

### **Release Notes for MDC v4.2.48**

EPA is releasing this version of MDC to provide a less stringent QA Status Evaluation (in MDC Hourly) for linearity checks of both ranges of dual range analyzer components (e.g., NOXA, SO2A, SO2H, SO2L, etc.) to make sure false errors are not generated.

Table 1 describes the MDC Hourly changes regarding the dual range analyzer QA Status. Table 2 describes the other changes and bug fixes in MDC and MDC Hourly. Detailed Linearity status checking information can be obtained by reviewing the redline/strikeout Linearity Status Determination (specification) documents that follow Table 2 below.

It may also be helpful to view the Linearity flow charts in conjunction with the specification documents. To view a copy of the flow charts, open MDC v4.2.48 and then choose the "MDC Hourly" option on the main menu. Once MDC Hourly loads, go to the "Help" option on the MDC Hourly main menu and select the "Contents" option. Click on the "Index" tab, type in "flow chart" in box 1, and click the "Display" button. This will bring up the "Check QA Status Screen" page of the Help file. Scroll down the page and click on the link for "Linearity Status (comprehensive)." (The flow charts are Adobe Acrobat (.pdf) files, so you will need the free Adobe Acrobat Reader to view them. Note that this new format allows you to zoom as needed to be able to read the small print.)

Table 1: MDC Hourly QA Status Evaluation Changes

Area of Change	Change Description
Dual Range Analyzer defined as separate components of the same monitoring system	<p>Added logic to compare serial numbers of low and high-scale components in the same monitoring system. If matching, it is assumed that these components are a dual-range analyzer. Changed the QA Status checking for these components by applying the following rules:</p> <ol style="list-style-type: none"> <li>1. If EITHER of the two ranges is "OOC-Failed," "OOC-Invalid," or "OOC-Aborted,"(meaning the most recent prior linearity test did not pass), then the monitoring system is out-of-control.</li> <li>2. If EITHER of the two ranges is in a conditional data period, and the subsequent linearity test did not pass, then the monitoring system is out-of-control.</li> </ol> <p>The Part 75 regulatory basis for this assessment is section 2.2.3(e) of Appendix B.</p>
Dual Range Analyzer defined as a single component	<p>Changed the logic for checking dual range component types (NOXA, SO2A, CO2A etc.). Instead of always requiring that both ranges be IC for every hour, apply the following rules:</p> <ol style="list-style-type: none"> <li>1. If EITHER of the two ranges is "OOC-Failed," "OOC-Invalid," or "OOC-Aborted,"(meaning the most recent prior linearity test did not pass), then the monitoring system is out-of-control.</li> <li>2. If EITHER of the two ranges is in a conditional data period, and the subsequent linearity test did not pass, then the monitoring system is out-of-control.</li> <li>3. If #1 and #2 are not true and the unadjusted reported value (ppm or %) is greater than the Low Span full scale range, then ONLY the high range Linearity check will be used to quality assure those hours.</li> <li>4. If #1 and #2 are not true and the unadjusted reported value (ppm or %) is less than or equal to the Low Span full scale range, and EITHER of the ranges is in-control, then the analyzer will be considered in-control. (<u>Rationale</u>: Readings less than full-scale of low range are sometimes recorded on the high scale, if the analyzer is configured to switch to the high scale at a set point, e.g., when readings reach 75-80% of the low range full-scale value).</li> </ol>

Table 2: MDC 4.2.48 Changes and Bug Fixes

Module	Function	Spec/RT	Problem/Change Description
MDC General	Data Entry	RT 301/307	Fixed problem of the wrong ORISPL being displayed on the Op Hours tab data entry screen.
		RT 503/504	Fixed problem that caused RT 301/307 data to disappear if user changed Unit or Stack ID in MDC.
		RT 600	Fixed crash that occurred if user changed test number for 7-day cal.
		RT 611 (RATA)	Fixed minor problem when recalculating RT 611. The Normal Load Indicator field was not calculated if there was a RT 536 with a start date equal to the RATA date and another RT 536 with an end date equal to the RATA date. Changed to be consistent with the evaluation (uses the new RT 536).
		RT 628	Fixed crash that occurred when the date field was left blank (a required field).
	Deleting Facility	RT 301/307	Fixed facility delete to include deletion of Op Hours records.
	RATA Evaluation	RATA-14	MDC was not applying low-emitter specification for Flow RATAs. Fixed to pass based on low-flow standard and to apply applicable reduced frequency standard(see Part 75, Appendix A, Section 3.3.4.).
Reports	RT 600	Added performance specification for O2/CO2 monitors ( $ R-A  \leq 0.5\%$ ) to report header.	
MDC Hourly	Calculations	Rounding	Added work-around to correct internal Visual Basic calculation bug. (In some circumstances appeared to round down instead of up from 0.x5, e.g., 0.055 would be rounded to 0.05 instead of 0.06.)
		MODC issue	Fixed crash that occurred when the NOx Unadjusted Emission Rate MODC = 21 (0 ppm), and the NOx formula code = "N1" or the SO2 Unadjusted Emission Rate MODC = 21 (0 ppm), and the SO2 formula code = "F2." Also, fixed NOx emission rate calculation on the "Non-Part 75 Emissions" tab when the SO2 unadjusted emission rate MODC = 21 and the NOx formula code = "N2."
		MODC issue	Changed logic to treat the use of MODC 54 the same as missing data (use the reported value, no QA tests required for that hour).
		BAF Determination	Was incorrectly displaying "System Missing or Invalid" when RATA QA status was "Operating Hour Record not found." Fixed to give correct error "Cannot Determine BAF for System."
		BAF Determination	Fixed to automatically set the BAF to 1.000 for an RT 556 event that indicate a Complete Monitor or System Replacement during the conditional data validation period.

Table 2: MDC 4.2.48 Changes and Bug Fixes

<b>Module</b>	<b>Function</b>	<b>Spec/RT</b>	<b>Problem/Change Description</b>
MDC Hourly (cont.)	QA Test Status	RATA Status (OOC-RT 556 Event)	1) Fixed problem that occurred when determining which RATA to use during an RT 556 event, to always use first subsequent RATA after an event (not the first non-passing RATA as MDC Hourly is evaluating the RATA).  2) Fixed endless loop situation when looking for an RT 556 event subsequent to a RATA test.
		Linearity Status	Fixed problem with adding quarter to date function, which resulted in generating a false Linearity Status error message of "Operating Hours Record Not Found," instead of "IC-Extension."
	Review Quarterly Report	Detailed Emissions Data Screen	Fixed the problem that occurred when the Heat Input CEMS tab was filtered and the total was blank in the "Totals for Filtered Hours" box. Occurred when the quarterly report file contained reported Heat Input, an optional field in the EDR, for all hours.

## Linearity Test Status Determination for the Current EDR HOURLY DATA Record

1. If System ID is blank,

status = "System ID Blank," and exit.

Locate System ID in SYSTEMS where the Last Date System Reported Data is blank or is on or after the first day of the Quarter in the current EDR HOURLY DATA record.

If not found,

Status = "No Active System in MDC" and exit.

If Component ID is blank,

If parameter\_monitored\_by\_monitoring\_system is equal to "NOX" and component\_type\_code is blank,

status = "Cannot Determine Component," and exit.

otherwise

status = "Component ID Blank," and exit.

Locate System ID/Component ID in SYSLINK (MDC).

If not found,

status = "Component Not in MDC" and exit.

2. Locate System ID in SYSTEMS (MDC).

If the incoming system parameter is blank,

set the incoming system parameter to the parameter\_monitored\_by\_monitoring\_system.

If parameter\_monitored\_by\_monitoring\_system is not equal to "NOX," "CO2," or "O2,"

status = "Invalid System Parameter" and exit.

If the incoming system parameter is not blank,

If parameter\_monitored\_by\_monitoring\_system is not equal to the incoming system parameter,

status = "Invalid System Parameter," and exit.

3. Locate Component ID in COMPONENTEN (MDC).

Set the outgoing component type to the component\_type\_code,

If component\_type\_code does not begin with the incoming component type prefix, or if the component type prefix is equal "O2D" and the component\_type\_code is not equal to "O2WD",

status = "Invalid Component Type" and exit.

If the Component\_Type\_Code ends in "H",

Locate the System ID in SYSLINK

where the first three characters of the Component\_Type\_Code is equal to the component type prefix and the last character of the Component\_Type\_Code is equal to "L",

If found, and the Component\_Serial\_Number of the SYSLINK record is equal to the Component\_Serial\_Number in the SYSLINK record of the incoming Component ID found in step 1 (removing the phrases "HIGH", "HI", "LOW", and "LO"),

The component is a dual-range analyzer. The current range of the analyzer is high. The Component ID of the high range is the incoming Component ID. The Component ID of the low range is the Component ID of the SYSLINK record.

If the Component\_Type\_Code ends in "L",

Locate the System ID in SYSLINK

where the first three characters of the Component\_Type\_Code is equal to the component type prefix and the last character of the Component\_Type\_Code is equal to "H",

If found, and the Component\_Serial\_Number of the SYSLINK record is equal to the Component\_Serial\_Number in the SYSLINK record of the incoming Component ID found in step 1 (removing the phrases "HIGH", "HI", "LOW", and "LO"),

The component is a dual-range analyzer. The current range of the analyzer is low. The Component ID of the low range is the incoming Component ID. The Component ID of the high range is the Component ID of the SYSLINK record.

If the Component\_Type\_Code ends in "A",

Locate the Span record

where the Parameter\_of\_Span\_Value is equal to the component type prefix (or O2 if the component type prefix is O2D or O2W), the Span\_Scale is equal to "L", the Span\_Effective\_Date/Hour is on or before the Date/Hour in the current EDR HOURLY DATA record, and the Span\_Ineffective\_Date/Hour is blank or on or after the Date/Hour in the current EDR HOURLY DATA record,

If found, and the incoming measured value is greater than the Full\_Scale\_Range in the SPAN record,

The component is a dual-range analyzer. The current range of the analyzer is

high. The Component ID of the high range is the incoming Component ID. The Component ID of the low range is also the incoming Component ID.

Otherwise,

The component is a dual-range analyzer. The current range of the analyzer is unknown. The Component ID of the high range is the incoming Component ID. The Component ID of the low range is also the incoming Component ID.

Note: The incoming system parameter and the incoming component type prefix is based on the record type of the hourly data and the formula code.

4. If the Component Type Prefix is equal to "SO2", Component\_Type\_Code is equal to "SO2", or "SO2H",

Locate the Span record

where the Parameter\_of\_Span\_Value is equal to "SO2", the Span\_Scale is equal to "H", the Span\_Effective\_Date/Hour is on or before the Date/Hour in the current EDR HOURLY DATA record, and the Span\_Ineffective\_Date/Hour is blank or on or after the Date/Hour in the current EDR HOURLY DATA record,

If found, and the Span Value is less than or equal to 30,

status = "IC-Exempt" and exit.

If the Component\_Type\_Code is equal to "SO2L", or the Component Type Prefix is equal to "SO2" and this is a dual-range analyzer and this is the second pass,

Locate the Span record

where the Parameter\_of\_Span\_Value is equal to "SO2", the Span\_Scale is equal to "L", the Span\_Effective\_Date/Hour is on or before the Date/Hour in the current EDR HOURLY DATA record, and the Span\_Ineffective\_Date/Hour is blank or on or after the Date/Hour in the current EDR HOURLY DATA record,

If found, and the Span Value is less than or equal to 30,

If this is a dual-range analyzer and the current range is high,

status = the stored status of the high range analyzer, and exit.

Otherwise,

status = "IC-Exempt" and exit.

~~If the Component\_Type\_Code is equal to "SO2A", and this is the first pass;~~

~~Locate the Span record~~

~~where the Parameter\_of\_Span\_Value is equal to "SO2", the Span\_Scale is equal to "H", the Span\_Effective\_Date/Hour is on or before the Date/Hour in the current EDR~~

~~HOURLY DATA record, and the Span\_Ineffective\_Date/Hour is blank or on or after the Date/Hour in the current EDR HOURLY DATA record;~~

~~———— If found, and the Span Value is less than or equal to 30;~~

~~———— status = "IC-Exempt", and exit.~~

~~———— If the Component\_Type\_Code is equal to "SO2A", and this is the second pass;~~

~~———— Locate the Span record~~

~~———— where the Parameter\_of\_Span\_Value is equal to "SO2", the Span\_Scale is equal to "L", the Span\_Effective\_Date/Hour is on or before the Date/Hour in the current EDR HOURLY DATA record, and the Span\_Ineffective\_Date/Hour is blank or on or after the Date/Hour in the current EDR HOURLY DATA record;~~

~~———— If found, and the Span Value is less than or equal to 30;~~

~~———— status = the stored status for the high-scale range of the component, and exit.~~

If the Component\_Type\_Code is equal to "NOX" or "NOXH",

Locate the Span record

where the Parameter\_of\_Span\_Value is equal to "NOX", the Span\_Scale is equal to "H", the Span\_Effective\_Date/Hour is on or before the Date/Hour in the current EDR HOURLY DATA record, and the Span\_Ineffective\_Date/Hour is blank or on or after the Date/Hour in the current EDR HOURLY DATA record,

If found, and the Span Value is less than or equal to 30,

status = "IC-Exempt" and exit.

If the Component\_Type\_Code is equal to "NOXL", **or the Component Type Prefix is equal to "NOX" and this is a dual-range analyzer and this is the second pass,**

Locate the Span record

where the Parameter\_of\_Span\_Value is equal to "NOX", the Span\_Scale is equal to "L", the Span\_Effective\_Date/Hour is on or before the Date/Hour in the current EDR HOURLY DATA record, and the Span\_Ineffective\_Date/Hour is blank or on or after the Date/Hour in the current EDR HOURLY DATA record,

If found, and the Span Value is less than or equal to 30,

**If this is a dual-range analyzer and the current range is high,**

**status = the stored status of the high range analyzer, and exit.**

**Otherwise,**

status = "IC-Exempt" and exit.

~~If the Component\_Type\_Code is equal to "NOXA", and this is the first pass,~~

~~Locate the Span record~~

~~where the Parameter\_of\_Span\_Value is equal to "NOX", the Span\_Scale is equal to "H", the Span\_Effective\_Date/Hour is on or before the Date/Hour in the current EDR HOURLY DATA record, and the Span\_Ineffective\_Date/Hour is blank or on or after the Date/Hour in the current EDR HOURLY DATA record;~~

~~If found, and the Span Value is less than or equal to 30;~~

~~status = "IC-Exempt", and exit.~~

~~If the Component\_Type\_Code is equal to "NOXA", and this is the second pass;~~

~~Locate the Span record~~

~~where the Parameter\_of\_Span\_Value is equal to "NOX", the Span\_Scale is equal to "L", the Span\_Effective\_Date/Hour is on or before the Date/Hour in the current EDR HOURLY DATA record, and the Span\_Ineffective\_Date/Hour is blank or on or after the Date/Hour in the current EDR HOURLY DATA record;~~

~~If found, and the Span Value is less than or equal to 30;~~

~~status = the stored status for the high-scale range of the component, and exit.~~

5. If this is a dual-range analyzer, and this is the first pass,

The applicable Component ID is the Component ID of the high range.

If this is a dual-range analyzer, and this is the second pass,

The applicable Component ID is the Component ID of the low range.

Otherwise,

The applicable Component ID is the incoming Component ID.

If the Component\_Type\_Code ends in "A", and this is the first pass,

Locate the most recent TESTSUM record

for the System ID/**Applicable** Component ID

where the Test\_Type = "LINE", the Span\_Scale is equal to "H", and the Test\_End\_Date/Test\_End\_Time is prior to the Date/Hour in the current EDR HOURLY DATA record.

If the Component\_Type\_Code ends in "A", and this is the second pass,

Locate the most recent TESTSUM record

for the System ID/**Applicable** Component ID  
where the Test\_Type = "LINE", the Span\_Scale is equal to "L", and the  
Test\_End\_Date/Test\_End\_Time is prior to the Date/Hour in the current EDR HOURLY  
DATA record.

Otherwise,

Locate the most recent TESTSUM record

for the System ID/**Applicable** Component ID  
where the Test\_Type = "LINE" and the Test\_End\_Date/Test\_End\_Time is prior to the  
Date/Hour in the current EDR HOURLY DATA record.

If found,

Locate the most recent SYSEVENT record

for the System ID  
where either the Component ID is equal to the **applicable incoming** Component ID or  
the Event Code is equal to 120, 125, 130, or 200, and the Required\_Test\_Code is  
equal to 2, 4, 8, 9, 10, 12, or 17, and the Event\_Start\_Date/Event\_Start\_Hour is after  
the Test\_End\_Date/Test\_End\_Time in the above record and either prior to the  
Date/Hour in the current EDR HOURLY DATA record or equal to both the  
Date/Hour in the current EDR HOURLY DATA record and the  
Conditional\_Data\_Start\_Date/Hour and is on or after January 1, 1993.

If found,

If the Event\_Code is equal to 170, and **this is a dual-range analyzer, the**  
~~Component\_Type\_Code ends in "A"~~,

If this is the first pass,

Locate the Span record where the Parameter\_of\_Span\_Value corresponds to  
the Component\_Type\_Code, the Span\_Scale is equal to "H", the  
Span\_Effective\_Date is equal to the Event\_Start\_Date.

If found,.

This is an applicable prior SYSEVENT record. Go to next step.

If not found, and the Test\_Completion\_Date/Hour in the SYSEVENT record  
is not blank,

Locate the first TESTSUM record  
for the System ID/**Applicable** Component ID

where the Test\_Type = "LINE", the Span\_Scale is equal to "H", and the Test\_End\_Date/Test\_End\_Hour is on or before the Test\_Completion\_Date/Hour and on or after the Date/Hour in the current EDR HOURLY DATA record.

If found,

This is an applicable prior SYSEVENT record. Go to next step.

If not found,

Set a flag to indicate that that the program was "Unable to Determine Scale of Span Value Change," but continue looking for an applicable prior SYSEVENT record below.

If not found, and the Test\_Completion\_Date/Hour in the SYSEVENT record is blank,

Set a flag to indicate that that the program was "Unable to Determine Scale of Span Value Change," but continue looking for an applicable prior SYSEVENT record below.

If this is the second pass,

Locate the Span record where the Parameter\_of\_Span\_Value corresponds to the Component\_Type\_Code , the Span\_Scale is equal to "L", the Span\_Effective\_Date is equal to the Event\_Start\_Date.

If found,.

This is an applicable prior SYSEVENT record. Go to next step.

If not found, and the Test\_Completion\_Date/Hour in the SYSEVENT record is not blank,

Locate the first TESTSUM record for the System ID/**Applicable** Component ID where the Test\_Type = "LINE", the Span\_Scale is equal to "L", and the Test\_End\_Date/Test\_End\_Hour is on or before the Test\_Completion\_Date/Hour and on or after the Date/Hour in the current EDR HOURLY DATA record.

If found,

This is an applicable prior SYSEVENT record. Go to next step.

If not found,

Continue looking for an applicable prior SYSEVENT record below.

If not found, and the Test\_Completion\_Date/Hour in the SYSEVENT record is blank,

Continue looking for an applicable prior SYSEVENT record below.

Otherwise,

This is an applicable prior SYSEVENT record. Go to next step.

If the applicable prior SYSEVENT record was not found above,

Locate the most recent SYSEVENT record for the System ID where either the Component ID is equal to the **applicable incoming** Component ID or the Event Code is equal to 120, 125, 130, or 200, and the Required\_Test\_Code is equal to 2, 4, 8, 9, 10, 12, or 17, and the Event\_Start\_Date/Event\_Start\_Hour is equal to the Test\_End\_Date/Test\_End\_Hour in the above record and either prior to the Date/Hour in the current EDR HOURLY DATA record or equal to both the Date/Hour in the current EDR HOURLY DATA record and the Conditional\_Data\_Start\_Date/Hour and is on or after January 1, 1993.

If found,

If the Test\_Completion\_Date/Hour is blank or is after the Test\_End\_Date/Hour in the above TESTSUM record,

Locate the first TESTSUM record for the System ID/**Applicable** Component ID where the Test\_Type = "LINE", and the Test\_End\_Date/Test\_End\_Hour is after the Event\_Start\_Date/Hour.

If found, and the Test\_Completion\_Date/Hour in the SYSEVENT record is blank or is on or after the Test\_End\_Date/Hour in the record just found,

If the Event\_Code is equal to 170, **and this is a dual-range analyzer**, ~~the Component\_Type\_Code ends in "A",~~

If this is the first pass,

Locate the Span record where the Parameter\_of\_Span\_Value corresponds to the Component\_Type\_Code, the Span\_Scale is equal to "H", the Span\_Effective\_Date is equal to the Event\_Start\_Date.

If found,.

This is an applicable prior SYSEVENT record. Go to next step.

If not found, and the Test\_Completion\_Date/Hour in the SYSEVENT record is not blank,

Locate the first TESTSUM record for the System ID/**Applicable** Component ID where the Test\_Type = "LINE", the Span\_Scale is equal to "H", and the Test\_End\_Date/Test\_End\_Hour is on or before the Test\_Completion\_Date/Hour and on or after the Date/Hour in the current EDR HOURLY DATA record.

If found,

This is an applicable prior SYSEVENT record. Go to next step.

If not found,

Set a flag to indicate that that the program was "Unable to Determine Scale of Span Value Change," and go to step 7.

If not found, and the Test\_Completion\_Date/Hour in the SYSEVENT record is blank,

Set a flag to indicate that that the program was "Unable to Determine

Scale of Span Value Change," and go to step 7.

If this is the second pass,

Locate the Span record where the Parameter\_of\_Span\_Value corresponds to the Component\_Type\_Code, the Span\_Scale is equal to "L", the Span\_Effective\_Date is equal to the Event\_Start\_Date.

If found,.

This is an applicable prior SYSEVENT record. Go to next step.

If not found, and the Test\_Completion\_Date/Hour in the SYSEVENT record is not blank,

Locate the first TESTSUM record for the System ID/**Applicable** Component ID where the Test\_Type = "LINE", the Span\_Scale is equal to "L", and the Test\_End\_Date/Test\_End\_Hour is on or before the Test\_Completion\_Date/Hour and on or after the Date/Hour in the current EDR HOURLY DATA record.

If found,

This is an applicable prior SYSEVENT record. Go to next step.

If not found,

If the flag to indicate that the program was "Unable to Determine Scale of Span Value Change" was set in the first pass,

status = "Unable to

Determine Scale of Span  
Value Change," and exit.

Otherwise,

Go to step 7.

If not found, and the  
Test\_Completion\_Date/Hour in the  
SYSEVENT record is blank,

If the flag to indicate that the program  
was "Unable to Determine Scale of  
Span Value Change" was set in the first  
pass,

status = "Unable to Determine  
Scale of Span Value Change,"  
and exit.

Otherwise,

Go to step 7.

Otherwise,

This is an applicable prior SYSEVENT record. Go to  
next step.

If not found,

Locate the most recent SYSEVENT record  
for the System ID  
where either the Component ID is equal to the ~~applicable incoming~~ Component ID or  
the Event Code is equal to 120, 125, 130, or 200, and the Required\_Test\_Code is  
equal to 2, 4, 8, 9, 10, 12, or 17, and the Event\_Start\_Date/Event\_Start\_Hour is  
either prior to the Date/Hour in the current EDR HOURLY DATA record or equal  
to both the Date/Hour in the current EDR HOURLY DATA record and the  
Conditional\_Data\_Start\_Date/Hour and is on or after January 1, 1993.

If found,

If the Event\_Code is equal to 170, and ~~this is a dual-range analyzer, the  
Component\_Type\_Code ends in "A",~~

If this is the first pass,

Locate the Span record where the Parameter\_of\_Span\_Value corresponds to the Component\_Type\_Code , the Span\_Scale is equal to "H", the Span\_Effective\_Date is equal to the Event\_Start\_Date.

If found,.

This is an applicable prior SYSEVENT record. Go to next step.

If not found, and the Test\_Completion\_Date/Hour in the SYSEVENT record is not blank,

Locate the first TESTSUM record  
for the System ID/**Applicable** Component ID  
where the Test\_Type = "LINE", the Span\_Scale is equal to "H", and the Test\_End\_Date/Test\_End\_Hour is on or before the Test\_Completion\_Date/Hour and on or after the Date/Hour in the current EDR HOURLY DATA record.

If found,

This is an applicable prior SYSEVENT record. Go to next step.

If not found,

Go to step 7.

If not found, and the Test\_Completion\_Date/Hour in the SYSEVENT record is blank,

Go to step 7.

If this is the second pass,

Locate the Span record where the Parameter\_of\_Span\_Value corresponds to the Component\_Type\_Code , the Span\_Scale is equal to "L", the Span\_Effective\_Date is equal to the Event\_Start\_Date.

If found,.

This is an applicable prior SYSEVENT record. Go to next step.

If not found, and the Test\_Completion\_Date/Hour in the SYSEVENT record is not blank,

Locate the first TESTSUM record

for the System ID/**Applicable** Component ID  
where the Test\_Type = "LINE", the Span\_Scale is equal to  
"L", and the Test\_End\_Date/Test\_End\_Hour is on or before  
the Test\_Completion\_Date/Hour and on or after the  
Date/Hour in the current EDR HOURLY DATA record.

If found,

This is an applicable prior SYSEVENT record. Go to next  
step.

If not found,

Go to step 7.

If not found, and the Test\_Completion\_Date/Hour in the SYSEVENT record  
is blank,

Go to step 7.

Otherwise,

This is an applicable prior SYSEVENT record. Go to next step.

6. If an applicable prior SYSEVENT record is found,

If the Conditional\_Data\_Start\_Date or the Conditional\_Data\_Start\_Hour is blank, or if the  
Date/Hour in the EDR HOURLY DATA record is prior to the  
Conditional\_Data\_Start\_Date/Conditional\_Data\_Start\_Hour,

**If this is not a dual-range analyzer, or the current range is high and this is the first pass, or  
the current range is low and this is the second pass,**

status = "OOC-<event>" where the <event> is the Label field in the TABLES  
database where FIELD\_NAME = "EVENT\_CODE" and value is equal to the  
Event\_Code in the SYSEVENT record, and exit.

**Otherwise,**

**If this is the first pass,**

**store "OOC-<event>" where the <event> is the Label field in the TABLES  
database where FIELD\_NAME = "EVENT\_CODE" and value is equal to the  
Event\_Code in the SYSEVENT record as the status of the high range. Go to  
step 5 for the second pass.**

**If this is the second pass,**

status = the stored status for the high range of the analyzer, and exit.

If the Date/Hour in the EDR HOURLY DATA record is on or after the Conditional\_Data\_Start\_Date/Conditional\_Data\_Start\_Hour, go to step 8.

7. If an applicable prior SYSEVENT record is not found,

If the prior linearity TESTSUM record was found in step 5, go to step 10.

If the prior linearity TESTSUM record was not found in step 5,

If this is not a dual-range analyzer, or the current range is high and this is the first pass, or the current range is low and this is the second pass,

status = "OOC-No Prior Check and No RT 556," and exit.

Otherwise,

If this is the first pass,

store "OOC-No Prior Check and No RT 556" as the status of the high range. Go to step 4 for the second pass.

If this is the second pass,

status = the stored status for the high range of the analyzer, and exit.

8. Locate the first TESTSUM record for the System ID/Applicable Component ID where the Test\_Type = "LINE" and the Test\_End\_Date/Test\_End\_Time is on or after the Conditional\_Date\_Start\_Date/Conditional\_Data\_Start\_Hour in the SYSEVENT record.

If found, and the Calculated Test Result is equal to "I" or " ,"

status = "OOC-Recertification Test Invalid" and exit.

If found, and the Calculated Test Result is equal to "F,"

status = "OOC-Recertification Test Failed" and exit.

If found, and the Calculated Test Result is equal to "A,"

status = "OOC-Recertification Test Aborted" and exit.

9. If the maximum number of operating hours between the Date/Hour in the EDR Hourly Data record and the Conditional\_Data\_Start\_Date/Conditional\_Data\_Start\_Hour is less than 168,

If the Event Code in the SYSEVENT record is equal to 170 and this is a dual-range analyzer the Component\_Type\_Code ends in "A", and this is the first pass,

store "IC-Conditional" as the status for the high range of the analyzer, and go back to step 4 for the second pass.

If this is a dual-range analyzer, the current range is high, and this is the second pass,

status = the stored status of the high range analyzer, and exit.

Otherwise,

status = "IC-Conditional" and exit.

If the minimum number of operating hours between the Date/Hour in the EDR Hourly Data record and the Conditional\_Data\_Start\_Date/Conditional\_Data\_Start\_Hour is less than 168,

If this is a dual-range analyzer, and this is the first pass,

store "Undetermined-Conditional Data" as the status for the high range of the analyzer, and go back to step 4 for the second pass.

If this is a dual-range analyzer, the current range is high, and this is the second pass,

status = the stored status of the high range analyzer, and exit.

Otherwise,

status = "Undetermined-Conditional Data" and exit.

If the Event Code in the SYSEVENT record is equal to 125,

If this is an ARP-only unit/stack, or if the system parameter is equal to "SO2",

If the Date/Hour in the EDR\_Hourly\_Data record is within 90 operating days AND 180 calendar days of the Begin Operation Date for the unit/stack,

If this is a dual-range analyzer, and this is the first pass,

store "IC-Conditional" as the status for the high range of the analyzer, and go back to step 4 for the second pass.

If this is a dual-range analyzer, the current range is high, and this is the second pass,

status = the stored status of the high range analyzer, and exit.

Otherwise,

status = "IC-Conditional" and exit.

If the Date/Hour in the EDR\_Hourly\_Data record is possibly within 90 operating days AND 180 calendar days of the ARP Program Start Date for the unit/stack,

If this is a dual-range analyzer, and this is the first pass,

store "Undetermined-Initial Certification" as the status for the high range of the analyzer, and go back to step 4 for the second pass.

If this is a dual-range analyzer, the current range is high, and this is the second pass,

status = the stored status of the high range analyzer, and exit.

Otherwise,

status = "Undetermined-Initial Certification" and exit.

Otherwise,

If this is not a dual-range analyzer, or the current range is high and this is the first pass, or the current range is low and this is the second pass,

status = "OOC-Conditional Period Expired" and exit.

Otherwise,

If this is the first pass,

store "OOC-Conditional Period Expired" as the status of the high range. Go to step 4 for the second pass.

If this is the second pass,

status = the stored status for the high range of the analyzer, and exit.

Otherwise,

If the Date/Hour in the EDR\_Hourly\_Data record is within 90 calendar days of the Begin Operation Date for the unit/stack,

If this is a dual-range analyzer, and this is the first pass,

store "IC-Conditional" as the status for the high range of the analyzer, and go back to step 4 for the second pass.

If this is a dual-range analyzer, the current range is high, and this is the second pass,

status = the stored status of the high range analyzer, and exit.

Otherwise,

status = "IC-Conditional" and exit.

If the System Parameter is equal to "NOXC" and the Date/Hour in the EDR\_Hourly\_Data record is within 90 calendar days of the SUBH/OTC-SUBH Program Start Date for the unit/stack,

If this is a dual-range analyzer, and this is the first pass,

store "Undetermined-Initial Certification" as the status for the high range of the analyzer, and go back to step 4 for the second pass.

If this is a dual-range analyzer, the current range is high, and this is the second pass,

status = the stored status of the high range analyzer, and exit.

Otherwise,

status = "Undetermined-Initial Certification" and exit.

If the System Parameter is not equal to "NOXC" and the Date/Hour in the EDR\_Hourly\_Data record is within 90 calendar days of either the ARP Program Start Date or the SUBH/OTC-SUBH Program Start Date for the unit/stack,

If this is a dual-range analyzer, and this is the first pass,

store "Undetermined-Initial Certification" as the status for the high range of the analyzer, and go back to step 4 for the second pass.

If this is a dual-range analyzer, the current range is high, and this is the second pass,

status = the stored status of the high range analyzer, and exit.

Otherwise,

status = "Undetermined-Initial Certification" and exit.

Otherwise,

If this is not a dual-range analyzer, or the current range is high and this is the first pass, or the current range is low and this is the second pass,

status = "OOC-Conditional Period Expired" and exit.

Otherwise,

If this is the first pass,

store "OOC-Conditional Period Expired" as the status of the high range. Go to step 4 for the second pass.

If this is the second pass,

status = the stored status for the high range of the analyzer, and exit.

Otherwise,

If this is not a dual-range analyzer, or the current range is high and this is the first pass, or the current range is low and this is the second pass,

status = "OOC-Conditional Period Expired" and exit.

Otherwise,

If this is the first pass,

store "OOC-Conditional Period Expired" as the status of the high range. Go to step 4 for the second pass.

If this is the second pass,

status = the stored status for the high range of the analyzer, and exit.

Note: An operating hour in the current quarter is any hour for the unit with a UOT greater than 0 in the EDR HOURLY DATA file. Use the QTR\_HOUR (or EDR\_FILE\_CONTENT) record to determine hours of operation for quarters subsequent to the Conditional Data Start Date/Hour and prior to the current quarter. To determine the minimum number of operating hours in the quarter during which the Conditional Data Start Date/Hour occurred, subtract the number of calendar hours in the quarter prior to the Conditional Date Start Date/Hour from the number of operating hours in the quarter, and use this value if greater than zero. To determine the maximum number of operating hours in the quarter during which the Conditional Data Start Date/Hour occurred, use the lesser of the number of operating hours in the quarter and the number of calendar hours in the quarter on or after the Conditional Date Start Date/Hour. For ozone-season-only reporters (see step 11), use ozone hours instead of operating hours. To determine the minimum number of ozone hours in the quarter during which the Conditional Data Start Date/Hour occurred, subtract the number of calendar hours in the quarter prior to the Conditional Date Start Date/Hour from the number of ozone hours in the quarter (for quarter 3), or subtract the number of calendar hours beginning on May 1 and prior to the Conditional Date Start Date/Hour from the number of ozone hours in the quarter (for quarter 2) and use this value if greater than zero. To determine the maximum number of ozone hours in the quarter during which the Conditional Data Start Date/Hour occurred, use the lesser of the number of ozone hours in the quarter and the number of calendar hours in the quarter

on or after the Conditional Date Start Date/Hour.

Note: An ARP-only unit is a unit where there is a ARP Program record with a Program Begin Date on or before the current hour, and where there is no SUBH or OTC-SUBH Program records with a Program Begin Date on or before the current hour. A stack is an ARP-only stack if all units associated with the stack are ARP-only units. For any program, the program start date for a stack is the earliest program start date for all units associated with the stack.

Note: For units, the Begin Operation Date is the Date\_of\_Initial\_Unit\_Operation in the UNITINFO record; for stacks, the Begin Operation Date is the earliest Date\_of\_Initial\_Unit\_Operation for all units associated with the stack. Use the QTR\_HOUR (or EDR\_FILE\_CONTENT) record to determine the number of operating days for quarters during and subsequent to the Begin Operating Date and prior to the current quarter.

Note: Use the QTR\_HOUR (or EDR\_FILE\_CONTENT) record to determine the number of operating days for quarters during and subsequent to the Program Begin Date and prior to the current quarter. To determine the number of operating days in the quarter during which the Program Begin Date occurred, subtract the number of calendar days in the quarter prior to the Program Begin Date from the number of operating days in the quarter, and use this value if greater than zero.

Note: If a QTR\_HOUR (or EDR\_FILE\_CONTENT) record cannot be found, set status to "Operating Hours Record Not in MDC (Year/Qtr)" instead of "OOC-Conditional Period Expired."

10. If the Calculated\_Test\_Result in the TESTSUM record is not equal to "P" or "1",

Locate the most recent SYSEVENT record for the System ID where the Component ID is equal to the **applicable incoming** Component ID or the Event Code is equal to 120, 125, 130, or 200, and the Required\_Test\_Code is equal to 2, 4, 8, 9, 10, 12, or 17, and the Event\_Start\_Date/Event\_Start\_Hour is prior to the Test\_End\_Date/Test\_End\_Time in the TESTSUM record and is on or after January 1, 1993.

If the SYSEVENT record is found, and the Conditional\_Data\_Start\_Date and the Conditional\_Data\_Start\_Hour is not blank, and if the Conditional\_Data\_Start\_Date/Conditional\_Data\_Start\_Hour is after the Test\_End\_Date/Test\_End\_Time in the TESTSUM record and on or prior to the Date/Hour in the EDR HOURLY DATA record,

If the Event\_Code is equal to 170, and the Component\_Type\_Code ends in "A",

If this is the first pass,

Locate the Span record where the Parameter\_of\_Span\_Value corresponds to the Component\_Type\_Code, the Span\_Scale is equal to "H", the Span\_Effective\_Date is equal to the Event\_Start\_Date.

If found,.

This is an applicable SYSEVENT record. Go to step 8.

If not found, and the Test\_Completion\_Date/Hour in the SYSEVENT record is not blank,

Locate the first TESTSUM record  
for the System ID/Component ID  
where the Test\_Type = "LINE", the Span\_Scale is equal to  
"H", and the Test\_End\_Date/Test\_End\_Hour is on or before  
the Test\_Completion\_Date/Hour and on or after the  
Date/Hour in the current EDR HOURLY DATA record.

If found,

This is an applicable SYSEVENT record. Go to step 8.

If not found,

Set a flag to indicate that that the program was "Unable to  
Determine Scale of Span Value Change," but continue below.

If not found, and the Test\_Completion\_Date/Hour in the SYSEVENT record is blank,

Set a flag to indicate that that the program was "Unable to  
Determine Scale of Span Value Change," but continue below.

If this is the second pass,

Locate the Span record where the Parameter\_of\_Span\_Value corresponds to  
the Component\_Type\_Code , the Span\_Scale is equal to "L", the  
Span\_Effective\_Date is equal to the Event\_Start\_Date.

If found,.

This is an applicable SYSEVENT record. Go to step 8.

If not found, and the Test\_Completion\_Date/Hour in the SYSEVENT record is not blank,

Locate the first TESTSUM record  
for the System ID/Component ID  
where the Test\_Type = "LINE", the Span\_Scale is equal to  
"L", and the Test\_End\_Date/Test\_End\_Hour is on or before  
the Test\_Completion\_Date/Hour and on or after the

Date/Hour in the current EDR HOURLY DATA record.

If found,

This is an applicable SYSEVENT record. Go to step 8.

If not found,

If the flag to indicate that the program was "Unable to Determine Scale of Span Value Change" was set in the first pass,

status = "Unable to Determine Scale of Span Value Change," and exit.

Otherwise,

Continue below.

If not found, and the Test\_Completion\_Date/Hour in the SYSEVENT record is blank,

If the flag to indicate that the program was "Unable to Determine Scale of Span Value Change" was set in the first pass,

status = "Unable to Determine Scale of Span Value Change," and exit.

Otherwise,

Continue below.

Otherwise,

This is an applicable SYSEVENT record.. Go to step 8.

If an applicable SYSEVENT record was not found above,

If the Calculated\_Test\_Result in the TESTSUM record is equal to blank or "I,"

status = "OOC-Test Invalid" and exit.

If the Calculated\_Test\_Result in the TESTSUM record is equal to "F,"

status = "OOC-Test Failed" and exit.

If the Calculated\_Test\_Result in the TESTSUM record is equal to "A,"

status = "OOC-Test Aborted" and exit.

11. If the Calculated\_Test\_Result in the TESTSUM record is equal to "P" or "1", and

If this is a dual-range analyzer, and the current range is high and this is the second pass,  
status = the stored status for the high range of the analyzer, and exit.

If this is a dual-range analyzer, and the current range is low and this is the first pass,  
Go to step 4 for the second pass.

If the Reason\_for\_Test in the TESTSUM record contains a "G",

If the unit is a stack (i.e., UNITID begins with "CS" or "MS"),

Locate the most recent PROGRAM record for each Unit ID on or before the Date in the current EDR HOURLY DATA record.

If not found or if the Reporting\_Frequency\_for\_Unit is not equal to "OS" for any UnitID,

The stack is not an ozone-season-only reporter. The Test Expiration Date is the last day of the quarter of the Test\_End\_Date. Go to step 14.

If the unit is a unit (i.e., UNITID does not begin with "CS" or "MS"),

Locate the most recent PROGRAM record where the Program\_Start\_Date is on or before the Date in the current EDR HOURLY DATA record.

If not found or if the Reporting\_Frequency\_for\_Unit is not equal to "OS,"

The unit is not an ozone-season-only reporter. The Test Expiration Date is the last day of the quarter of the Test\_End\_Date. Go to step 14.

12. If the Test\_End\_Date in the TESTSUM record is between October 1 and April 30, and the unit/stack is an ozone-season-only reporter (see step 11),

Test Expiration Date is the June 30<sup>th</sup> following the Test\_End\_Date.  
Go to step 14.

13. If the Test\_End\_Date in the TESTSUM record is not between Oct 1 and April 30, or if the unit/stack is not an ozone-season-only reporter (see step 11),

Test Expiration Date is the last day of the quarter following the quarter of the Test\_End\_Date. Go to next step.

14. If the Date/Hour in the current EDR HOURLY DATA record is on or before the Test Expiration Date,

If **this is a dual-range analyzer** the Component\_Type\_Code ends in "A", and this is the first pass,

store "IC" as the status for the high range of the analyzer, and go back to step 4 for the second pass.

If **this is a dual-range analyzer, the current range is high**, the Component\_Type\_Code ends in "A", and this is the second pass,

status = the stored status for the high range of analyzer, and exit.

Otherwise,

status = "IC" and exit.

15. If the Date/Hour in the current EDR HOURLY DATA record is after the Test Expiration Date,

If the unit/stack is not an ozone-season-only reporter (see step 11),

Locate the most recent SYSEVENT record for the System ID where the Required\_Test\_Code is equal to 2, 4, 8, 9, 10, 12, or 17 and the Event\_Start\_Date/Event\_Start\_Hour is prior to the Test\_End\_Date/Test\_End\_Time in the TESTSUM record and is on or after January 1, 1993.

If found, and the Event Code is equal to 125, the Conditional Data Start Date is blank, and the Test Completion Date is not blank and is after the Test\_End\_Date,

The adjusted Test Expiration Date is the last day of the quarter following the quarter of the Test\_Completion\_Date.

If the Date/Hour in the current EDR HOURLY DATA record is on or before the Adjusted Test Expiration Date,

If **this is a dual-range analyzer** the Component\_Type\_Code ends in "A", and this is the first pass,

store "IC" as the status for the high range of the analyzer, and go back to step 4 for the second pass.

If **this is a dual-range analyzer, the current range is high** the

~~Component\_Type\_Code ends in "A"~~, and this is the second pass,

status = the stored status for the high range of the analyzer,  
and exit.

Otherwise,

status = "IC" and exit.

Locate the QTR\_HOUR record for the unit/stack  
where the EDR\_Year/EDR\_Qtr is equal to the quarter immediately following the quarter  
of the Test\_End\_Date in the TESTSUM record.

If not found,

Set a flag to indicate that the operating record cannot be found.

If found, and the Operating Hours is less than 168,

Add one quarter to the (Adjusted) Test Expiration Date.

Continue this process for 2 more quarters, but stop when you are unable to apply  
an extension for any quarter.

Otherwise,

If the Component\_Type\_Code ends with "H", or **this is a dual-range analyzer ends in**  
~~"A"~~ and this is the first pass,

Locate the System ID/Component ID in EXT\_EXEM  
where the Extension\_Exemption\_Type = "QAEX", the  
Type\_of\_Test\_Extended\_or\_Exempted = "L", the Basis\_for\_Exemption is  
equal to "2", the Span\_Scale is blank or equal to "H", and the  
Extension\_Exemption\_Year/Extension\_Exemption\_Quarter is equal to the  
quarter immediately following the quarter of the Test\_End\_Date in the  
TESTSUM record.

If the Component\_Type\_Code ends with "L", or **this is a dual-range analyzer ends in**  
~~"A"~~ and this is the second pass ~~and the stored status for the high range of the analyzer~~  
~~is not equal to "IC-Extension"~~,

Locate the System ID/Component ID in EXT\_EXEM  
where the Extension\_Exemption\_Type = "QAEX", the  
Type\_of\_Test\_Extended\_or\_Exempted = "L", the Basis\_for\_Exemption is  
equal to "2", the Span\_Scale is equal to "L", and the  
Extension\_Exemption\_Year/Extension\_Exemption\_Quarter is equal to the  
quarter immediately following the quarter of the Test\_End\_Date in the

TESTSUM record.

If the EXT\_EXEM record is found,

Add one quarter to the (Adjusted) Test Expiration Date.

Continue this process for 2 more quarters, but stop when you are unable to apply an extension for any quarter.

If the Date/Hour in the current EDR HOURLY DATA record is on or before the adjusted Test Expiration Date,

If **this is a dual-range analyzer** the Component\_Type\_Code ends in "A", and this is the first pass,

Store "IC-Extension" as the status for the high range of the analyzer, and go back to step 4 for the second pass.

Otherwise,

status = "IC-Extension" and exit.

Note: For the Audit Tool, locate the operating hours in the EDR\_FILE\_CONTENT record. For ozone-season-only reporters (see step 11), use ozone hours instead of operating hours.

16. If the Date/Hour in the EDR HOURLY DATA record is more than 168 operating hours after the Test Expiration Date,

If an operating record could not be found in step 15,

**If this is a dual-range analyzer and the current range is unknown,**

**If this is the first pass,**

**store "Operating Hours Record Not in MDC (Year/Qtr)" as the status of the high range. Go to step 4 for the second pass.**

**If this is the second pass,**

**status = the stored status for the high range of the analyzer, and exit.**

**Otherwise,**

**status = "Operating Hours Record Not in MDC (Year/Qtr)," and exit.**

Otherwise,

If this is a dual-range analyzer and the current range is unknown,

If this is the first pass,

store "OOC-Expired" as the status of the high range. Go to step 4 for the second pass.

If this is the second pass,

status = the stored status for the high range of the analyzer, and exit.

Otherwise,

status = "OOC-Expired" and exit.

If unit/stack is an ozone-season-only reporter (see step 11),

If the Test\_End\_Date is prior to year immediately prior to the current year, or the if number of ozone-season operating hours in the prior ozone season (i.e., the second and third quarters of the prior year) is greater than or equal to 336,

If an operating record could not be found in step 15,

If this is a dual-range analyzer and the current range is unknown,

If this is the first pass,

store "Operating Hours Record Not in MDC (Year/Qtr)" as the status of the high range. Go to step 4 for the second pass.

If this is the second pass,

status = the stored status for the high range of the analyzer, and exit.

Otherwise,

status = "Operating Hours Record Not in MDC (Year/Qtr)," and exit.

Otherwise,

If this is a dual-range analyzer and the current range is unknown,

If this is the first pass,

store "OOC-Expired" as the status of the high range. Go to step 4 for the second pass.

If this is the second pass,

status = the stored status for the high range of the analyzer, and exit.

Otherwise,

status = "OOC-Expired" and exit.

Note: Use the QTR\_HOUR (or EDR\_FILE\_CONTENT) record to determine hours of operation for quarters subsequent to the (Adjusted) Test Expiration Date and prior to the current quarter. For ozone-season-only reporters (see step 11), use ozone hours instead of operating hours. Also use the QTR\_HOUR (or EDR\_FILE\_CONTENT) record to determine the number of ozone-season operating hours in the prior ozone season.

17. If the Date/Hour in the EDR HOURLY DATA record is less than or equal to 168 operating hours after the (Adjusted) Test Expiration Date,

If this is a dual-range analyzer the Component\_Type\_Code ends in "A", and this is the first pass,

Store "IC-Grace" as the status for the high range of the analyzer, and go back to step 4 for the second pass.

If this is a dual-range analyzer, the current range is high, the Component\_Type\_Code ends in "A", and this is the second pass, and the status for the high range of the analyzer is not equal to "IC",

status = the stored status for the high range of the analyzer, and exit.

Otherwise,

status = "IC-Grace" and exit.