current TestSummary record.

If found,

Set Calibration Test Supp Data ID to the QA Supp Data ID in the QASupp record.

If CAN_SUBMIT in the QA Supp record is equal to "N",

If this is an unassociated QASupp record, and the ComponentID, SpanScale, EndDate, EndHour, and EndMinute in the QASupp record is not equal to ComponentID, SpanScale, EndDate, EndHour, or EndMinute of the current TestSummary record,

return result B.

Otherwise,

return result C.

Results:

Result	Description	Severity
A	Based on the information in this record, this test has already been submitted with a different test number, or the Client Tool database already contains the same test with a different test number. This test cannot be submitted.	Fatal
B	Another [testtype] with this test number has already been submitted for this location. This test cannot be submitted with this test number. If this is a different test, you should assign it a unique test number.	Fatal

C	This test has already been submitted and will not be resubmitted. If you wish to resubmit this test, please contact EPA for approval.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Test Evaluation
	Condition: Duplicate 7-Day Calibration *Equals* false
2	QA Test Evaluation Report 7-Day Calibration Test Evaluation (Pass 1)

Check Code: SEVNDAY-6

Check Name: Zero Injection Time Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the calibration injection:

Set Zero Injection Valid to true.

If the ZeroInjectionDate is null, or the ZeroInjectionHour is null or not between 0 and 23, or the ZeroInjectionMinute is null and the ZeroInjectionDate is on or after ECMPS MP Begin Date, or the ZeroInjectionMinute is not between 0 and 59,

set Calibration Injection Times Valid to false, and return result A.

Otherwise,

If Last Calibration Injection Date is null or is prior to the ZeroInjectionDate,

set Last Calibration Injection Date to ZeroInjectionDate.

Otherwise,

set Calibration Injection Times Appropriate to false.

If ZeroInjectionMinute is null and the ZeroInjectionDate is before ECMPS MP Begin Date, or

UpscaleInjectionMinute is null and the UpscaleInjectionDate is before ECMPS MP Begin Date,

return result B.

Results:

Result	Description	Severity
A	The [type] date, hour, and/or minute for [key] is invalid.	Critical Error Level 1
B	You did not provide [fieldname] for [key]. This information will be required for ECMPS submissions.	Non-Critical Error

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Injection Evaluation
2	QA Test Evaluation Report --- Calibration Injection

Check Code: SEVNDAY-7

Check Name: Upscale Injection Time Valid

Related Former Checks: 7DAY-12

Applicability: CEM Check

Specifications:

For the calibration injection:

Set Upscale Injection Valid to true.

Append the UpscaleGasLevelCode to Calibration Upscale Gas Level Code.

If the UpscaleInjectionDate is null, or the UpscaleInjectionHour is null or not between 0 and 23, or the UpscaleInjectionMinute is null and the UpscaleInjectionDate is on or after ECMPS MP Begin Date, or the UpscaleInjectionMinute is not between 0 and 59,

set Calibration Injection Times Valid to false, and return result A.

If the ZeroInjectionDate is not null, and UpscaleInjectionDate is not equal to the ZeroInjectionDate,

return result B.

Results:

Result	Description	Severity
A	The [type] date, hour, and/or minute for [key] is invalid.	Critical Error Level 1
B	The ZeroInjectionDate was not equal to the UpscaleInjectionDate for [key]. The zero-level and upscale injections reported in the same record must be performed on the same day.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Injection Evaluation
2	QA Test Evaluation Report --- Calibration Injection

Check Code: SEVNDAY-8

Check Name: Zero Calibration Error Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the calibration injection:

If the ZeroCalibrationError is null,

return result A.

If the ZeroCalibrationError is less than 0,

return result B.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Injection Evaluation
2	QA Test Evaluation Report --- Calibration Injection

Check Code: SEVNDAY-9

Check Name: Upscale Calibration Error Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the calibration injection:

If the UpscaleCalibrationError is null,

return result A.

If the UpscaleCalibrationError is less than 0,

return result B.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Injection Evaluation
2	QA Test Evaluation Report --- Calibration Injection

Check Code: SEVNDAY-10

Check Name: Injection Upscale Gas Level Code Valid

Related Former Checks: 7DAY-3C

Applicability: CEM Check

Specifications:

For the calibration injection:

If the UpscaleGasLevelCode is null,

set Upscale Calibration Valid to false, and return result A.

If the UpscaleGasLevelCode is not equal to "MID" or "HIGH",

set Upscale Calibration Valid to false, and return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Injection Evaluation
2	QA Test Evaluation Report --- Calibration Injection

Check Code: SEVNDAY-11

Check Name: Zero Measured Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the calibration injection:

If ZeroMeasuredValue is null,

set Zero Calibration Injection Valid to false, and return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Injection Evaluation
2	QA Test Evaluation Report --- Calibration Injection

Check Code: SEVNDAY-12

Check Name: Upscale Measured Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the calibration injection:

If UpscaleMeasuredValue is null,

set Upscale Calibration Injection Valid to false, and return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Injection Evaluation
2	QA Test Evaluation Report --- Calibration Injection

Check Code: SEVNDAY-13

Check Name: Zero Reference Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the calibration injection:

Set Calculate Zero Calibration Injection to Zero Calibration Injection Valid.

If ZeroReferenceValue is null,

set Calculate Zero Calibration Injection to false, Calibration Maximum Zero Reference Value to null, and return result A.

If ZeroReferenceValue is less than 0,

set Calculate Zero Calibration Injection to false, Calibration Maximum Zero Reference Value to null, and return result B.

Otherwise,

If Calibration Maximum Zero Reference Value is not null,

If ZeroReferenceValue is greater than Calibration Maximum Zero Reference Value,

set Calibration Maximum Zero Reference Value to the ZeroReferenceValue.

If Calibration Minimum Zero Reference Value is null,

set Calibration Minimum Zero Reference Value to the ZeroReferenceValue.

Otherwise,

If ZeroReferenceValue is less than the Calibration Maximum Zero Reference Value,

set Calibration Minimum Zero Reference Value to the ZeroReferenceValue.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Injection Evaluation
2	QA Test Evaluation Report --- Calibration Injection

Check Code: SEVNDAY-14

Check Name: Upscale Reference Value Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the calibration injection:

Set Calculate Upscale Calibration Injection to Upscale Calibration Injection Valid.

If UpscaleReferenceValue is null,

set Calculate Upscale Calibration Injection to false, Calibration Maximum Upscale Reference Value to null, and return result A.

If UpscaleReferenceValue is less than or equal to 0,

set Calculate Upscale Calibration Injection to false, Calibration Maximum Upscale Reference Value to null, and return result B.

Otherwise,

If Calibration Maximum Upscale Reference Value is not null,

If UpscaleReferenceValue is greater than Calibration Maximum Upscale Reference Value,

set Calibration Maximum Upscale Reference Value to the UpscaleReferenceValue.

If Calibration Minimum Upscale Reference Value is null,

set Calibration Minimum Upscale Reference Value to the UpscaleReferenceValue.

Otherwise,

If UpscaleReferenceValue is less than the Calibration Minimum Upscale Reference Value,

set Calibration Minimum Upscale Reference Value to the UpscaleReferenceValue.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Injection Evaluation
2	QA Test Evaluation Report --- Calibration Injection

Check Code: SEVNDAY-15

Check Name: Calculate Zero Injection Results

Related Former Checks: 7DAY-13, 14, 17

Applicability: CEM Check

Specifications:

For the calibration injection:

Add 1 to Calibration Injection Count.

If Calibration Injection Times Valid is true,

If the Calibration Test Begin Date is null or the Calibration Test Begin Hour/Begin Minute is later than the ZeroInjectionDate, ZeroInjectionHour, and ZeroInjectionMinute,

set the Calibration Test Begin Date/Begin Hour/Begin Minute to the ZeroInjectionDate, ZeroInjectionHour, and ZeroInjectionMinute.

If the Calibration Test Begin Date/Begin Hour/Begin Minute is later than the UpscaleInjectionDate,UpscaleInjectionHour, and UpscaleInjectionMinute,

set the Calibration Test Begin Date/Begin Hour/Begin Minute to the UpscaleInjectionDate, UpscaleInjectionHour, and UpscaleInjectionMinute.

If the Calibration Test End Date is null or the Calibration Test End Date/End Hour/EndMinute is prior to the ZeroInjectionDate, ZeroInjectionHour, and ZeroInjectionMinute,

set the Calibration Test End Date/End Hour/EndMinute to the ZeroInjectionDate, ZeroInjectionHour, and ZeroInjectionMinute.

If the Calibration Test End Date/End Hour/EndMinute is prior to the UpscaleInjectionDate, UpscaleInjectionHour, and UpscaleInjectionMinute,

set the Calibration Test End Date/End Hour/EndMinute to the UpscaleInjectionDate, UpscaleInjectionHour, and UpscaleInjectionMinute.

If Test Span Value is null,

set Calculate Zero Calibration Injection is false.

If Calculate Zero Calibration Injection is false,

set Calibration Test Calc Result to "INVALID", Calibration Zero Injection Calc Result to null, Calibration Zero Injection Calc APS Indicator to null, and return result A.

Otherwise,

Calculate diff = abs(Zero Injection Measured Value - Zero Injection Reference Value)

Set Calibration Zero Injection Calc APS Indicator to 0.

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

Round diff to 1 decimal place.

Set Calibration Zero Injection Calc Result to diff.

If Calibration Test Calc Result is not equal to "INVALID" or "FAILED",

If Calibration Zero Injection Calc Result is greater than 0.5,

set Calibration Test Calc Result to "FAILED".

If ZeroCalibrationError is greater than or equal to 0 and less than or equal to 0.5,

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

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

set Calibration Test Calc Result to "PASSED".

Otherwise,

set Calibration Test Calc Result to "PASSED".

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

Calculate Calibration Zero Injection Calc Result = min(round(diff / Test Span Value * 100, 1), 9999.9).

Round diff to 0 decimal places.

If Calibration Zero Injection Calc Result is greater than 2.5, Test Span Value is less than 200, and diff is less than or equal to 5,

set Calibration Zero Injection Calc Result to diff.

set Calibration Zero Injection Calc APS Indicator to 1.

If Calibration Test Calc Result is not equal to "INVALID" or "FAILED",

set Calibration Test Calc Result to "PASSAPS".

Otherwise,

If Calibration Zero Injection Calc Result is greater than 2.5,

If Calibration Test Calc Result is not equal to "INVALID" or "FAILED",

If ZeroAPSIndicator is NOT equal to 1 and ZeroCalibrationError is greater than or equal to 0 and less than or equal to 2.5,

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

If the absolute value of the difference between Calibration Zero Injection Calc Result and ZeroCalibrationError is less than or equal to the Tolerance in the cross-check record,

If Calibration Test Calc Result is not equal to "PASSAPS",

set Calibration Test Calc Result to "PASSED".

Otherwise,

set Calibration Test Calc Result to "FAILED".

Otherwise,

set Calibration Test Calc Result to "FAILED".

If ZeroAPSIndicator is equal to 1 and ZeroCalibrationError is greater than or equal to 0 and less than or equal to 5, and Test Span Value is less than 200,

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

and the FieldDescription is equal to "DifferencePPM".

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

set Calibration Test Calc Result to "PASSAPS".

Otherwise,

If Calibration Test Calc Result is not equal to "INVALID", "FAILED", or "PASSAPS"

set Calibration Test Calc Result to "PASSED".

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

Calculate Calibration Zero Injection Calc Result = min(round(diff / Test Span Value * 100, 1), 9999.9).

Round diff to 2 decimal places.

If Calibration Zero Injection Calc Result is greater than 3.0, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and diff is less than or equal to 0.01,

set Calibration Zero Injection Calc Result to 0.

set Calibration Zero Injection Calc APS Indicator to 1.

If Calibration Test Calc Result is not equal to "INVALID" or "FAILED",

set Calibration Test Calc Result to "PASSAPS".

Otherwise,

If Calibration Zero Injection Calc Result is greater than 3.0,

If Calibration Test Calc Result is not equal to "INVALID" or "FAILED",

If ZeroAPSIndicator is NOT equal to 1 and ZeroCalibrationError is greater than or equal to 0 and less than or equal to 3.0,

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

If the absolute value of the difference between Calibration Zero Injection Calc Result and ZeroCalibrationError is less than or equal to the Tolerance in the cross-check record,

If Calibration Test Calc Result is not equal to "PASSAPS",

set Calibration Test Calc Result to "PASSED".

Otherwise,

set Calibration Test Calc Result to "FAILED".

Otherwise,

set Calibration Test Calc Result to "FAILED".

If ZeroAPSIndicator is equal to 1, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and ZeroCalibrationError is greater than or equal to 0 and less than or equal to 0.01,

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

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

set Calibration Test Calc Result to "PASSAPS".

Otherwise,

If Calibration Test Calc Result is not equal to "INVALID", "FAILED", or "PASSAPS"

set Calibration Test Calc Result to "PASSED".

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

Calculate Calibration Zero Injection Calc Result = min(round(diff / Test Span Value * 100, 1), 9999.9).

Round diff to 1 decimal place.

If Calibration Zero Injection Calc Result is greater than 5.0, Test Span Value is less than or equal to 10, and diff is less than or equal to 1.0,

set Calibration Zero Injection Calc Result to diff.

set Calibration Zero Injection Calc APS Indicator to 1.

If Calibration Test Calc Result is not equal to "INVALID" or "FAILED",

set Calibration Test Calc Result to "PASSAPS".

Otherwise,

If Calibration Zero Injection Calc Result is greater than 5.0,

If Calibration Test Calc Result is not equal to "INVALID" or "FAILED",

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

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

If the absolute value of the difference between Calibration Zero Injection Calc Result and ZeroCalibrationError is less than or equal to the Tolerance in the cross-check record,

If Calibration Test Calc Result is not equal to "PASSAPS",

set Calibration Test Calc Result to "PASSED".

Otherwise,

set Calibration Test Calc Result to "FAILED".

Otherwise,

set Calibration Test Calc Result to "FAILED".

If ZeroAPSIndicator is equal to 1, Test Span Value is less than or equal to 10, and ZeroCalibrationError is greater than or equal to 0 and less than or equal to 1.0,

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

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

set Calibration Test Calc Result to "PASSAPS".

Otherwise,

If Calibration Test Calc Result is not equal to "INVALID", "FAILED", or "PASSAPS"

set Calibration Test Calc Result to "PASSED".

Results:

Result	Description	Severity
A	The software could not evaluate the [test] calculations reported for [key], because of the errors listed above.	Informational Message

Usage:

1	QA Test Evaluation Report --- Calibration Injection

Check Code: SEVNDAY-16

Check Name: Calculate Upscale Injection Results

Related Former Checks: 7DAY-13, 14, 17

Applicability: CEM Check

Specifications:

For the calibration injection:

If Test Span Value is null,

set Calculate Upscale Calibration Injection to false.

If Calculate Upscale Calibration Injection is false,

set Calibration Test Calc Result to "INVALID", Calibration Upscale Injection Calc Result to null, Calibration Upscale Injection Calc APS Indicator to null, and return result A.

Otherwise,

Calculate diff = abs(Upscale Injection Measured Value - Upscale Injection Reference Value)

Set Calibration Upscale Injection Calc APS Indicator to 0.

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

Round diff to 1 decimal place.

Set Calibration Upscale Injection Calc Result to diff.

If Calibration Test Calc Result is not equal to "INVALID" or "FAILED",

If Calibration Upscale Injection Calc Result is greater than 0.5,

set Calibration Test Calc Result to "FAILED".

If UpscaleCalibrationError is greater than or equal to 0 and less than or equal to 0.5,

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

If the absolute value of the difference between diff and UpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record,

set Calibration Test Calc Result to "PASSED".

Otherwise,

set Calibration Test Calc Result to "PASSED".

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

Calculate Calibration Upscale Injection Calc Result = min(round(diff / Test Span Value * 100, 1), 9999.9)

Round diff to 0 decimal places.

If Calibration Upscale Injection Calc Result is greater than 2.5, Test Span Value is less than 200, and diff is less than or equal to 5,

set Calibration Upscale Injection Calc Result to diff.

set Calibration Upscale Injection Calc APS Indicator to 1.

If Calibration Test Calc Result is not equal to "INVALID" or "FAILED",

set Calibration Test Calc Result to "PASSAPS".

Otherwise,

If Calibration Upscale Injection Calc Result is greater than 2.5,

If Calibration Test Calc Result is not equal to "INVALID" or "FAILED",

If UpscaleAPSIndicator is NOT equal to 1 and UpscaleCalibrationError is greater than or equal to 0 and less than or equal to 2.5,

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

If the absolute value of the difference between Calibration Upscale Injection Calc Result and UpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record,

If Calibration Test Calc Result is not equal to "PASSAPS",

set Calibration Test Calc Result to "PASSED".

Otherwise,

set Calibration Test Calc Result to "FAILED".

Otherwise,

set Calibration Test Calc Result to "FAILED".

If UpscaleAPSIndicator is equal to 1 and UpscaleCalibrationError is greater than or equal to 0 and less than or equal to 5, and Test Span Value is less than 200,

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

If the absolute value of the difference between diff and UpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record,

set Calibration Test Calc Result to "PASSAPS".

Otherwise,

If Calibration Test Calc Result is not equal to "INVALID", "FAILED", or "PASSAPS"

set Calibration Test Calc Result to "PASSED".

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

Calculate Calibration Upscale Injection Calc Result = min(round(diff / Test Span Value * 100, 1), 9999.9).

Round diff to 2 decimal places.

If Calibration Upscale Injection Calc Result is greater than 3.0, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and diff is less than or equal to 0.01,

set Calibration Upscale Injection Calc Result to 0.

set Calibration Upscale Injection Calc APS Indicator to 1.

If Calibration Test Calc Result is not equal to "INVALID" or "FAILED",

set Calibration Test Calc Result to "PASSAPS".

Otherwise,

If Calibration Upscale Injection Calc Result is greater than 3.0,

If Calibration Test Calc Result is not equal to "INVALID" or "FAILED",

If UpscaleAPSIndicator is NOT equal to 1 and UpscaleCalibrationError is greater than or equal to 0 and less than or equal to 3.0,

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

If the absolute value of the difference between Calibration Upscale Injection Calc Result and UpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record,

If Calibration Test Calc Result is not equal to "PASSAPS",

set Calibration Test Calc Result to "PASSED".

Otherwise,

set Calibration Test Calc Result to "FAILED".

Otherwise,

set Calibration Test Calc Result to "FAILED".

If UpscaleAPSIndicator is equal to 1, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and UpscaleCalibrationError is greater than or equal to 0 and less than or equal to 0.01,

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

If the absolute value of the difference between diff and UpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record,

set Calibration Test Calc Result to "PASSAPS".

Otherwise,

If Calibration Test Calc Result is not equal to "INVALID", "FAILED", or "PASSAPS"

set Calibration Test Calc Result to "PASSED".

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

Calculate Calibration Upscale Injection Calc Result = min(round(diff / Test Span Value * 100, 1), 9999.9)

Round diff to 1 decimal place.

If Calibration Upscale Injection Calc Result is greater than 5.0, Test Span Value is less than or equal to 10, and diff is less than or equal to 1.0,

set Calibration Upscale Injection Calc Result to diff.

set Calibration Upscale Injection Calc APS Indicator to 1.

If Calibration Test Calc Result is not equal to "INVALID" or "FAILED",

set Calibration Test Calc Result to "PASSAPS".

Otherwise,

If Calibration Upscale Injection Calc Result is greater than 5.0,

If Calibration Test Calc Result is not equal to "INVALID" or "FAILED",

If UpscaleAPSIndicator is NOT equal to 1 and UpscaleCalibrationError is greater than or equal to 0 and less than or equal to 5.0,

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

If the absolute value of the difference between Calibration Upscale Injection Calc Result and UpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record,

If Calibration Test Calc Result is not equal to "PASSAPS",

set Calibration Test Calc Result to "PASSED".

Otherwise,

set Calibration Test Calc Result to "FAILED".

Otherwise,

set Calibration Test Calc Result to "FAILED".

If UpscaleAPSIndicator is equal to 1, Test Span Value is less than or equal to 10, and UpscaleCalibrationError is greater than or equal to 0 and less than or equal to 1.0,

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

If the absolute value of the difference between diff and UpscaleCalibrationError is less than or equal to the Tolerance in the cross-check record,

set Calibration Test Calc Result to "PASSAPS".

Otherwise,

If Calibration Test Calc Result is not equal to "INVALID", "FAILED", or "PASSAPS"

set Calibration Test Calc Result to "PASSED".

Results:

Result	Description	Severity
A	The software could not evaluate the [test] calculations reported for [key], because of the errors listed above.	Informational Message

Usage:

1	QA Test Evaluation Report --- Calibration Injection

Check Code: SEVNDAY-17

Check Name: Reported Zero Injection Results Consistent with Recalculated Values

Related Former Checks: 7DAY-4, 15, 16

Applicability: CEM Check

Specifications:

For the calibration injection:

In the QA Evaluation Process, the Calibration Zero Injection Calc Result and Calibration Zero Injection Calc APS Indicator will be stored as calculated values in the Calibration Injection record.

If the ZeroAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "FLOW", and the SampleAcquisitionMethodCode of the associated component is not equal to "DP",

return result A.

If the ZeroAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "SO2" or "NOX", and the Test Span Value is greater than or equal to 200,

return result B.

If the ZeroAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "CO2" or "O2",

return result C.

Otherwise,

If Calculate Zero Calibration Injection is equal to true,

If the ZeroAPSIndicator in the current record is not equal to 1 and the Calibration Zero Injection Calc APS Indicator is equal to 1,

return result D.

If the ZeroCalibrationError is greater than or equal to 0,

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

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

If the absolute value of the difference between the Calibration Zero Injection Calc Result and the ZeroCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

If the Calibration Zero Injection Calc APS Indicator is equal to 1,

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

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

If the absolute value of the difference between the Calibration Zero Injection Calc Result and the ZeroCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

else if the ComponentTypeCode of the associated component is equal to "HG",

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

FieldDescription is equal to "DifferenceUGSCM".

If the absolute value of the difference between the Calibration Zero Injection Calc Result and the ZeroCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

Otherwise,

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

If the absolute value of the difference between the Calibration Zero Injection Calc Result and the ZeroCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

else i f ZeroAPSIndicator is equal to 0 ,

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

If the absolute value of the difference between the Calibration Zero Injection Calc Result and the ZeroCalibrationError is greater than the Tolerance in the cross-check record,

return result F.

Results:

Result	Description	Severity
A	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance criteria for non-differential pressure flow monitors.	Critical Error Level 1
B	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance specification criteria for SO2 and NOX components when the instrument span is greater than or equal to 200.	Critical Error Level 1
C	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance specification criteria for CO2 and O2 components.	Critical Error Level 1
D	You did not report a value of "1" in the [level] APS Indicator for [key], although EPA applied the alternative performance specification to determine that the injection passed the applicable performance specification.	Critical Error Level 1
E	The absolute difference reported as the [level] Calibration Error for [key] is inconsistent with the recalculated absolute difference for the gas injection or reference signal.	Critical Error Level 1
F	The [level] Calibration Error reported for [key] is inconsistent with the recalculated calibration error for the gas injection or reference signal.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- Calibration Injection

Check Code:	SEVNDAY-18
Check Name:	Reported Upscale Injection Results Consistent with Recalculated Values
Related Former Checks:	7DAY-4, 15, 16
Applicability:	CEM Check
Specifications:	

For the calibration injection:

In the QA Evaluation Process, the Calibration Upscale Injection Calc Result and Calibration Upscale Injection Calc APS Indicator will be stored as calculated values in the Calibration Injection record.
If the UpscaleAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "FLOW", and the SampleAcquisitionMethodCode of the associated component is not equal to "DP",

return result A.

If the UpscaleAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "SO2" or "NOX", and the Test Span Value is greater than or equal to 200,

return result B.

If the UpscaleAPSIndicator is equal to 1, the ComponentTypeCode of the associated component is equal to "CO2" or "O2",

return result C.

Otherwise,

If Calculate Upscale Calibration Injection is equal to true,

If the UpscaleAPSIndicator in the current record is not equal to 1 and the Calibration Upscale Injection Calc APS Indicator is equal to 1,

return result D.

If the UpscaleCalibrationError is greater than or equal to 0,

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

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

If the absolute value of the difference between the Calibration Upscale Injection Calc Result and the UpscaleCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

If the Calibration Upscale Injection Calc APS Indicator is equal to 1,

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

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

If the absolute value of the difference between the Calibration Upscale Injection Calc Result and the UpscaleCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

else if the ComponentTypeCode of the associated component is equal to "HG",

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

If the absolute value of the difference between the Calibration Upscale Injection Calc Result and the UpscaleCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

Otherwise,

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

If the absolute value of the difference between the Calibration Upscale Injection Calc Result and the UpscaleCalibrationError is greater than the Tolerance in the cross-check record,

return result E.

else i f UpscaleAPSIndicator is equal to 0 ,

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

If the absolute value of the difference between the Calibration Upscale Injection Calc Result and the UpscaleCalibrationError is greater than the Tolerance in the cross-check record,

return result F.

Results:

Result	Description	Severity
A	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance criteria for non-differential pressure flow monitors.	Critical Error Level 1
B	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance specification criteria for SO2 and NOX components when the instrument span is greater than or equal to 200.	Critical Error Level 1
C	You reported a value of "1" as the [level] APS Indicator for [key], but you must use the standard performance specification criteria for CO2 and O2 components.	Critical Error Level 1
D	You did not report a value of "1" in the [level] APS Indicator for [key], although EPA applied the alternative performance specification to determine that the injection passed the applicable performance specification.	Critical Error Level 1
E	The absolute difference reported as the [level] Calibration Error for [key] is inconsistent with the recalculated absolute difference for the gas injection or reference signal.	Critical Error Level 1
F	The [level] Calibration Error reported for [key] is inconsistent with the recalculated calibration error for the gas injection or reference signal.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- Calibration Injection

Check Code: SEVNDAY-19

Check Name: 7-Day Calibration Test Begin Time Consistent with Injection Times

Related Former Checks:

Applicability: CEM Check

Specifications:

For a calibration test with valid begin time and injection times and Calibration Injection Count greater than 0:

If BeginDate, BeginHour, and BeginMinute does not equal the InjectionDate, InjectionHour, and InjectionMinute of the earliest injection,

return result A.

Results:

Result	Description	Severity
A	You reported a test Begin Date, Hour, and Minute that is not the same as the Injection Date, Hour, and Minute of the first injection in the 7-day calibration test.	Critical Error Level 1

Usage:

1 QA Test Evaluation Report 7-Day Calibration Test (Pass 2)

Condition: Calibration Test Aborted *Equals* false

Check Code: SEVNDAY-20

Check Name: 7-Day Calibration Test End Time Consistent with Injection Times

Related Former Checks:

Applicability: CEM Check

Specifications:

For the calibration test with valid end time and injection times and Calibration Injection Count greater than 0:

If EndDate, EndHour, and EndMinute does not equal the InjectionDate, InjectionHour, and InjectionMinute of the last injection,

return result A.

Results:

Result	Description	Severity
A	You reported a Test End Date, Hour, and Minute that is not the same as the Injection Date, Hour, and Minute of the last injection in the 7 day calibration test.	Critical Error Level 1

Usage:

1 QA Test Evaluation Report 7-Day Calibration Test (Pass 2)

Condition: Calibration Test Aborted *Equals* false

Check Code: SEVNDAY-21

Check Name: Correct Number of Injections

Related Former Checks: 7DAY-7

Applicability: CEM Check

Specifications:

For the calibration test:

If Calibration Injection Count is less than 7,

set Calibration Test Calc Result to "INVALID", and return result A.

Results:

Result	Description	Severity
A	The test contains fewer than seven calibration injection records.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report 7-Day Calibration Test (Pass 2) *Condition:* Calibration Test Aborted *Equals* false

Check Code: SEVNDAY-22

Check Name: Upscale Gas Level Codes Valid

Related Former Checks: 7DAY-8

Applicability: CEM Check

Specifications:

For the calibration test:

If the number of items in Calibration Upscale Gas Level Code is greater than 1,

set Calibration Calc Test Result to "INVALID", and return result A.

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

set Calibration Calc Test Result to "INVALID", and return result B.

Results:

Result	Description	Severity
A	You have reported more than one value as the UpscaleGasLevelCode in the calibration injection records.	Critical Error Level 1
B	You have reported a value of "MID" as the UpscaleGasLevelCode in at least one calibration injection record. This value is not appropriate for flow components.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report 7-Day Calibration Test (Pass 2)
	Condition: Calibration Test Aborted *Equals* false

Check Code: SEVNDAY-23

Check Name: Reference Values Consistent with Gas Level

Related Former Checks: 7DAY-9

Applicability: CEM Check

Specifications:

For a calibration test with both the Calibration Maximum Zero Reference Value and the Calibration Minimum Upscale Reference Value not equal to null,

If the Calibration Maximum Zero Reference Value is greater than or equal to the Calibration Minimum Upscale Reference Value,

set Calibration Test Calc Result to "INVALID", and return result A.

Results:

Result	Description	Severity
A	The reference values are not consistent with the calibration gas/signal levels reported. The reference values of zero-level gas injections or signals must be less than those of upscale gas injections.	Critical Error Level 1

Usage:

1 QA Test Evaluation Report 7-Day Calibration Test (Pass 2)

Condition: Calibration Test Aborted *Equals* false

Check Code: SEVNDAY-24

Check Name: Zero Injection Reference Value Consistent with Span

Related Former Checks: 7DAY-3A

Applicability: CEM Check

Specifications:

For the calibration injection with a Test Span Value and a Calibration Maximum Zero Reference Value that are not null:

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

Calculate Calibration Zero Reference Percent of Span = Calibration Maximum Zero Reference Value / Test Span Value * 100, and round to result to one decimal place.

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

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

If Calibration Zero Reference Percent of Span is greater than 20.0 + Tolerance in the cross-check record,

return result A.

Otherwise,

return result B.

Results:

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

Usage:

1	QA Test Evaluation Report 7-Day Calibration Test (Pass 2) *Condition:* Calibration Test Aborted *Equals* false

Check Code: SEVNDAY-25

Check Name: Upscale Injection Reference Value Consistent with Span

Related Former Checks: 7DAY-3B, D, E

Applicability: CEM Check

Specifications:

For the calibration test with a Test Span Value and a Calibration Minimum Upscale Reference Value that are not null:

Calculate Calibration Upscale Reference Percent of Span = Calibration Maximum Upscale Reference Value / Test Span Value * 100, and round to result to one decimal place.

Set noncritical to false.

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

If Calibration Upscale Gas Level Code is equal to "MID", and the ComponentTypeCode of the associated component is not equal to "FLOW",

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

If Calibration Upscale Reference Percent of Span is less than 50.0 - Tolerance in the cross-check record or Calibration Upscale Reference Percent of Span is greater than 60.0 + Tolerance in the cross-check record,

return result A.

Otherwise,

set noncritical to true.

If Calibration Minimum Upscale Reference Value is not equal to Calibration Maximum Upscale Reference Value,

Calculate tempval = Calibration Minimum Upscale Reference Value / Test Span Value * 100, and round to result to one decimal place.

If tempval is less than 50.0 - Tolerance in the cross-check record or tempval is greater than 60.0 + Tolerance in the cross-check record,

set Calibration Upscale Reference Percent of Span to tempval, and return result A.

If tempval is less than 50.0 or tempval greater than 60.0,

set Calibration Upscale Reference Percent of Span to tempval and noncritical to true.

If noncritical is true,

return result B.

If Calibration Upscale Gas Level Code is equal to "HIGH",

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

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

If Calibration Upscale Reference Percent of Span is less than 50.0 - Tolerance in the cross-check record or Calibration Upscale Reference Percent of Span is greater than 70.0 + Tolerance in the cross-check record,

return result C.

Otherwise,

set noncritical to true.

If Calibration Minimum Upscale Reference Value is not equal to Calibration Maximum Upscale Reference Value,

Calculate tempval = Calibration Minimum Upscale Reference Value / Test Span Value * 100, and round to result to one decimal place.

If tempval is less than 50.0 - Tolerance in the cross-check record or tempval is greater than 70.0 + Tolerance in the cross-check record,

set Calibration Upscale Reference Percent of Span to tempval, and return result C.

If tempval is less than 50.0 or tempval is greater than 70.0,

set Calibration Upscale Reference Percent of Span to tempval and noncritical to true.

If noncritical is true,

return result D.

Otherwise,

If Calibration Upscale Reference Percent of Span is greater than 100.0,

return result E.

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

If Calibration Upscale Reference Percent of Span is less than 80.0 - Tolerance in the cross-check record,

return result E.

Otherwise,

set noncritical to true.

If Calibration Minimum Upscale Reference Value is not equal to Calibration Maximum Upscale Reference Value,

Calculate tempval = Calibration Minimum Upscale Reference Value / Test Span Value * 100, and round to result to one decimal place.

If tempval is less than 80.0 - Tolerance in the cross-check record or tempval is greater than 100.0,

set Calibration Upscale Reference Percent of Span to tempval, and return result E.

If tempval is less than 80.0,

set Calibration Upscale Reference Percent of Span to tempval and noncritical to true.

If noncritical is true,

return result F.

Results:

Result	Description	Severity
A	The tag value of at least one Mid level reference signal or calibration gas for [key] is [percent]%, which does not meet the applicable performance specifications. The concentration of the mid reference signal or calibration gas must be between 50.0% and 60.0% of the span value. The test is invalid.	Critical Error Level 2

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

Usage:

1 QA Test Evaluation Report 7-Day Calibration Test (Pass 2)

Condition: Calibration Test Aborted *Equals* false

Check Code: SEVNDAY-26

Check Name: Injections Performed at Appropriate Times

Related Former Checks: 7DAY-10/11

Applicability: CEM Check

Specifications:

For the calibration test:

Set Calibration Test Validity Determined to true.

If Calibration Injection Times Appropriate is equal to false,

set Calibration Test Calc Result to "INVALID", and return result A.

Results:

Result	Description	Severity
A	This test contains at least two zero-level calibration gas injections or reference signals that were performed on the same day.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report 7-Day Calibration Test (Pass 2)
	Condition: Calibration Test Aborted *Equals* false

Check Code: SEVNDAY-27

Check Name: Determination of Overall 7-Day Calibration Test Status

Related Former Checks: 7DAY-18

Applicability: CEM Check

Specifications:

For the calibration test:

If Calibration Test Calc Result is equal to "INVALID",

set Calibration Test Calc Result to null.

If TestResultCode is null,

return result A.

If TestResultCode is not equal to "PASSED", "PASSAPS", "FAILED", or "ABORTED",

Locate the TestResultCode is not in the Test Result Code Lookup table,

If not found,

return result B.

If found,

return result C.

If Calibration Test Calc Result is equal to "FAILED",

If TestResultCode is equal to "PASSED" or "PASSAPS",

return result D.

Otherwise,

return result E.

If Calibration Test Calc Result is equal to "PASSED" or "PASSAPS", and the TestResultCode is equal to "FAILED",

return result F.

In the QA Evaluation Process, the Calibration Test Calc Result and Test Span Value will be stored as calculated values in the Test Summary record for the test, and (for tests that have not yet been submitted or have been approved for resubmission) the appropriate values will be stored in the QA Supp Data record for the test.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1
C	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1
D	You have reported an online offline calibration demonstration, but the recalculated results indicate a failing test.	Critical Error Level 1
E	You reported a failed 7-day calibration test. Please check to see that the test	Informational Message

	was repeated and passed.	
F	You reported a TestResultCode of "FAILED", but the results recalculated or determined from the other reported values indicate that the test passed.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report 7-Day Calibration Test (Pass 2)

Check Code: SEVNDAY-28

Check Name: 7-Day Calibration Test Result Code Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the calibration test:

If TestResultCode is null,

return result A.

If TestResultCode is not equal to "ABORTED", "PASSED", "PASSAPS", or "FAILED",

Locate the TestResultCode is not in the Test Result Code Lookup table,

If not found,

return result B.

If found,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
C	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Test Evaluation

Check Code: SEVNDAY-29

Check Name: Duplicate Calibration Test

Related Former Checks:

Applicability: CEM Check

Specifications:

For the calibration test with a valid TestNumber:

Locate another TestSummary record for the location where the TestTypeCode is equal to "7DAY" and the TestNumber is equal to the TestNumber in the current record.

If found,

return result A.

Otherwise,

Locate an unassociated QA Supp record for the location where the TestTypeCode is equal to "7DAY" and the TestNumber is equal to the TestNumber in the current record.

If found,

return result B.

Results:

Result	Description	Severity
A	Another [testtype] with this test number already exists. You must assign a different test number.	Fatal
B	You cannot change the TestNumber to the value that you have entered, because a [testtype] with this TestNumber has already been submitted. If this is a different test, you should assign it a different TestNumber. If you are trying to resubmit this test, you should delete this test, and either reimport this test with its original TestNumber or retrieve the original test from the EPA host system.	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Test Evaluation

Check Code: SEVNDAY-30

Check Name: 7-Day Calibration Test Component ID Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the calibration test:

If the ComponentID is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Test Evaluation

Check Code: SEVNDAY-31

Check Name: Online Offline Indicator Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the calibration injection:

If OnlineOfflineIndicator is null,

return result A.

If OnlineOfflineIndicator is equal to 0,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported an OnlineOfflineIndicator for [key] that indicates that the unit was offline, but 7-day calibration test injections must be performed when the unit is online.	Critical Error Level 2

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Injection Evaluation
2	QA Test Evaluation Report --- Calibration Injection

Check Code: SEVNDAY-32

Check Name: Zero APS Indicator Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the calibration injection record:

If ZeroAPSIndicator is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Injection Evaluation
2	QA Test Evaluation Report --- Calibration Injection

Check Code: SEVNDAY-33

Check Name: Upscale APS Indicator Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the calibration injection record:

If UpscaleAPSIndicator is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Injection Evaluation
2	QA Test Evaluation Report --- Calibration Injection

Check Code: SEVNDAY-34

Check Name: Calculate 7-Day Calibration

Related Former Checks:

Applicability: CEM Check

Specifications:

For the injection:

Set 7DAY Zero Calc Result, 7DAY Zero Calc APS, 7DAY Upscale Calc Result, and 7DAY Upscale Calc APS to null.

If the UpscaleGasLevelCode is not equal to "MID" or "HIGH", or the UpscaleReferenceValue is null, or the UpscaleMeasuredValue is null, or the ZeroReferenceValue is null, or the ZeroMeasuredValue is null, or the ZeroReferenceValue is greater than or equal to UpscaleReferenceValue,

return result A.

If the associated ComponentTypeCode is equal to "FLOW" and the SpanScaleCode is not null; or the ComponentTypeCode is not equal to "FLOW" and the SpanScaleCode is not equal to "H" or "L",

return result A.

Otherwise,

Locate the System Component records for the associated component with the earliest BeginDate.

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

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

Otherwise,

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

If the Span record is not found,

return result B.

Otherwise,

Calculate diff = abs(ZeroInjectionMeasuredValue - ZeroInjectionReferenceValue)

Set 7DAY Zero Calc APS to 0.

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

Round diff to 1 decimal place.

Set 7DAY Zero Calc Result to diff.

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

Calculate 7DAY Zero Calc Result = min(round(diff / SpanValue * 100, 1), 9999.9).

Round diff to 0 decimal places.

If 7DAY Zero Calc Result is greater than 2.5, SpanValue is less than 200, and diff is less than or equal to 5,

set 7DAY Zero Calc Result to diff.

set 7DAY Zero Calc APS to 1.

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

Calculate 7DAY Zero Calc Result = min(round(diff / SpanValue * 100, 1), 9999.9).

Round diff to 2 decimal places.

If 7DAY Zero Calc Result is greater than 3.0, the SampleAcquisitionMethodCode of the associated component is equal to "DP", and diff is less than or equal to 0.01,

set 7DAY Zero Calc Result to 0.

set 7DAY Zero Calc APS to 1.

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

Calculate 7DAY Zero Calc Result = min(round(diff / SpanValue * 100, 1), 9999.9).

Round diff to 1 decimal place.

If 7DAY Zero Calc Result is greater than 5.0, SpanValue is less than or equal to 10, and diff is less than or equal to 1.0,

set 7DAY Zero Calc Result to diff.

set 7DAY Zero Calc APS to 1.

Calculate diff = abs(UpscaleInjectionMeasuredValue - UpscaleInjectionReferenceValue)

Set 7DAY Upscale Calc APS to 0.

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

Round diff to 1 decimal place.

Set 7DAY Upscale Calc Result to diff.

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

Calculate 7DAY Upscale Calc Result = min(round(diff / SpanValue * 100, 1), 9999.9).

Round diff to 0 decimal places.

If 7DAY Upscale Calc Result is greater than 2.5, SpanValue is less than 200, and diff is less than or equal to 5,

set 7DAY Upscale Calc Result to diff.

set 7DAY Upscale Calc APS to 1.

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

Calculate 7DAY Upscale Calc Result = min(round(diff / SpanValue * 100, 1), 9999.9).

Round diff to 2 decimal places.

If 7DAY Upscale Calc Result is greater than 3.0, the SampleAcquisitionMethodCode of the associated

component is equal to "DP", and diff is less than or equal to 0.01,

set 7DAY Upscale Calc Result to 0.

set 7DAY Upscale Calc APS to 1.

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

Calculate 7DAY Upscale Calc Result = min(round(diff / SpanValue * 100, 1), 9999.9).

Round diff to 1 decimal place.

If 7DAY Upscale Calc Result is greater than 5.0, SpanValue is less than or equal to 10, and diff is less than or equal to 1.0,

set 7DAY Upscale Calc Result to diff.

set 7DAY Upscale Calc APS to 1.

Results:

Result	Description	Severity
A	The values in this record could not be calculated because of invalid data.	Critical Error Level 1
B	You have not reported a valid monitoring plan span record that was active during the test.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Injection Calculations

Check Category:

General Test

Check Code: TEST-1

Check Name: Test Begin Date Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the test:

If BeginDate is null,

return result A.

If BeginDate is before 01/01/1993 or after the current date,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported a [Fieldname] of [Date], which is outside the range of acceptable values for this date for [key].	Critical Error Level 1

Usage:

1	Obsolete Gas Flow Meter Calibration Test (Pass 1)
2	Obsolete Gas Flow Meter Calibration Test Evaluation
3	Obsolete Hg LME Default Test (Pass 1)
4	Obsolete Hg LME Default Test Evaluation
5	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Test Evaluation
6	QA and Certification Data Entry Screen Evaluation Appendix E Test Evaluation
7	QA and Certification Data Entry Screen Evaluation Cycle Time Test Evaluation
8	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
9	QA and Certification Data Entry Screen Evaluation Linearity Evaluation
10	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation
11	QA and Certification Data Entry Screen Evaluation RATA Evaluation
12	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation
13	QA Test Evaluation Report 7-Day Calibration Test Evaluation (Pass 1)
14	QA Test Evaluation Report Appendix E Test (Pass 1)
15	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 1)
16	QA Test Evaluation Report Fuelflow-to-Load Baseline Data
17	QA Test Evaluation Report Linearity Test (Pass 1)
18	QA Test Evaluation Report Online Offline Calibration Test
19	QA Test Evaluation Report RATA Evaluation (Pass 1)
20	QA Test Evaluation Report Unit Default Test (Pass 1)

Check Code: TEST-2

Check Name: Test Begin Hour Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the test:

If BeginHour is null,

return result A.

If BeginHour is not between 0 and 23,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	Obsolete Gas Flow Meter Calibration Test (Pass 1)
2	Obsolete Gas Flow Meter Calibration Test Evaluation
3	Obsolete Hg LME Default Test (Pass 1)
4	Obsolete Hg LME Default Test Evaluation
5	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Test Evaluation
6	QA and Certification Data Entry Screen Evaluation Appendix E Test Evaluation
7	QA and Certification Data Entry Screen Evaluation Cycle Time Test Evaluation
8	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
9	QA and Certification Data Entry Screen Evaluation Linearity Evaluation
10	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation
11	QA and Certification Data Entry Screen Evaluation RATA Evaluation
12	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation
13	QA Test Evaluation Report 7-Day Calibration Test Evaluation (Pass 1)
14	QA Test Evaluation Report Appendix E Test (Pass 1)
15	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 1)
16	QA Test Evaluation Report Fuelflow-to-Load Baseline Data
17	QA Test Evaluation Report Linearity Test (Pass 1)
18	QA Test Evaluation Report Online Offline Calibration Test
19	QA Test Evaluation Report RATA Evaluation (Pass 1)
20	QA Test Evaluation Report Unit Default Test (Pass 1)

Check Code: TEST-3

Check Name: Test Begin Minute Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the test:

Set Test Begin Minute Valid to true.

If BeginMinute is null,

If BeginDate is on or after ECMPS MP Begin Date, or the TestTypeCode is equal to "LINE", "RATA", "CYCLE", "F2LREF", "APPE" or "UNITDEF",

set Test Begin Minute Valid to false, and return result A.

Otherwise,

return result B.

If BeginMinute is not between 0 and 59,

set Test Begin Minute Valid to false, and return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You did not provide [fieldname] for [key]. This information will be required for ECMPS submissions.	Informational Message
C	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	Obsolete Gas Flow Meter Calibration Test (Pass 1)
2	Obsolete Gas Flow Meter Calibration Test Evaluation
3	Obsolete Hg LME Default Test (Pass 1)
4	Obsolete Hg LME Default Test Evaluation
5	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Test Evaluation
6	QA and Certification Data Entry Screen Evaluation Appendix E Test Evaluation
7	QA and Certification Data Entry Screen Evaluation Cycle Time Test Evaluation
8	QA and Certification Data Entry Screen Evaluation Linearity Evaluation
9	QA and Certification Data Entry Screen Evaluation RATA Evaluation
10	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation
11	QA Test Evaluation Report 7-Day Calibration Test Evaluation (Pass 1)
12	QA Test Evaluation Report Appendix E Test (Pass 1)
13	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 1)
14	QA Test Evaluation Report Linearity Test (Pass 1)

15	QA Test Evaluation Report RATA Evaluation (Pass 1)
16	QA Test Evaluation Report Unit Default Test (Pass 1)

Check Code: TEST-4

Check Name: Test End Date Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the test:

If EndDate is null,

return result A.

If EndDate is before 01/01/1993 or after the current date,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You reported a [Fieldname] of [Date], which is outside the range of acceptable values for this date for [key].	Fatal

Usage:

1	Obsolete Gas Flow Meter Calibration Test (Pass 1)
2	Obsolete Gas Flow Meter Calibration Test Evaluation
3	Obsolete Hg LME Default Test (Pass 1)
4	Obsolete Hg LME Default Test Evaluation
5	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Test Evaluation
6	QA and Certification Data Entry Screen Evaluation Appendix E Test Evaluation
7	QA and Certification Data Entry Screen Evaluation Cycle Time Test Evaluation
8	QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Data Evaluation
9	QA and Certification Data Entry Screen Evaluation Fuel Flowmeter Accuracy Test Evaluation
10	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
11	QA and Certification Data Entry Screen Evaluation Linearity Evaluation
12	QA and Certification Data Entry Screen Evaluation Miscellaneous Test Evaluation
13	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation
14	QA and Certification Data Entry Screen Evaluation RATA Evaluation
15	QA and Certification Data Entry Screen Evaluation Transmitter Transducer Test Evaluation
16	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation
17	QA Test Evaluation Report 7-Day Calibration Test Evaluation (Pass 1)
18	QA Test Evaluation Report Appendix E Test (Pass 1)
19	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 1)
20	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation
21	QA Test Evaluation Report Fuel Flowmeter Accuracy Test

22	QA Test Evaluation Report Fuelflow-to-Load Baseline Data
23	QA Test Evaluation Report Linearity Test (Pass 1)
24	QA Test Evaluation Report Miscellaneous Tests
	Condition: Miscellaneous Test Type Valid*Equals* true
25	QA Test Evaluation Report Online Offline Calibration Test
26	QA Test Evaluation Report RATA Evaluation (Pass 1)
27	QA Test Evaluation Report Transmitter Transducer Test
28	QA Test Evaluation Report Unit Default Test (Pass 1)

Check Code: TEST-5

Check Name: Test End Hour Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the test:

If EndHour is null,

return result A.

If EndHour is not between 0 and 23,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	Obsolete Gas Flow Meter Calibration Test (Pass 1)
2	Obsolete Gas Flow Meter Calibration Test Evaluation
3	Obsolete Hg LME Default Test (Pass 1)
4	Obsolete Hg LME Default Test Evaluation
5	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Test Evaluation
6	QA and Certification Data Entry Screen Evaluation Appendix E Test Evaluation
7	QA and Certification Data Entry Screen Evaluation Cycle Time Test Evaluation
8	QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Data Evaluation
9	QA and Certification Data Entry Screen Evaluation Fuel Flowmeter Accuracy Test Evaluation
10	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
11	QA and Certification Data Entry Screen Evaluation Linearity Evaluation
12	QA and Certification Data Entry Screen Evaluation Miscellaneous Test Evaluation
13	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation
14	QA and Certification Data Entry Screen Evaluation RATA Evaluation
15	QA and Certification Data Entry Screen Evaluation Transmitter Transducer Test Evaluation
16	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation
17	QA Test Evaluation Report 7-Day Calibration Test Evaluation (Pass 1)
18	QA Test Evaluation Report Appendix E Test (Pass 1)
19	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 1)
20	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation
21	QA Test Evaluation Report Fuel Flowmeter Accuracy Test

22	QA Test Evaluation Report Fuelflow-to-Load Baseline Data
23	QA Test Evaluation Report Linearity Test (Pass 1)
24	QA Test Evaluation Report Miscellaneous Tests
	Condition: Miscellaneous Test Type Valid*Equals* true
25	QA Test Evaluation Report Online Offline Calibration Test
26	QA Test Evaluation Report RATA Evaluation (Pass 1)
27	QA Test Evaluation Report Transmitter Transducer Test
28	QA Test Evaluation Report Unit Default Test (Pass 1)

Check Code: TEST-6

Check Name: Test End Minute Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the test:

Set Test End Minute Valid to true.

If TestTypeCode is not equal to "ONOFF",

If EndMinute is null,

If TestEndDate is on or after ECMPS MP Begin Date, or the TestTypeCode is equal to "LINE", "RATA", "CYCLE", "F2LREF", "APPE" or "UNITDEF",

set Test End Minute Valid to false, and return result A.

Otherwise,

return result B.

If EndMinute is not between 0 and 59,

set Test End Minute Valid to false, and return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You did not provide [fieldname] for [key]. This information will be required for ECMPS submissions.	Informational Message
C	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	Obsolete Gas Flow Meter Calibration Test (Pass 1)
2	Obsolete Gas Flow Meter Calibration Test Evaluation
3	Obsolete Hg LME Default Test (Pass 1)
4	Obsolete Hg LME Default Test Evaluation
5	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Test Evaluation
6	QA and Certification Data Entry Screen Evaluation Appendix E Test Evaluation
7	QA and Certification Data Entry Screen Evaluation Cycle Time Test Evaluation
8	QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Data Evaluation
9	QA and Certification Data Entry Screen Evaluation Fuel Flowmeter Accuracy Test Evaluation
10	QA and Certification Data Entry Screen Evaluation Linearity Evaluation
11	QA and Certification Data Entry Screen Evaluation Miscellaneous Test Evaluation
12	QA and Certification Data Entry Screen Evaluation RATA Evaluation
13	QA and Certification Data Entry Screen Evaluation Transmitter Transducer Test Evaluation

14	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation
15	QA Test Evaluation Report 7-Day Calibration Test Evaluation (Pass 1)
16	QA Test Evaluation Report Appendix E Test (Pass 1)
17	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 1)
18	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation
19	QA Test Evaluation Report Fuel Flowmeter Accuracy Test
20	QA Test Evaluation Report Linearity Test (Pass 1)
21	QA Test Evaluation Report Miscellaneous Tests
	Condition: Miscellaneous Test Type Valid*Equals* true
22	QA Test Evaluation Report RATA Evaluation (Pass 1)
23	QA Test Evaluation Report Transmitter Transducer Test
24	QA Test Evaluation Report Unit Default Test (Pass 1)

Check Code: TEST-7

Check Name: Test Dates Consistent

Related Former Checks:

Applicability: CEM Check

Specifications:

For a test:

If Test Begin Date Valid, Test Begin Hour Valid, Test End Date Valid, and Test End Hour Valid are all true,

If TestTypeCode is equal to "ONOFF" or "FF2LBAS",

If BeginDate/BeginHour is on or after the EndDate/EndHour,

set Test Dates Consistent to false, and return result A.

Otherwise,

set Test Dates Consistent to true.

Otherwise,

If Test Begin Minute Valid and Test End Minute Valid are both true,

If BeginDate/BeginHour/BeginMinute is on or after the EndDate/EndHour/EndMinute,

set Test Dates Consistent to false, and return result A.

Otherwise,

set Test Dates Consistent to true.

Otherwise,

set Test Dates Consistent to false.

Otherwise,

set Test Dates Consistent to false.

Results:

Result	Description	Severity
A	You reported EndDate, EndHour, and EndMinute which is prior to or equal to BeginDate, BeginHour, and BeginMinute for [key].	Critical Error Level 1

Usage:

1	Obsolete Gas Flow Meter Calibration Test (Pass 1)
2	Obsolete Gas Flow Meter Calibration Test Evaluation
3	Obsolete Hg LME Default Test (Pass 1)
4	Obsolete Hg LME Default Test Evaluation
5	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Test Evaluation
6	QA and Certification Data Entry Screen Evaluation Appendix E Test Evaluation
7	QA and Certification Data Entry Screen Evaluation Cycle Time Test Evaluation

8	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
9	QA and Certification Data Entry Screen Evaluation Linearity Evaluation
10	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation
11	QA and Certification Data Entry Screen Evaluation RATA Evaluation
12	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation
13	QA Test Evaluation Report 7-Day Calibration Test Evaluation (Pass 1)
14	QA Test Evaluation Report Appendix E Test (Pass 1)
15	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 1)
16	QA Test Evaluation Report Fuelflow-to-Load Baseline Data
17	QA Test Evaluation Report Linearity Test (Pass 1)
18	QA Test Evaluation Report Online Offline Calibration Test
19	QA Test Evaluation Report RATA Evaluation (Pass 1)
20	QA Test Evaluation Report Unit Default Test (Pass 1)

Check Code: TEST-8

Check Name: Test Span Scale Valid

Related Former Checks: LIN-10

Applicability: CEM Check

Specifications:

For a test:

set Test Span Scale Valid to true and Test Span Value to null.

If the ComponentID is not null,

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

If the SpanScaleCode is null,

set Test Span Scale Valid to false, and return result A.

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

set Test Span Scale Valid to false, and return result B.

If Test Dates Consistent is true,

If the SpanScaleCode is equal to "H"

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

If found,

set Test Span Scale Valid to false, and return result C.

If the SpanScaleCode is equal to "L"

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

If found,

set Test Span Scale Valid to false, and return result C.

Otherwise,

If the SpanScaleCode is not null,

set Test Span Scale Valid to false, and return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1
C	The active analyzer range for the component is inconsistent with the span scale [value] reported for this test.	Critical Error Level 1

D	You reported a SpanScaleCode, but this is not appropriate for flow component.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Test Evaluation
2	QA and Certification Data Entry Screen Evaluation Cycle Time Test Evaluation
3	QA and Certification Data Entry Screen Evaluation Linearity Evaluation
4	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation
5	QA Test Evaluation Report 7-Day Calibration Test Evaluation (Pass 1)
6	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 1)
7	QA Test Evaluation Report Linearity Test (Pass 1)
8	QA Test Evaluation Report Online Offline Calibration Test

Check Code: TEST-9

Check Name: Determine Span Value

Related Former Checks: LIN-9

Applicability: CEM Check

Specifications:

For the test with valid dates and span scale:

Set Test Span Determined to true.

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

If found,

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

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

Otherwise,

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

If not found,

return result A.

If more than one record is found with different Span Values,

return result B.

If one record is found,

set Test Span Value to the SpanValue in the retrieved span record.

else

return result C.

Results:

Result	Description	Severity
A	You have not reported a valid monitoring plan span record that was active during the test.	Critical Error Level 1
B	You reported more than one monitoring plan span record that was active during the test.	Critical Error Level 1
C	The tested component is not part of any monitoring system.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report 7-Day Calibration Test Evaluation (Pass 1)

	Condition: Calibration Test Aborted *Equals* false
2	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 1)
3	QA Test Evaluation Report Linearity Test (Pass 1)
	Condition: Linearity Test Aborted *Equals* false
4	QA Test Evaluation Report Online Offline Calibration Test

Check Code: TEST-10

Check Name: Test Year and Quarter Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the test:

Set Test Reporting Period Valid to true.

Set Test Reporting Period Begin Date to null.

If Reporting Period ID is null,

set Test Reporting Period Valid to false, and return result A.

Otherwise,

Locate the Reporting Period ID in the Reporting Period table.

Set Test Reporting Period Begin Date to the first day of the Year and Quarter in the retrieved record.

If the Year and Quarter in the retrieved record is later than the current quarter,

set Test Reporting Period Valid to false, and return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You reported a Year/Quarter which is outside the range of acceptable values for this test.	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation
2	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Test Evaluation
3	QA Test Evaluation Report Flow-to-Load Check Evaluation
4	QA Test Evaluation Report Fuelflow-to-Load Test

Check Code: TEST-12

Check Name: Miscellaneous Test Type Code Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the test:

Set Miscellaneous Test Type Valid to true.

If TestTypeCode is null,

return result A.

If TestTypeCode is not equal to "LEAK", "PEI", "DAHS", "PEMSACC", "OTHER", "DGFMCAL", "MFMCAL", "TSCAL", "BCAL", or: "QGA",

set Miscellaneous Test Type Valid to false, and return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	This test has not been evaluated.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Miscellaneous Test Evaluation
2	QA Test Evaluation Report Miscellaneous Tests

Check Code: TEST-13

Check Name: Test Number Valid

Related Former Checks:

Applicability: CEM Check

Specifications:

For the RATA:

If the TestNumber is null,

return result A.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal

Usage:

1	Obsolete Gas Flow Meter Calibration Test Evaluation
2	Obsolete Hg LME Default Test Evaluation
3	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Test Evaluation
4	QA and Certification Data Entry Screen Evaluation Appendix E Test Evaluation
5	QA and Certification Data Entry Screen Evaluation Cycle Time Test Evaluation
6	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation
7	QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Data Evaluation
8	QA and Certification Data Entry Screen Evaluation Fuel Flowmeter Accuracy Test Evaluation
9	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
10	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Test Evaluation
11	QA and Certification Data Entry Screen Evaluation Linearity Evaluation
12	QA and Certification Data Entry Screen Evaluation Miscellaneous Test Evaluation
13	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation
14	QA and Certification Data Entry Screen Evaluation RATA Evaluation
15	QA and Certification Data Entry Screen Evaluation Transmitter Transducer Test Evaluation
16	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation

Check Code: TEST-14

Check Name: Miscellaneous Test Description Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the miscellaneous test:

If TestDescription is null,

If TestTypeCode is equal to "OTHER",

return result A.

Otherwise,

If TestTypeCode is not equal to "OTHER",

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported a TestDescription, but this is not appropriate for this test type. Use the TestComment field to enter additional information about the test.	Non-Critical Error

Usage:

1	QA and Certification Data Entry Screen Evaluation Miscellaneous Test Evaluation
2	QA Test Evaluation Report Miscellaneous Tests
	Condition: Miscellaneous Test Type Valid*Equals* true

Check Code: TEST-15

Check Name: Miscellaneous Test Grace Period Indicator Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the miscellaneous test:

If the GracePeriodIndicator is equal to 1,

If the TestTypeCode is not equal to "LEAK",

return result A.

Results:

Result	Description	Severity
A	The GracePeriodIndicator is not appropriate for this test type.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Miscellaneous Test Evaluation
2	QA Test Evaluation Report Miscellaneous Tests

Check Code: TEST-16

Check Name: Miscellaneous Test System or Component Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the miscellaneous test:

If both the MonitoringSystemID and ComponentID are not null,

return result A.

If TestTypeCode is equal to "LEAK", "PEI", or "DAHS",

If ComponentID is null,

set Miscellaneous Test ID Fieldname to "ComponentID", and return result B.

If TestTypeCode is equal to "PEMSACC",

If MonitoringSystemID is null,

set Miscellaneous Test ID Fieldname to "MonitoringSystemID", and return result B.

If MonitoringSystemID is not null,

Locate the Monitor System record for the location where the MonitoringSystemID is equal to the MonitoringSystemID in the test.

If the TestTypeCode is equal to "PEMSACC",

If the SystemTypeCode in the retrieved record is not equal to "NOXP",

set Miscellaneous Test ID Fieldname to "monitoring system", and return result C.

If ComponentID is not null,

Locate the Component record for the location where the ComponentID is equal to the ComponentID in the test.

If the TestTypeCode is equal to "DAHS",

If the ComponentTypeCode in the retrieved record is not equal to "DAHS",

set Miscellaneous Test ID Fieldname to "component", and return result C.

If the TestTypeCode is equal to "LEAK",

If the ComponentTypeCode in the retrieved record is not equal to "FLOW",

set Miscellaneous Test ID Fieldname to "component", and return result C.

Otherwise,

If the SampleAcquisitionMethodCode in the retrieved record is not equal "DP" or "O",

return result D.

If the TestTypeCode is equal to "PEI",

If the ComponentTypeCode in the retrieved record is not equal to "OFFM" or "GFFM",

set Miscellaneous Test ID Fieldname to "component", and return result C.

If the TestTypeCode is equal to " D GFMTCAL" , "MFMCAL", "TSCAL" or "BCAL",

If the ComponentTypeCode in the retrieved record is not equal to " STRAIN ",

set Miscellaneous Test ID Fieldname to "component", and return result C.

If the TestTypeCode is equal to "QGA",

If the ComponentTypeCode in the retrieved record is not equal to "HCL" or "HF",

set Miscellaneous Test ID Fieldname to "component", and return result C.

If both the MonitoringSystemID and ComponentID are null,

return result E .

Results:

Result	Description	Severity
A	You have reported both a MonitoringSystemID and a ComponentID for this test. This is invalid.	Critical Error Level 1
B	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
C	The type of [fieldname] associated with this test is not appropriate for the test type.	Critical Error Level 1
D	The SampleAcquisitionMethodCode of the component associated with this test is invalid. Leak checks are only performed on differential pressure (DP) flow monitors.	Critical Error Level 2
E	You have not reported MonitoringSystemID and ComponentID for this test. Both cannot be Blank/null	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Miscellaneous Test Evaluation
2	QA Test Evaluation Report Miscellaneous Tests
	Condition: Miscellaneous Test Type Valid*Equals* true

Check Code: TEST-17

Check Name: Miscellaneous Test Reason Code Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the miscellaneous test:

If TestReasonCode is null,

return result A.

If TestReasonCode is not in the Test Reason Code Lookup table,

return result B.

If TestTypeCode is equal to "LEAK" and TestReasonCode is equal to "INITIAL" or "RECERT" , or TestTypeCode is equal to "DAHS" and TestReasonCode is equal to "QA",

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1
C	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Miscellaneous Test Evaluation
2	QA Test Evaluation Report Miscellaneous Tests
	Condition: Miscellaneous Test Type Valid*Equals* true

Check Code: TEST-18

Check Name: Miscellaneous Test Result Code Valid

Related Former Checks:

Applicability: General Check

Specifications:

For the miscellaneous test:

If TestResultCode is null,

return result A.

If TestResultCode is not equal to "ABORTED", "PASSED", or "FAILED",

Locate the TestResultCode is not in the Test Result Code Lookup table,

If not found,

return result B.

If found,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
C	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Miscellaneous Test Evaluation
2	QA Test Evaluation Report Miscellaneous Tests
	Condition: Miscellaneous Test Type Valid*Equals* true

Check Code: TEST-19

Check Name: Duplicate Miscellaneous Test

Related Former Checks:

Applicability: General Check

Specifications:

For the miscellaneous test with a valid TestNumber:

Locate another TestSummary record for the location where the TestTypeCode and the TestNumber are equal to the TestTypeCode and TestNumber in the current record.

If found,

return result A.

Otherwise,

Locate an unassociated QA Supp record for the location where the TestTypeCode and the TestNumber are equal to the TestTypeCode and TestNumber in the current record.

If found,

return result B.

Results:

Result	Description	Severity
A	Another test with this test type and test number already exists. You must assign a different test number.	Fatal
B	You cannot change the TestNumber to the value that you have entered, because a test with this TestType and TestNumber has already been submitted. If this is a different test, you should assign it a different TestNumber. If you are trying to resubmit this test, you should delete this test, and either reimport this test with its original TestNumber or retrieve the original test from the EPA host system.	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Miscellaneous Test Evaluation

Check Code: TEST-20

Check Name: Identification of Previously Reported Test or Test Number for Miscellaneous Test

Related Former Checks:

Applicability: General Check

Specifications:

For a miscellaneous test with valid End Times:

Locate another test for the location where the TestTypeCode, MonitorSystemID, ComponentID, EndDate, EndHour, and EndMinute is equal to the TestTypeCode, MonitorSystemID, ComponentID, EndDate, EndHour, and EndMinute of the current TestSummary record.

If found,

return result A.

Otherwise,

Locate an unassociated QASupp record for the location where the TestTypeCode, MonitorSystemID, ComponentID, EndDate, and EndHour is equal to TestTypeCode, MonitorSystemID, ComponentID, EndDate, and EndHour of the current TestSummary record, and the EndMinute is null or is equal to the EndMinute in the current TestSummary record, and the TestNum is not equal to the TestNumber in the current TestSummary record,

If found,

return result A.

Otherwise,

Locate a QASupp record for the location where the TestTypeCode and TestNum are equal to the TestTypeCode and TestNumber in the current TestSummary record.

If found,

If CAN_SUBMIT in the QA Supp record is equal to "N",

If this is an unassociated QASupp record, and the MonitorSystemID, ComponentID, EndDate, EndHour, and EndMinute in the QASupp record is not equal to MonitorSystemID, ComponentID, EndDate, EndHour, or EndMinute of the current TestSummary record,

return result B.

Otherwise,

return result C.

Results:

Result	Description	Severity
A	Based on the information in this record, this test has already been submitted with a different test number, or the Client Tool database already contains the same test with a different test number. This test cannot be submitted.	Fatal
B	Another test with this test type and test number has already been submitted for this location. This test cannot be submitted with this test number. If this is a different test, you should assign it a unique test number.	Fatal
C	This test has already been submitted and will not be resubmitted. If you wish to resubmit this test, please contact EPA for approval.	Informational Message

Usage:

1	QA and Certification Data Entry Screen Evaluation Miscellaneous Test Evaluation
	Condition: Duplicate Miscellaneous Test *Equals* false
2	QA Test Evaluation Report Miscellaneous Tests

Check Code: TEST-21

Check Name: Invalid Test Message

Related Former Checks:

Applicability: General Check

Specifications:

For an invalid test:

return result A.

Results:

Result	Description	Severity
A	IMPORTANT FYI: This test was determined to be "INVALID" due to one or more Critical Level 2 errors. The reported data indicate that the test was not performed according to the requirements and therefore cannot be used to validate emissions data. Unless you make corrections to the test data and re-run the evaluation, this test will be disregarded by the emissions evaluation routine. If you are unable to eliminate the Critical Level 2 error(s) by correcting the test data but you believe this test should be considered valid, contact your CAMD analyst.	Informational Message

Usage:

1	QA Test Evaluation Report Invalid Tests

Check Code: TEST-22

Check Name: Monitor Plan Evaluation Check

Related Former Checks:

Applicability: General Check

Specifications:

For the test:

Locate all Monitoring Plan Location records for the location where the SeverityLevelCd of the associated Monitoring Plan is equal to "CRIT1" or "FATAL", and the End Quarter of the associated Monitoring Plan is null or is on or after the EndDate or Year/Quarter of the test.

If found,

return result A.

Otherwise,

Locate all Monitoring Plan Location records for the location where the MustSubmitFlag and NeedsEvalFlag of the associated Monitoring Plan are equal to "Y", and the End Quarter of the associated Monitoring Plan is null or is on or after the EndDate or Year/Quarter of the test.

If found,

return result B.

Results:

Result	Description	Severity
A	A Monitoring Plan associated with this [entity] has critical errors. You must correct all active and future Monitoring Plans containing the location in this [entity] in order to submit this [entity] to be loaded on EPA's host system.	Critical Error Level 1
B	A Monitoring Plan associated with this [entity] has not been evaluated. You must evaluate all active and future Monitoring Plans containing the location in this [entity] in order to complete the evaluation of this [entity].	Critical Error Level 1

Usage:

1	Obsolete Gas Flow Meter Calibration Test (Pass 1)
2	Obsolete Hg LME Default Test (Pass 1)
3	QA Test Evaluation Report 7-Day Calibration Test Evaluation (Pass 1)
4	QA Test Evaluation Report Appendix E Test (Pass 1)
5	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 1)
6	QA Test Evaluation Report Flow-to-Load Check Evaluation
7	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation
8	QA Test Evaluation Report Fuel Flowmeter Accuracy Test
9	QA Test Evaluation Report Fuelflow-to-Load Baseline Data
10	QA Test Evaluation Report Fuelflow-to-Load Test
11	QA Test Evaluation Report Linearity Test (Pass 1)
12	QA Test Evaluation Report Miscellaneous Tests
13	QA Test Evaluation Report Online Offline Calibration Test

14	QA Test Evaluation Report RATA Evaluation (Pass 1)
15	QA Test Evaluation Report Transmitter Transducer Test
16	QA Test Evaluation Report Unit Default Test (Pass 1)

Check Code: TEST-23

Check Name: Injection Protocol Valid

Related Former Checks:

Applicability:

Specifications:

If (***CurrentTest*** .TestTypeCode is equal to "7DAY" OR "CYCLE")

Set *ComponentRecord* to the record in ***ComponentRecords*** where ComponentID is equal to ***CurrentTest*** .ComponentID .

If (*ComponentRecord* is NOT equal to null)

If (*ComponentRecord* .ComponentTypeCode is equal to "HG")

If ***CurrentTest*** .InjectionProtocol is null,

Return result A.

Else if ***CurrentTest*** .InjectionProtocol is NOT equal to "HGE" OR "HGO",

Return result B.

Else

If ***CurrentTest*** .InjectionProtocol is NOT null,

Return result C.

Else

If ***CurrentTest*** .InjectionProtocol is NOT null,

Return result D.

Results:

Result	Description	Severity
A	You did not identify an injection protocol (HGE or HGO), as required for a Hg CEMS seven day calibration or cycle time test.	Critical Error Level 1
B	You did not identify an injection protocol (HGE or HGO), as required for a Hg CEMS seven day calibration or cycle time test.	Critical Error Level 1
C	An injection protocol is only reported for Hg CEMS.	Critical Error Level 1
D	An injection protocol is not required for this test type.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Test Evaluation
2	QA and Certification Data Entry Screen Evaluation Appendix E Test Evaluation
3	QA and Certification Data Entry Screen Evaluation Cycle Time Test Evaluation
4	QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Data Evaluation
5	QA and Certification Data Entry Screen Evaluation Fuel Flowmeter Accuracy Test Evaluation
6	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Baseline Data Evaluation
7	QA and Certification Data Entry Screen Evaluation Linearity Evaluation

8	QA and Certification Data Entry Screen Evaluation Miscellaneous Test Evaluation
9	QA and Certification Data Entry Screen Evaluation Online Offline Calibration Test Evaluation
10	QA and Certification Data Entry Screen Evaluation RATA Evaluation
11	QA and Certification Data Entry Screen Evaluation Transmitter Transducer Test Evaluation
12	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation
13	QA Test Evaluation Report 7-Day Calibration Test Evaluation (Pass 1)
14	QA Test Evaluation Report Appendix E Test (Pass 1)
15	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 1)
16	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation
17	QA Test Evaluation Report Fuel Flowmeter Accuracy Test
18	QA Test Evaluation Report Fuelflow-to-Load Baseline Data
19	QA Test Evaluation Report Linearity Test (Pass 1)
20	QA Test Evaluation Report Miscellaneous Tests
21	QA Test Evaluation Report Online Offline Calibration Test
22	QA Test Evaluation Report RATA Evaluation (Pass 1)
23	QA Test Evaluation Report Transmitter Transducer Test
24	QA Test Evaluation Report Unit Default Test (Pass 1)

Check Code: TEST-24

Check Name: Initialize Test Parameters

Related Former Checks:

Applicability: General Check

Specifications:

For the monitoring plan:

If the associated First ECMPS Reporting Period for the monitoring plan is null,

Set ***ECMPS MP Begin Date*** to {01/01/200 9 }

Else

Set ***ECMPS MP Begin Date*** to the first day of the First ECMPS Reporting Period.

Set ***Protocol Gases*** to null.

Set ***ProtocolGasCylinderIDList*** to null.

Usage:

1	Other QA Evaluation Report Test Extension Exemption Evaluation
2	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Injection Evaluation
3	QA and Certification Data Entry Screen Evaluation 7-Day Calibration Test Evaluation
4	QA and Certification Data Entry Screen Evaluation Appendix E Test Evaluation
5	QA and Certification Data Entry Screen Evaluation Cycle Time Injection Evaluation
6	QA and Certification Data Entry Screen Evaluation Cycle Time Test Evaluation
7	QA and Certification Data Entry Screen Evaluation Flow-to-Load Check Evaluation
8	QA and Certification Data Entry Screen Evaluation Flow-to-Load Reference Data Evaluation
9	QA and Certification Data Entry Screen Evaluation Fuel Flowmeter Accuracy Test Evaluation
10	QA and Certification Data Entry Screen Evaluation Fuelflow-to-Load Test Evaluation
11	QA and Certification Data Entry Screen Evaluation Linearity Evaluation
12	QA and Certification Data Entry Screen Evaluation Miscellaneous Test Evaluation
13	QA and Certification Data Entry Screen Evaluation RATA Evaluation
14	QA and Certification Data Entry Screen Evaluation RATA Summary Evaluation
15	QA and Certification Data Entry Screen Evaluation Test Extension Exemption Evaluation
16	QA and Certification Data Entry Screen Evaluation Transmitter Transducer Test Evaluation
17	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation
18	QA Test Evaluation Report 7-Day Calibration Test Evaluation (Pass 1)
19	QA Test Evaluation Report Appendix E Test (Pass 1)
20	QA Test Evaluation Report Cycle Time Test Evaluation (Pass 1)
21	QA Test Evaluation Report Flow-to-Load Check Evaluation
22	QA Test Evaluation Report Flow-to-Load Reference Data Evaluation

23 QA Test Evaluation Report Fuel Flowmeter Accuracy Test
24 QA Test Evaluation Report Fuelflow-to-Load Test
25 QA Test Evaluation Report Linearity Test (Pass 1)
26 QA Test Evaluation Report Miscellaneous Tests
27 QA Test Evaluation Report RATA Evaluation (Pass 1)
28 QA Test Evaluation Report Transmitter Transducer Test
29 QA Test Evaluation Report Unit Default Test (Pass 1)

Check Category:

Unit Default Test

Check Code: UNITDEF-1

Check Name: Initialize Unit Default Test Variables

Related Former Checks:

Applicability: LME Check

Specifications:

For the Unit Default test:

Set Unit Default Maximum NOx Rate, Unit Default Level Sum Reference Value, Unit Default Level Count, Unit Default Flagged NOx Rate, Unit Default Flagged Level Sum Reference Value, Unit Default Level Run Count, and Unit Default Last Run Number to 0.

Set Unit Default Run Sequence Valid and Unit Default Run Used Indicators Consistent to true.

Set Unit Default Run Sequence Consecutive to false.

Set Unit Default Run Sequence, Unit Default Last Op Level, and Unit Default Flagged Op Level to null.

Usage:

1	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation
2	QA and Certification Data Entry Screen Evaluation Unit Default Test Run Evaluation
3	QA Test Evaluation Report Unit Default Test (Pass 1)

Check Code: UNITDEF-2

Check Name: Unit Default Test Fuel Code Valid

Related Former Checks:

Applicability: LME Check

Specifications:

For the Unit Default test:

If the FuelCode is null,

set Unit Default Fuel Valid to false, and return result A.

If the FuelCode is not in the FuelCode lookup table, or the FuelGroup in the lookup table record is not equal to "OIL" or "GAS",

set Unit Default Fu el Valid to false, and return result B.

Otherwise,

set Unit Default Fu el Valid to true.

If Unit Default Fuel is invalid, do not perform checks in the Unit Default Run category.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation
2	QA Test Evaluation Report Unit Default Test (Pass 1)

Check Code: UNITDEF-3

Check Name: Unit Default Test Operating Condition Code Valid

Related Former Checks:

Applicability: LME Check

Specifications:

For the Unit Default test:

If the OperatingConditionCode is not null,

If the OperatingConditionCode is not equal to "A", "B", or "P",

return result A.

Results:

Result	Description	Severity
A	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation
2	QA Test Evaluation Report Unit Default Test (Pass 1)
	Condition: Unit Default Fuel Valid *Equals* true

Check Code: UNITDEF-4

Check Name: Unit Default Test Reason Code Valid

Related Former Checks:

Applicability: LME Check

Specifications:

For the Unit Default test:

If the TestReasonCode is null,

If EndDate is on or after ECMPS MP Begin Date,

return result A.

Otherwise,

return result B.

If the TestReasonCode is not equal to "INITIAL", "QA", or "RECERT",

Locate the TestReasonCode is not in the Test Reason Code Lookup table,

If not found,

return result C.

If found,

return result D.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You did not provide [fieldname] for [key]. This information will be required for ECMPS submissions.	Non-Critical Error
C	You reported the value [value], which is not in the list of valid values, in the field [fieldname] for [key].	Fatal
D	You reported the value [value], which is not in the list of valid values for this test type, in the field [fieldname] for [key].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation
2	QA Test Evaluation Report Unit Default Test (Pass 1)
	Condition: Unit Default Fuel Valid *Equals* true

Check Code: UNITDEF-5

Check Name: Unit Default Test NOx Default Rate Valid

Related Former Checks:

Applicability: LME Check

Specifications:

For the Unit Default test:

If the NOxDefaultRate is null,

return result A.

If the NOxDefaultRate is less than 0,

return result B.

Results:

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

Usage:

1	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation
2	QA Test Evaluation Report Unit Default Test (Pass 1)
	Condition: Unit Default Fuel Valid *Equals* true

Check Code: UNITDEF-6

Check Name: Identification of Previously Reported Test or Test Number for Unit Default Test

Related Former Checks:

Applicability: LME Check

Specifications:

For an Unit Default test with valid end time:

Set Extra Unit Default Test to false.

Locate another Unit Default test for the location where the FuelCode, OperatingConditionCode, EndDate, EndHour, and EndMinute are equal to the FuelCode, OperatingConditionCode, EndDate, EndHour, and EndMinute of the current TestSummary record.

If found,

set Extra Unit Default Test to true, and return result A.

Otherwise,

Locate an unassociated QASupp record for the location where the TestType Code is equal to "UNITDEF", and the FuelCode, OperatingConditionCode, EndDate, EndHour, and EndMinute is equal to the FuelCode, OperatingConditionCode, EndDate, EndHour, and EndMinute of the current TestSummary record, and the TestNum is not equal to the TestNumber in the current TestSummary record,

If found,

set Extra Unit Default Test to true, and return result A.

Otherwise,

Locate a QASupp record for the location where the TestTypeCode is equal to "UNITDEF" and the TestNum equal to the TestNumber in the current TestSummary record.

If found,

If CAN_SUBMIT in the QA Supp record is equal to "N",

If this is an unassociated QASupp record, and the FuelCode, OperatingConditionCode, EndDate, EndHour, and EndMinute in the QASupp record is not equal to FuelCode, OperatingConditionCode, EndDate, EndHour, or EndMinute of the current TestSummary record,

return result B.

Otherwise,

return result C.

Results:

Result	Description	Severity
A	Based on the information in this record, this test has already been submitted with a different test number, or the Client Tool database already contains the same test with a different test number. This test cannot be submitted.	Fatal
B	Another [testtype] with this test number has already been submitted for this location. This test cannot be submitted with this test number. If this is a different test, you should assign it a unique test number.	Fatal
C	This test has already been submitted and will not be resubmitted. If you wish	Informational Message

to resubmit this test, please contact EPA for approval.

Usage:

1	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation *Condition:* Duplicate Unit Default Test *Equals* false
2	QA Test Evaluation Report Unit Default Test (Pass 1)

Check Code: UNITDEF-7

Check Name: Determine Run Sequence

Related Former Checks:

Applicability: LME Check

Specifications:

For the unit default test:

If there are no Unit Default Run records,

Set Unit Default Run Times Valid to false.

Otherwise,

Set Unit Default Run Times Valid to true.

Proceed through the Unit Default Run records for the test in run BeginDate/Hour/Minute order.

If this is the first run of the test,

Set Simultaneous Unit Default Runs to false.

If the BeginDate is null, or the BeginHour is null or not between 0 and 23, or the BeginMinute is null or not between 0 and 59,

set Unit Default Run Times Valid to false.

Otherwise,

Set the Unit Default Test Begin Date, Begin Hour, and Begin Minute to the BeginDate, BeginHour, and BeginMinute.

If the EndDate is null, or the EndHour is null or not between 0 and 23, or the EndMinute is null or not between 0 and 59,

set Unit Default Run Times Valid to false.

Otherwise,

Set the Unit Default Test End Date, End Hour, and End Minute to the EndDate, EndHour, and EndMinute.

Otherwise,

If Unit Default Run Times Valid is equal to true, the BeginDate is not null, the BeginHour is between 0 and 23, and the BeginMinute is between 0 and 59,

If the BeginDate, BeginHour, and BeginMinute is prior to the EndDate, EndHour, and EndMinute of the previous run,

set Simultaneous Unit Default Runs to true.

If the EndDate is null, or the EndHour is null or not between 0 and 23, or the EndMinute is null or not between 0 and 59,

set Unit Default Run Times Valid to false.

Otherwise,

Set the Unit Default Test End Date, End Hour, and End Minute to the EndDate, EndHour, and EndMinute.

Usage:

1	QA Test Evaluation Report Unit Default Test (Pass 1)
	Condition: Unit Default Fuel Valid *Equals* true

Check Code: UNITDEF-8

Check Name: Unit Default Test Number of Units in Group Valid

Related Former Checks: IDEN-6A

Applicability: LME Check

Specifications:

For the Unit Default test:

If GroupID is not null,

If NumberOfUnitsInGroup is null,

return result A.

If NumberOfUnitsInGroup is less than 2,

return result B.

Otherwise,

If NumberOfUnitsInGroup is not null,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported an invalid value in the NumberOfUnitsInGroup for this test. The value must be greater than or equal to 2.	Critical Error Level 1
C	You reported a value in [fieldname] for this test, but you did not report a GroupID. This field only applies to a test that is conducted for a group of identical units.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation
2	QA Test Evaluation Report Unit Default Test (Pass 1)
	Condition: Unit Default Fuel Valid *Equals* true

Check Code: UNITDEF-9

Check Name: Unit Default Test Number of Tests for Group Valid

Related Former Checks: IDEN-6B

Applicability: LME Check

Specifications:

For the Unit Default test:

If GroupID is not null,

If NumberOfTestsForGroup is null,

return result A.

If NumberOfUnitsInGroup is less than 3 ,

If NumberOfTestsForGroup is less than 1,

return result B.

If NumberOfUnitsInGroup is less than 7,

If NumberOfTestsForGroup is less than 2,

return result B.

If NumberOfUnitsInGroup is less than 11,

If NumberOfTestsForGroup is less than 3,

return result B.

Otherwise,

Calculate tempval = (NumberOfUnitsInGroup / 3), and round the result to the nearest integer.

If NumberOfTestsForGroup is less than tempval,

return result B.

Otherwise,

If NumberOfTestsForGroup is not null,

return result C.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	You reported an invalid value in the NumberOfTestsForGroup for this test. This value is less than the minimum number of tests for the number of units in the group.	Critical Error Level 2
C	You reported a value in [fieldname] for this test, but you did not report a GroupID. This field only applies to a test that is conducted for a group of identical units.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation
2	QA Test Evaluation Report Unit Default Test (Pass 1)
	Condition: Unit Default Fuel Valid *Equals* true

Check Code: UNITDEF-10

Check Name: Unit Default Test Begin Time Consistent with Run Times

Related Former Checks:

Applicability: LME Check

Specifications:

For the unit default test with valid begin time and run times:

If BeginDate, BeginHour, and BeginMinute does not equal the Unit Default Test Begin Date, Begin Hour, and Begin Minute,

return result A.

Results:

Result	Description	Severity
A	You reported a test Begin Date, Hour, and Minute that is not the same as the BeginDate, Hour, and Minute of the first run in the test.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Unit Default Test (Pass 1)

Check Code: UNITDEF-11

Check Name: Unit Default Test End Time Consistent with Run Times

Related Former Checks:

Applicability: LME Check

Specifications:

For the unit default test with valid end time and run times:

If EndDate, EndHour, and EndMinute does not equal the Unit Default Test End Date, End Hour, and End Minute,

return result A.

Results:

Result	Description	Severity
A	You reported a test EndDate, Hour, and Minute that is not the same as the EndDate, Hour, and Minute of the last run in the test.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Unit Default Test (Pass 1)

Check Code: UNITDEF-12

Check Name: Unit Default Test Consistent with Methodology

Related Former Checks: UDEF-2

Applicability: LME Check

Specifications:

For the Unit Default Test with consistent dates:

Locate a Method record for the location where the ParameterCode is equal to "NOXM", the MethodCode is equal to "LME", and the EndDate is null or the EndDate and EndHour is after the EndDate and EndHour of the test.

If not found,

return result A.

Results:

Result	Description	Severity
A	You have reported this unit default test to determine a unit-and-fuel specific NOX default for LME, but you do not have an active NOXM LME methodology record in your monitoring plan.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Unit Default Test (Pass 1)

Check Code: UNITDEF-13

Check Name: Simultaneous Runs

Related Former Checks: UDEF-4

Applicability: LME Check

Specifications:

For the unit default test with valid run times:

If Simultaneous Unit Default Runs is equal to true,

return result A.

Results:

Result	Description	Severity
A	One or more runs in this test have overlapping run times.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Unit Default Test (Pass 1)

Check Code: UNITDEF-14

Check Name: Concurrent Unit Default Tests

Related Former Checks: UDEF-6

Applicability: LME Check

Specifications:

For a unit default test with consistent dates:

Locate another Unit Default test for the location where the FuelCode and OperatingConditionCode are equal to the FuelCode and OperatingConditionCode of the current test, the BeginDate, BeginHour, and BeginMinute is before the EndDate, EndHour, and EndMinute of the current test, and the EndDate, EndHour, and EndMinute is after the BeginDate, BeginHour, and BeginMinute of the current test.

If found,

return result A.

If not found,

Locate a n unassociated QA Supp record for the location where the TestTypeCode is equal to "UNITDEF"; the FuelCode and OperatingConditionCode are equal to FuelCode and OperatingConditionCode of the current test; the BeginDate, BeginHour, and BeginMinute is before the EndDate, EndHour, and EndMinute of the current test, and the EndDate, EndHour, and EndMinute is after the BeginDate, BeginHour, and BeginMinute of the current record; and the TestNum is not equal to the TestNumber in the current test.

If found,

return result A.

Results:

Result	Description	Severity
A	The test was conducted at the same time as another Unit Default test with the same FuelCode and OperatingConditionCode.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Unit Default Test (Pass 1)
	Condition: Extra Unit Default Test *Equals* false

Check Code: UNITDEF-15

Check Name: Insufficient Number of Runs

Related Former Checks: UDEF-7

Applicability: LME Check

Specifications:

For the Unit Default Run:

If Unit Default Last Op Level is equal to OperatingLevelforRun,

If Unit Default Flagged Op Level contains the OperatingLevelForRun,

If RunUsedIndicator is not equal to 1,

set Unit Default Run Used Indicators Consistent to false.

Otherwise,

If RunUsedIndicator is equal to 1,

set Unit Default Run Used Indicators Consistent to false.

append OperatingLevelForRun to Unit Default Flagged Op Level.

Otherwise,

Add 1 to Unit Default Level Count.

If RunUsedIndicator is equal to 1,

append OperatingLevelForRun to Unit Default Flagged Op Level.

If Unit Default Last Op Level is not null,

If Unit Default Level Run Count is less than 3,

set Unit Default Incomplete Level to Unit Default Last Op Level.

set Unit Default Level Sum Reference Value and Unit Default Level Run Count to 0, Unit Default Last Op Level to OperatingLevelforRun, Unit Default Maximum NOx Rate to -1, and return result A.

Otherwise,

If Unit Default Maximum NOx Rate is greater than or equal to 0,

If Unit Default Level Sum Reference Value is greater than or equal to 0,

Calculate tempRate = Unit Default Level Sum Reference Value / Unit Default Level Run Count and round the result to 3 decimal places.

If tempRate is greater than Unit Default Maximum NOx Rate,

set Unit Default Maximum NOx Rate to tempRate.

Otherwise,

set Unit Default Maximum NOx Rate to -1.

If Unit Default Flagged Level Sum Reference Value is greater than or equal to 0,

Calculate Unit Default Flagged NOx Rate = Unit Default Flagged Level Sum Reference Value / Unit

Default Level Run Count and round the result to 3 decimal places.

Set Unit Default Level Sum Reference Value and Unit Default Level Run Count to 0.

Set Unit Default Last Op Level to OperatingLevelforRun.

Results:

Result	Description	Severity
A	The Unit Default test contains fewer than three run records for OperatingLevelForRun [level]. A minimum of three runs are required at each operating level.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report --- Unit Default Test Run

Check Code: UNITDEF-16

Check Name: Operating Level for Run Valid

Related Former Checks:

Applicability: LME Check

Specifications:

For the Unit Default Run:

If the OperatingLevelfor Run is null,

return result A.

If the OperatingLevelforRun is not between 1 and 99,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Unit Default Test Run Evaluation
2	QA Test Evaluation Report --- Unit Default Test Run

Check Code: UNITDEF-17

Check Name: Run Begin Time Valid

Related Former Checks:

Applicability: LME Check

Specifications:

For the Unit Default run:

If the BeginDate is null, or the BeginHour is null or not between 0 and 23, or the BeginMinute is null or not between 0 and 59.

return result A.

Results:

Result	Description	Severity
A	The BeginDate, BeginHour, and/or BeginMinute for [key] is invalid.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Unit Default Test Run Evaluation
2	QA Test Evaluation Report --- Unit Default Test Run

Check Code: UNITDEF-18

Check Name: Run End Time Valid

Related Former Checks: UDEF-13

Applicability: LME Check

Specifications:

For the Unit Default run:

If the EndDate is null, or the EndHour is null or not between 0 and 23, or the EndMinute is null or not between 0 and 59,

return result A.

Otherwise,

If the BeginDate is not null, the BeginHour is between 0 and 23, and the BeginMinute is between 0 and 59.

If the BeginDate, BeginHour, and BeginMinute is on or after the EndDate, EndHour, and EndMinute,

return result B.

Otherwise,

Calculate tempLength as the difference in minutes between the BeginDate/Hour/Minute and the EndDate/Hour/Minute.

If tempLength is less than 8,

return result C.

Results:

Result	Description	Severity
A	The EndDate, EndHour, and/or EndMinute for [key] are invalid.	Critical Error Level 1
B	The begin time was later than the end time for [key].	Critical Error Level 1
C	According to the Begin and End times for [key], the run was less than 8 minutes. Each run must be at least 8 minutes in duration.	Non-Critical Error

Usage:

1	QA and Certification Data Entry Screen Evaluation Unit Default Test Run Evaluation
2	QA Test Evaluation Report --- Unit Default Test Run

Check Code: UNITDEF-19

Check Name: Response Time Valid

Related Former Checks:

Applicability: LME Check

Specifications:

For the Unit Default Run:

If the ResponseTime is null,

return result A.

If the ResponseTime is not between 0 and 800,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values from [minvalue] to [maxvalue].	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Unit Default Test Run Evaluation
2	QA Test Evaluation Report --- Unit Default Test Run

Check Code: UNITDEF-20

Check Name: Run Number Valid

Related Former Checks:

Applicability: LME Check

Specifications:

For the Unit Default Run:

Add 1 to Unit Default Level Run Count.

If the RunNumber is null,

return result A.

Otherwise,

If Unit Default Level Run Count is equal to 1,

If Unit Default Level Count is equal to 1, and the associated OperatingLevelForRun is not equal to 1,

set Unit Default Run Sequence Valid to false.

Otherwise,

If RunNumber is not equal to 1,

set Unit Default Run Sequence Consecutive to true.

Otherwise,

If RunNumber - Unit Default Last Run Number is not equal to 1,

set Unit Default Run Sequence Valid to false.

Set Unit Default Last Run Number to RunNumber.

Append RunNumber to Unit Default Run Sequence in numeric order.

If the RunNumber is less than or equal to 0,

return result B.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Fatal
B	You defined an invalid [fieldname] for [key]. This value must be greater than zero and less than 20,000.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Unit Default Test Run Evaluation
2	QA Test Evaluation Report --- Unit Default Test Run

Check Code: UNITDEF-21

Check Name: Reference Value for Run Valid

Related Former Checks:

Applicability: LME Check

Specifications:

For the Unit Default Run:

If the ReferenceValue is null,

set Unit Default Maximum NOx Rate to -1, and return result A.

If the ReferenceValue is less than 0,

set Unit Default Maximum NOx Rate to -1, and return result B.

Otherwise,

add ReferenceValue to Unit Default Level Sum Reference Value.

If RunUsedIndicator is equal to 1,

add Reference Value to Unit Default Flagged Level Sum Reference Value.

Results:

Result	Description	Severity
A	You did not provide [fieldname], which is required for [key].	Critical Error Level 1
B	The value [value] in the field [fieldname] for [key] is not within the range of valid values. This value must be greater than or equal to zero.	Critical Error Level 2

Usage:

1	QA and Certification Data Entry Screen Evaluation Unit Default Test Run Evaluation
2	QA Test Evaluation Report --- Unit Default Test Run

Check Code: UNITDEF-22

Check Name: Out of Sequence or Missing Runs

Related Former Checks: UDEF-5

Applicability: LME Check

Specifications:

For the unit default test with valid run times:

If Unit Default Run Sequence Valid is equal to true,

If Unit Default Run Sequence Consecutive is equal to true,

If the RunNumbers in the Unit Default Run Sequence do not begin with 1 or are not consecutive,

return result A.

Otherwise,

return result A.

Results:

Result	Description	Severity
A	There are missing or non-sequential OperatingLevelForRun and RunNumbers in this test. Run numbers must begin with 1 and be consecutive within the entire test or within each operating level. The lowest OperatingLevelForRun must be equal to 1.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Unit Default Test (Pass 2)

Check Code: UNITDEF-23

Check Name: Insufficient Number of Runs for Highest Operating Level

Related Former Checks: UDEF-7

Applicability: LME Check

Specifications:

For the Unit Default test:

If Unit Default Last Op Level is null,

set Calculate Unit Default NOx Rate to false.

Otherwise,

Set Calculate Unit Default NOx Rate to true.

If Unit Default Level Run Count is less than 3,

set Calculate Unit Default NOx Rate to false, and return result A.

Otherwise,

If Unit Default Maximum NOx Rate is less than 0,

set Calculate Unit Default NOx Rate to false.

Otherwise,

If Unit Default Level Sum Reference Value is greater than or equal to 0,

Calculate tempRate = Unit Default Level Sum Reference Value / Unit Default Level Run Count and round the result to 3 decimal places.

If tempRate is greater than Unit Default Maximum NOx Rate,

set Unit Default Maximum NOx Rate to tempRate.

Otherwise,

set Unit Default Maximum NOx Rate to -1.

If Unit Default Flagged Level Sum Reference Value is greater than or equal to 0,

Calculate Unit Default Flagged NOx Rate = Unit Default Flagged Level Sum Reference Value / Unit Default Level Run Count and round the result to 3 decimal places.

Results:

Result	Description	Severity
A	The Unit Default test contains fewer than three run records for OperatingLevelForRun [level]. A minimum of three runs are required at each operating level.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Unit Default Test (Pass 2)

Check Code: UNITDEF-24

Check Name: Unit Default Test Run Used Indicators Consistent with Default NOx Rate

Related Former Checks: UDEF-8D, E, F, 9B

Applicability: LME Check

Specifications:

For the Unit Default test:

If Unit Default Flagged Op Level is null,

return result A.

If Unit Default Flagged Op Level Contains more than one level,

return result B.

If Unit Default Run Used Indicators Consistent is false,

return result C.

Otherwise,

If Calculate Unit Default NOx Rate is equal to true,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "APPE" and the FieldDescription is equal to "MeanReferenceValue".

If the absolute value of the difference between the Unit Default Maximum NOx Rate and Unit Default Flagged NOx Rate is greater than the Tolerance in the cross-check record,

return result D.

Results:

Result	Description	Severity
A	You have not reported a RunUsedIndicator of 1 in any runs of this test, which indicate the runs used to calculate the default NOx emissions rate.	Critical Error Level 1
B	You have reported a RunUsedIndicator in runs for more than one operating level of this test. The default NOx emissions rate should only be calculated from the runs of one operating level.	Critical Error Level 1
C	Some runs for OperatingLevelForRun [level] of this test have RunUsedIndicators equal to 1 indicating that the run was used to calculate the default NOx emissions rate, but other runs for this operating level do not have RunUsedIndicators equal to 1. The default NOx emissions rate must be calculated from all the runs of one operating level.	Critical Error Level 1
D	The default NOx emission rate calculated from the runs in the flagged operating level is not equal to the highest average NOx emissions rate for all operating levels the test.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Unit Default Test (Pass 2)

Check Code: UNITDEF-25

Check Name: Unit Default Test NOx Rate Consistent with Recalculated Value

Related Former Checks: UDEF-31B

Applicability: LME Check

Specifications:

For the Unit Default test:

If Calculate Unit Default NOx Rate is equal to true,

If the NOxDefaultRate in the current record is greater than or equal to 0, and is not equal to the Unit Default Maximum NOx Rate,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "APPE" and the FieldDescription is equal to "MeanReferenceValue".

If the absolute value of the difference between the NOxDefaultRate and the Unit Default Maximum NOx Rate is greater than the Tolerance in the cross-check record,

return result A.

Otherwise,

set Unit Default Maximum NOx Rate to the NOxDefaultRate.

Results:

Result	Description	Severity
A	The DefaultNOxRate reported for the test is not equal to the emissions rate recalculated from the run records.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Unit Default Test (Pass 2)

Check Code: UNITDEF-26

Check Name: Unit Default Test NOx Rate Consistent with Default Value

Related Former Checks: UDEF-10D, E, F, IDEN-13

Applicability: LME Check

Specifications:

For a Unit Default test with valid end date and hour:

If Calculate Unit Default NOx Rate is equal to true,

set tempValue to null.

If the OperatingConditionCode is null,

Locate the latest MonitorDefault record for the location where the ParameterCode is equal to "NOXR", the DefaultPurposeCode is equal to "LM", the DefaultSourceCode is equal to "TEST", the FuelCode is equal to the FuelCode in the current test, the OperatingConditionCode is not equal to "B" or "P", and the Begin Date is within 90 days of the EndDate of the current test.

If not found,

Locate the latest MonitorDefault record for the location where the ParameterCode is equal to "NOXR", the DefaultPurposeCode is equal to "LM", the DefaultSourceCode is equal to "TEST", the FuelCode is equal to the FuelCode in the current test, the OperatingConditionCode is not equal to "B" or "P", and the Begin Date is prior to the EndDate of the current test.

If the OperatingConditionCode is equal to "A" or "B",

Locate the latest MonitorDefault record for the location where the ParameterCode is equal to "NOXR", the DefaultPurposeCode is equal to "LM", the DefaultSourceCode is equal to "TEST", the FuelCode is equal to the FuelCode in the current test, the OperatingConditionCode is equal to "B", and the Begin Date is within 90 days of the EndDate of the current test.

If not found,

Locate the latest MonitorDefault record for the location where the ParameterCode is equal to "NOXR", the DefaultPurposeCode is equal to "LM", the DefaultSourceCode is equal to "TEST", the FuelCode is equal to the FuelCode in the current test, the OperatingConditionCode is equal to "B", and the Begin Date is prior to the EndDate of the current test.

If the OperatingConditionCode is equal to "P",

Locate the latest MonitorDefault record for the location where the ParameterCode is equal to "NOXR", the DefaultPurposeCode is equal to "LM", the DefaultSourceCode is equal to "TEST", the FuelCode is equal to the FuelCode in the current test, the OperatingConditionCode is equal to "P", and the Begin Date is within 90 days of the EndDate of the current test.

If not found,

Locate the latest MonitorDefault record for the location where the ParameterCode is equal to "NOXR", the DefaultPurposeCode is equal to "LM", the DefaultSourceCode is equal to "TEST", the FuelCode is equal to the FuelCode in the current test, the OperatingConditionCode is equal to "P", and the Begin Date is prior to the EndDate of the current test.

If a default record was found above ,

set tempValue to the DefaultValue in the retrieved record.

If tempValue is null,

return result A.

Otherwise,

If GroupID is null,

If the Unit Default Maximum NOx Emission Rate is greater than 0.15,

If tempValue is not equal to the Unit Default Maximum NOx Emission Rate,

return result B.

Otherwise,

If tempValue is not equal to the Unit Default Maximum NOx Emission Rate or to 0.15,

return result B.

Otherwise,

If tempValue is less than the Unit Default Maximum NOx Emission Rate,

return result B.

Results:

Result	Description	Severity
A	You have not included in your monitoring plan a default record for ParameterCode NOXR, DefaultPurposeCode LM, DefaultSourceCode TEST, FuelCode [fuel] with the appropriate OperatingConditionCode to report the unit-and-fuel-specific NOx emission rate that was determined by this test.	Critical Error Level 1
B	The unit-and-fuel specific NOx emission rate reported in the Monitor Default record in your monitoring plan does not correspond to the default NOx emission rate recalculated from the run values in this test.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Unit Default Test (Pass 2)

Check Code: UNITDEF-27

Check Name: Unit Default Validation of Base and Peak Load Unit Default Tests

Related Former Checks: UDEF-32 A, E, IDEN-13

Applicability: LME Check

Specifications:

For the Unit Default Test with an OperatingConditionCode equal to "A", "B", or "P" and a valid end date and hour:

Locate all Unit Type records for this location where the UnitTypeCode is not equal to "CC", "CT", "ICE", "IGC", or "OT"; the BeginDate is null or is before the EndDate of the test; and the EndDate is null or after the BeginDate of the test.

If found,

return result A.

Otherwise,

If the OperatingConditionCode is equal to "A", and Calculate Unit Default NOx Rate is equal to true,

Locate the earliest MonitorDefault record for the location where the ParameterCode is equal to "NOXR", the DefaultPurposeCode is equal to "LM", the DefaultSourceCode is equal to "TEST", the FuelCode is equal to the FuelCode in the current test, the OperatingConditionCode is equal to "P", and the EndDate is null or the EndDate and EndHour are on or after the EndDate and EndHour of the current test.

If not found,

return result B.

Otherwise,

Calculate tempPeakValue = Unit Default Maximum NOx Rate * 1.15, and round the result to three decimal places.

If tempPeakValue is not equal to the DefaultValue in the retrieved record,

Locate the Test Tolerance cross-check record where the TestTypeCode is equal to "APPE" and the FieldDescription is equal to "MeanReferenceValue".

If GroupID is null,

If tempPeakValue is greater than 0.15,

If the absolute value of the difference between the tempPeakValue and the DefaultValue is greater than the Tolerance in the cross-check record,

return result C.

Otherwise,

If the absolute value of the difference between the tempPeakValue and the DefaultValue is greater than the Tolerance in the cross-check record, and DefaultValue is not equal to 0.15,

return result C.

Otherwise,

If the absolute value of the difference between the tempPeakValue and the DefaultValue is greater than the Tolerance in the cross-check record, and DefaultValue is less than the tempPeakValue,

return result C.

Results:

Result	Description	Severity
A	You have indicated that this test is used to determine separate default NOx emissions rates for base and peak load hours, but according to the monitoring plan, this unit is not a combustion turbine. Only combustion turbines can have separate default NOx emissions rates for base and peak load hours.	Critical Error Level 1
B	You have not included in your monitoring plan a default record for ParameterCode NOXR, DefaultPurposeCode LM, DefaultSourceCode TEST, FuelCode [fuel], OperatingConditionCode P to report the unit-and-fuel-specific NOx emission rate for use during peak load hours that was determined by this test.	Critical Error Level 1
C	The unit-and-fuel specific NOx default emission rate reported in the Monitor Default record for ParameterCode NOXR, DefaultPurposeCode LM, DefaultSourceCode TEST, FuelCode [fuel], OperatingConditionCode P does not correspond to the emission rate recalculated from the run values in this test. The peak load default value should generally be 1.15 times the emission rate established by the test.	Critical Error Level 1

Usage:

1	QA Test Evaluation Report Unit Default Test (Pass 2)

Check Code: UNITDEF-28

Check Name: Duplicate Unit Default Test

Related Former Checks:

Applicability: LME Check

Specifications:

For the Unit Default test with a valid TestNumber:

Locate another TestSummary record for the location where the TestTypeCode is equal to "UNITDEF" and the TestNumber is equal to the TestNumber in the current record.

If found,

return result A.

Otherwise,

Locate an unassociated QA Supp record for the location where the TestTypeCode is equal to " UNITDEF " and the TestNumber is equal to the TestNumber in the current record.

If found,

return result B.

Results:

Result	Description	Severity
A	Another [testtype] with this test number already exists. You must assign a different test number.	Fatal
B	You cannot change the TestNumber to the value that you have entered, because a [testtype] with this TestNumber has already been submitted. If this is a different test, you should assign it a different TestNumber. If you are trying to resubmit this test, you should delete this test, and either reimport this test with its original TestNumber or retrieve the original test from the EPA host system.	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Unit Default Test Evaluation

Check Code: UNITDEF-29

Check Name: Duplicate Unit Default Test Run

Related Former Checks:

Applicability: LME Check

Specifications:

For the Unit Default Run record with a OperatingLevelforRun and RunNumber that are not null.

Locate another Unit Default Run record for the test where the OperatingLevelforRun and RunNumber are equal to the OperatingLevelforRun and RunNumber in the current record.

If found,

return result A.

Results:

Result	Description	Severity
A	Another [recordtype] record already exists with the same [fieldnames].	Fatal

Usage:

1	QA and Certification Data Entry Screen Evaluation Unit Default Test Run Evaluation

Check Code: UNITDEF-30

Check Name: Calculate Unit Default NOx Rate

Related Former Checks:

Applicability: LME Check

Specifications:

For the Unit Default Test:

Set tempLevel and Unit Default Test NOx Rate to null.

Sort the Unit Default Run records for the test in OperatingLevelForRun order:

For each run record:

If OperatingLevelforRun is null or is less than or equal to 0; or ReferenceValue is null or is less than 0,

return result A.

Otherwise,

If OperatingLevelForRun is not equal to tempLevel,

If tempLevel is not null,

If tmpCt is less than 3,

return result B.

Otherwise,

Calculate tmpRate = tmpRV / tmpCt, and round the result to 3 decimal places.

If tmpRate is greater than Unit Default Test NOx Rate,

set Unit Default Test NOx Rate to tmpRate.

Set tmpCt and tmpRV to 0.

Set tempLevel to OperatingLevelforRun.

Add 1 to tmpCt.

Add ReferenceValue to tmpRV.

If tempLevel is null, or tmpCt is less than 3,

return result B.

Otherwise,

Calculate tmpRate = tmpRV / tmpCt, and round the result to 3 decimal places.

If tmpRate is greater than Unit Default Test NOx Rate,

set Unit Default Test NOx Rate to tmpRate.

Results:

Result	Description	Severity
A	The values in this record could not be calculated because of invalid data.	Critical Error Level 1

B	The Unit Default test contains fewer than three run records for at least one operating level. A minimum of three runs are required at each operating level.	Critical Error Level 1

Usage:

1	QA and Certification Data Entry Screen Evaluation Unit Default Test Calculations