

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE UNIT 1
INSTRUMENT & CONTROL PROCEDURE NO. 1-1400207
REVISION 0

1.0 TITLE:

CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

2.0 REVIEW AND APPROVAL:

Reviewed by Facility Review Group _____ 3/4 1996

Approved by J. Scarola _____ Plant General Manager 3/4 1996

Revision Reviewed by F R G _____ 19

Approved by _____ Plant General Manager 19

3.0 PURPOSE:

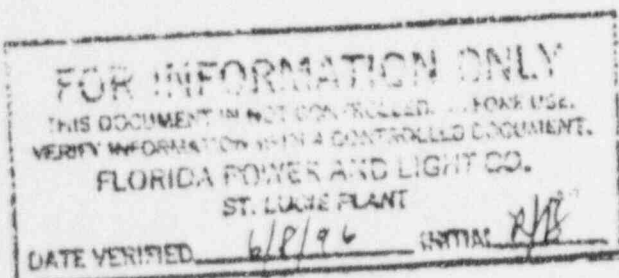
This procedure provides instructions for the calibration and/or functional test of the St. Lucie Plant Unit 1 (PSL-1) containment process monitor, in accordance with PSL-1 Technical Specifications.

4.0 PRECAUTIONS AND LIMITS:

4.1 Follow applicable Health Physics precautions when handling radioactive materials.

4.2 Beta detector windows are very thin material which can easily be damaged causing light leaks. Be very careful when handling these detectors, especially when taping sources to the window. Ensure there is no foreign material on either the source or the window.

4.3 Should the instrument fail the calibration procedure or become inoperable, it shall be repaired and recalibrated as necessary. Technical Specifications shall be reviewed for required surveillance and to determine if any limits of operability have been violated.



S_1 OPS	
DATE	_____
DOCT	PROCEDURE
DOCN	1-1400207
SYS	_____
COMP	COMPLETED
ITM	0

ST. LUCIE UNIT 1
INSTRUMENT & CONTROL PROCEDURE NO. 1-1400207, REVISION C
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

4.0 PRECAUTIONS AND LIMITS: (continued)

4.4 Exercise caution so as not to run one of the redundant pumps with the sample suction valve shut.

4.5 Ensure PASS is in the OFF position prior to starting pumping system.

5.0 RELATED SYSTEM STATUS:

5.1 The containment process monitor must be operational.

6.0 REFERENCES:

6.1 Victoreen Technical Manual 8770-6761, latest revision

6.2 Final Updated Safety Analysis Report, Section 12.2.4.1

6.3 PSL-1 Technical Specifications

7.0 RECORDS REQUIRED:

7.1 Certificates of calibration and functional check sheets, shall be maintained in the plant files in accordance with QI-17-PR/PSL-1, "Quality Assurance Records".

ST. LUCIE UNIT 1
INSTRUMENT & CONTROL PROCEDURE NO. 1-1400207, REVISION 03
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

8.0 INSTRUCTIONS:

8.1 Channel Functional Test

1. Notify RCO that you will be performing a functional test and which alarms and/or valve trips to expect.

Performed by CZS

2. Select calibrate on the function selector switch. Depress the red pushbutton to read the high alarm setpoint and record the setpoint on the Functional Test Certificate.

Performed by CZS

3. Select Operate on the function selector switch. The functional check pushbutton when depressed will produce a full scale reading of approximately 1×10^6 cpm. This button is utilized to check the proper functioning of the alarm setpoints and applicable trip functions. This button is located on the inside front of the ratemeter, top right-hand side. In checking the alarm setpoints, it is useful to pump the pushbutton so as to control the count rate increase. Verify and record that the high alarm occurs at less than or equal to 110% of setpoint.

Performed by CZS

4. Check that the instrument controls are not set in operate mode by placing the function selector switch from the OPERATE position to the H.V. position. Verify alarm annunciation occurs; then, return switch to operate.

Performed by CZS

5. Check the operation of the FAIL function and downscale failure by disconnecting either the detector input signal or the high voltage cable. Ensure that the FAIL light goes out. (It is normally energized.) Verify that alarm annunciation occurs. Reconnect the previously removed cabling after completion of the check. Complete the check for both channel 31 and 32.

Performed by CZS

IV Robert G. Reed

ST. LUCIE UNIT 1
INSTRUMENT & CONTROL PROCEDURE NO. 1-1400207, REVISION 05
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

8.0 INSTRUCTIONS: (continued)

8.1 (continued)

6. Verify valve lineup in accordance with procedure 1-C-62.

Performed by C. J. Smith

IV

Robert A. Bell

7. Complete a functional test certificate after monitor is returned to normal.

Performed by C. J. Smith

IV

Robert A. Bell

8.2 Special Materials or Equipment:

1. Radiation check sources

1. Refer to the primary calibration data to determine which sources to use for a calibration.
2. Correlation of the channels to specific activity and the subsequent graphs of activity, in $\mu\text{Ci/cc}$ versus cpm, shall be done as part of the primary calibration.

2. Scaler with a 2-minute time base (NMC DS-2 or equivalent). The 2-minute time base is used for converting analog signal numbers to digital readout. The scaler counts for two minutes but scaler numbers represent CPM.

ST. LUCIE UNIT 1
INSTRUMENT & CONTROL PROCEDURE NO. 1-1400207, REVISION 01
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

8.0 INSTRUCTIONS: (continued)

8.3 Calibration of the Particulate Detector Channel 31 using radiation check sources

NOTE

Enter the **requested** information on the calibration sheet (attached) whenever "record" is **noted** in the procedure.

NOTE

An I & C ~~Specialist~~ is required to perform scaler connections and any internal adjustments to ratemeters. (H.V. included) Chemistry Department personnel are not ~~permitted~~ to perform these functions.

NOTE

Always remove high voltage from the detector before removing it from its chamber **and** restore high voltage after returning the detector to its chamber.

1. Stop ~~the~~ particulate/gaseous pump. The pump must be off when pulling and reinserting the detector from its shield so as to prevent a possible vacuum lock from damaging the thin beta window of the detector. Note that stopping the pump will cause a visual flow fault alarm. Ensure that a clean area of the filter paper is exposed to the detector.

Performed by Robert G. Bech

2. Partially withdraw the Channel 31 ratemeter drawer from its bin to allow access to the ratemeter internals. Connect one scaler lead (RED) to the channel 31 ratemeter at the junction of R-14 (adjacent to R-16) on the back side of the log ratemeter circuit board (the first vertical board behind the meter face), and the other lead (black) to the chassis ground. Set the scaler for a two-minute time base.

Performed by Robert G. Bech

Verified by Carl

3. Perform five background counts, average these and record this average on the calibration sheet.

Performed by Robert G. Bech

ST. LUCIE UNIT 1
INSTRUMENT & CONTROL PROCEDURE NO. 1-1400207, REVISION 0
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

8.0 INSTRUCTIONS: (continued)

8.3 (continued)

4. Ensure that the particulate/gaseous pump is OFF. Carefully remove the particulate detector from its shield.

Performed by Robert H. Bech

5. Center the radiation check source on the end window of the detector using extreme caution. Ensure that no particles are present on the source that could damage the thin Beta end window and tape the source in position. Record the source type and serial number.

Performed by Robert H. Bech

6. Carefully reinsert the detector into its shield.

Performed by Robert H. Bech

7. Perform five 2-minute counts on the scaler. Compare these readings, minus the background count from step 8.3.3, to the decay corrected readings taken from the original calibration data. Ensure that the readings coincide (Tolerance = $\pm 10\%$). Slight adjustments to the high voltage may be utilized to obtain maximum correlation of the data. Recheck background count if high voltage is adjusted.

Performed by [Signature] Verified by [Signature]

8. Record the following data on the calibration sheet:

Ratemeter reading

Recorder (Channel 31) reading

Scaler reading (average of five 2-minute counts)

Original calibration data showing the decay correction of the source

Performed by [Signature]

ST. LUCIE UNIT 1
INSTRUMENT & CONTROL PROCEDURE NO. 1-1400207, REVISION 0
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

8.0 INSTRUCTIONS: (continued)

8.3 (continued)

9. Carefully remove the detector and replace the radiation check source with a second source. This source should be of either different activity and/or type to ensure the accuracy of a 2-Point calibration. Record the source type and serial number.

Performed by R. Kuykendall

10. Carefully reinsert the detector into its shield.

Performed by R. Kuykendall

11. Perform five 2-minute counts on the scaler. Compare these readings, minus the background count from step 8.3.3 to the decay corrected readings taken from the original calibration data. Ensure that the readings coincide (Tolerance = $\pm 10\%$). Slight adjustments to the high voltage may be utilized to obtain maximum correlation of the data. Any adjustments to the high voltage during this step requires rechecking of the first source utilized and the background count rate.

Performed by [Signature] Verified by [Signature]

12. Record the following data on the calibration sheet:

Ratemeter reading

Recorder (Channel 31) reading

Scaler reading (average of five 2-minute counts)

Original calibration data showing the decay correction of the source.

Performed by [Signature]

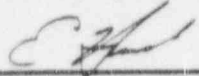
13. Utilize the preceding steps to obtain additional data as necessary using other radiation check sources. Record data as before. This step is for additional information only.

ST. LUCIE UNIT 1
INSTRUMENT & CONTROL PROCEDURE NO. 1-1400207, REVISION 0
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

8.0 INSTRUCTIONS: (continued)

8.3 (continued)

14. Disconnect the scaler from the ratemeter. Disconnect cabling from the detector prior to removing the detector from its shield. Remove any sources from the detector and replace the detector in its shield. Reconnect removed cabling as necessary. Restart the sample pump if all calibration work is completed.

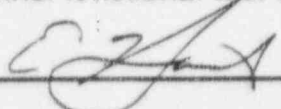
Performed by 

IV 

15. Select OPERATE. Notate the period of the calibration on the Channel 31 recorder paper.

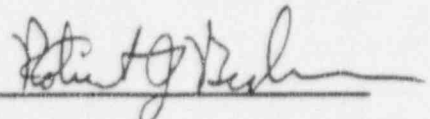
Performed by 

16. Perform a channel functional test as per 8.1 of this procedure.

Performed by 

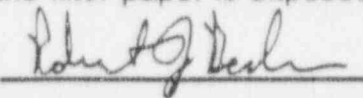
IV 

17. Complete all portions of the Calibration Certificate and the Functional Test Certificate.

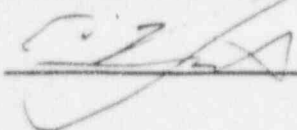
Performed by 

8.4 Calibration of the Gaseous Detector, Channel 32 using radiation check sources.

1. Stop the particulate/gaseous pump. The pump must be off when pulling and reinserting the detector from its shield so as to prevent a possible vacuum lock from damaging the thin beta window of the detector. Note that stopping the pump will cause a visual flow fault alarm. Ensure that a clean area of the filter paper is exposed to the detector.

Performed by 

2. Partially withdraw the Channel 32 ratemeter drawer from its bin to allow access to the ratemeter internals. Connect one scaler lead (RED) to the channel 32 ratemeter at the junction of R-14 (adjacent to R-16) on the back side of the log ratemeter circuit board (the first vertical board behind the meter face), and the other lead (black) to the chassis ground. Set the scaler for a two-minute time base.

Performed by 

Verified by 

ST. LUCIE UNIT 1
INSTRUMENT & CONTROL PROCEDURE NO. 1-1400207, REVISION 0
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

8.0 INSTRUCTIONS: (continued)

8.4 (continued)

3. Perform five background counts, average these and record this average on the calibration sheet.

Performed by C. J. H.

4. Ensure that the particulate/gaseous pump is OFF. Carefully remove the gaseous detector from its shield.

Performed by C. J. H.

5. Center the radiation check source on the end window of the detector using extreme caution. Ensure that no particles are present on the source that could damage the thin Beta end window and tape the source in position. Record the source type and serial number.

Performed by C. J. H.

6. Carefully reinsert the detector into its shield.

Performed by C. J. H.

7. Perform five 2-minute counts on the scaler. Compare these readings, minus the background count from step 8.4.3, to the decay corrected readings taken from the original calibration data. Ensure that the readings coincide (Tolerance = $\pm 10\%$). Slight adjustments to the high voltage may be utilized to obtain maximum correlation of the data. Recheck background count if high voltage is adjusted.

Performed by C. J. H.

Verified by Robert G. Beden

8. Record the following data on the calibration sheet:

Ratemeter reading

Recorder (Channel 32) reading

Scaler reading (average of five 2-minute counts)

Original calibration data showing the decay correction of the source

Performed by C. J. H.

ST. LUCIE UNIT 1
INSTRUMENT & CONTROL PROCEDURE NO. 1-1400207, REVISION C
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

8.0 INSTRUCTIONS: (continued)

8.4 (continued)

9. Carefully remove the detector and replace the radiation check source with a ~~second~~ source. This source should be of either different activity and/or type to ensure the accuracy of a 2-Point calibration. Record the source type and serial number.

Performed by E. J. S.

10. Carefully reinsert the detector into its shield.

Performed by E. J. S.

11. Perform five 2-minute counts on the scaler. Compare these readings, minus the background count from step 8.4.3 to the decay corrected readings taken from the original calibration data. Ensure that the readings coincide (Tolerance = $\pm 10\%$). Slight adjustments to the high voltage may be utilized to obtain maximum correlation of the data. Any adjustments to the high voltage during this step requires rechecking of the first source utilized and the background count rate.

Performed by E. J. S.

Verified by Robert G. Beck

12. Record the following data on the calibration sheet:

Ratemeter reading

Recorder (Channel 32) reading

Scaler reading (average of five 2-minute counts)

Original calibration data showing the decay correction of the source.

Performed by E. J. S.

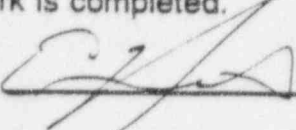
13. Utilize the preceding steps to obtain additional data as necessary using other radiation check sources. Record data as before. This step is for additional information only.

ST. LUCIE UNIT 1
INSTRUMENT & CONTROL PROCEDURE NO. 1-1400207, REVISION 3
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

8.0 INSTRUCTIONS: (continued)

8.4 (continued)

14. Disconnect the scaler from the ratemeter. Disconnect cabling from the detector prior to removing the detector from its shield. Remove any sources from the detector and replace the detector in its shield. Reconnect removed cabling as necessary. Restart the sample pump if all calibration work is completed.

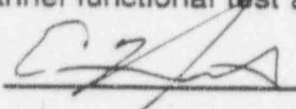
Performed by 

IV 

15. Select OPERATE. Notate the period of the calibration on the Channel 32 recorder paper.

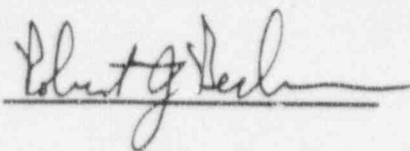
Performed by 

16. Perform a channel functional test as per 8.1 of this procedure.

Performed by 

IV 

17. Complete all portions of the Calibration Certificate and the Functional Test Certificate.

Performed by 

ST. LUCIE UNIT 1
INSTRUMENT & CONTROL PROCEDURE NO. 1-1400207, REVISION 1
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

CALIBRATION CERTIFICATE

Procedure Title	Calibration of the Containment Process Monitor	
Frequency	Refueling	
Maximum Time Between Calibrations	18 Months \pm 25%	
Equipment I.D. Number	Channel 31	Channel 32
Date of Last Calibration	11/16/95 94 <i>EPD</i>	11/16/95 94 <i>EPD</i>
Date of This Calibration	7/1/96	7/1/96
File Number	3460705	

Special Instructions:

CALIBRATION DATA

The requirements of the channel functional test in section 8.1 for the Containment Monitor have been satisfied.

Verified by *J. Guzman* Date 7/3/96
ICM Supervisor

ST. LUCIE UNIT 1
INSTRUMENT & CONTROL PROCEDURE NO. 1-1400207, REVISION 0
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

**CONTAINMENT MONITOR
CALIBRATION CERTIFICATE
P/ARTICULATE CHANNEL 31**

Source #1

Source Type <u>BA-133</u>
Serial # <u>WC-24</u>
Assay decay calculation:
$A = A_0 e^{\frac{-(0.693)(t)}{(T^{1/2}) (365.25 \text{ Days/Yr})}}$
$A = 5259 \left(e^{\frac{-(0.693)(7.865 \text{ yr.})}{10.9 \text{ yrs.}}} \right) = 3189 \text{ cpm}$
Tolerance ($\pm 10\%$) = <u>2870 cpm to 3508 cpm</u>
Background Scaler <u>443 R/B 150</u>
Ratemeter levels
Local <u>N/A</u>
Remote <u>3000</u>
Recorder levels <u>3000</u>
Scaler Levels <u>3057.6</u> (averaged)
Corrected Activity (ratemeter levels minus background)
<u>2907</u>

Source #2

Source Type <u>CS-137</u>
Serial # <u>WC-25</u>
Assay decay calculation:
$A = A_0 e^{\frac{-(0.693)(t)}{(T^{1/2}) (365.25 \text{ Days/Yr})}}$
$A = 32254 \left(e^{\frac{-(0.693)(7.865 \text{ yr.})}{30.17 \text{ yrs.}}} \right) = 26923 \text{ cpm}$
Tolerance ($\pm 10\%$) = <u>24231 cpm to 29615 cpm</u>
Background Scaler <u>443 R/B 150</u>
Ratemeter levels
Local <u>N/A</u>
Remote <u>28000</u>
Recorder levels <u>28000</u>
Scaler Levels <u>29222</u> (averaged)
Corrected Activity (ratemeter levels minus background)
<u>29072</u>

High Voltage setting 550
(for reference only)

Channel 31 returned to normal service.

Verified by

Robert G. Beck

7/2/96

Approved by

J. Swanson
ICM Supervisor

7/4/96
Date

ST. LUCIE UNIT 1
INSTRUMENT & CONTROL PROCEDURE NO. 1-1400207, REVISION 0
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

**CONTAINMENT MONITOR
CALIBRATION CERTIFICATE
NOBLE GAS CHANNEL 32**

Source #1

Source Type <u>BA-133</u>
Serial # <u>42C-24</u>
Assay decay calculation:
$A = A_0 e^{\frac{-(0.693)(t)}{(T^{1/2}) (365.25 \text{ Days/Yr})}}$
$A = 7657 \left(e^{\frac{-(0.693)(7.851 \text{ yrs.})}{10.9 \text{ yrs.}}} \right) = 4641 \text{ cpm}$
Tolerance ($\pm 10\%$) = <u>4183 cpm to 5112 cpm</u>
Background Scaler <u>52 CPM</u>
Ratemeter levels
Local <u>N/A</u>
Remote <u>4600</u>
Recorder levels <u>4600</u>
Scaler Levels <u>4681</u> (averaged)
Corrected Activity (scaler reading minus background) <u>4629</u>

Source #2

Source Type <u>CS-137</u>
Serial # <u>WC-25</u>
Assay decay calculation:
$A = A_0 e^{\frac{-(0.693)(t)}{(T^{1/2}) (365.25 \text{ Days/Yr})}}$
$A = 45711 \left(e^{\frac{-(0.693)(7.851 \text{ yrs.})}{30.17 \text{ yrs.}}} \right) = 38168 \text{ cpm}$
Tolerance ($\pm 10\%$) = <u>34351 cpm to 41984 cpm</u>
Background Scaler <u>52 CPM</u>
Ratemeter levels
Local <u>N/A</u>
Remote <u>38000</u>
Recorder levels <u>38000</u>
Scaler Levels <u>37644</u> (averaged)
Corrected Activity (scaler reading minus background) <u>37592</u>

High Voltage setting 580
(for reference only)

Channel 32 returned to normal service

Verified by

Robert G. Besh

7/2/96

Approved by

J. Duonan
ICM Supervisor

7/4/96
Date

ST. LUCIE UNIT 1
INSTRUMENT & CONTROL PROCEDURE NO. 1-1400207, REVISION 0
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

FUNCTIONAL TEST CERTIFICATE

Procedure Title	Calibration of the Containment Process Monitor		
Frequency	Monthly		
Maximum Time Between Functional Test	38 Days		
Tolerance	≤ 110% of Alarm Setpoint		
Equipment Name	Particulate Containment Process		
Equipment I.D. Number	Channel 31		
Date of Last Functional Test	4/22/96		
Date of This Functional Test	7/1/96		
SPECIAL INSTRUCTIONS:			
<p>A. Alarm must activate at ≤ 110% of setpoint.</p> <p>B. As found and as left data points will be identical if channel passes functional. (Actual Alarm point.)</p> <p>C. If channel fails alarm function (alarms higher than 110%) then as found is that value. As left is value after corrective action is taken and channel passes functional test.</p>			
FUNCTIONAL TEST			
<p>A. Verify all alarms activate and (if applicable) valves close.</p> <p>(1) Circuit failure</p> <p>(2) Downscale failure</p> <p>(3) Controls not set in operate mode</p> <p>B. Verify high alarm activates at less than or equal to 110% of actual setpoint. Record the following:</p>			
(1) Required setpoint	5000 CPM		
(2) Required setpoint X 1.10	5500 CPM		
(3) Actual alarm point	NA		
(4) As Found	N/A		
(5) As left alarm point	5000 CPM		
	NEW DATAMETER		

Performed by Robert G. Redman

Approved by [Signature] Date 7/4/96
ICM-Supervisor

ST. LUCIE UNIT 1
INSTRUMENT & CONTROL PROCEDURE NO. 1-1400207, REVISION 0
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

FUNCTIONAL TEST CERTIFICATE

Procedure Title	Calibration of the Containment Process Monitor										
Frequency	Monthly										
Maximum Time Between Functional Test	38 Days										
Tolerance	≤ 110% of Alarm Setpoint										
Equipment Name	Noble Gas Process										
Equipment I.D. Number	Channel 32										
Date of Last Functional Test	4/22/96										
Date of This Functional Test	6/22/96 7/1/96										
SPECIAL INSTRUCTIONS: A. Alarm must activate at ≤ 110% of setpoint. B. As found and as left data points will be identical if channel passes functional. (Actual Alarm point.) C. If channel fails alarm function (alarms higher than 110%) then as found is that value. As left is value after corrective action is taken and channel passes functional test.											
FUNCTIONAL TEST											
A. Verify all alarms activate and (if applicable) valves close. <ul style="list-style-type: none"> (1) Circuit failure (2) Downscale failure (3) Controls not set in operate mode 											
B. Verify high alarm activates at less than or equal to 110% of actual setpoint. Record the following: <table style="width: 100%; margin-top: 10px;"> <tr> <td style="width: 50%;">(1) Required setpoint</td> <td style="width: 50%;">2000 CPM</td> </tr> <tr> <td>(2) Required setpoint X 1.10</td> <td>2200 CPM</td> </tr> <tr> <td>(3) Actual alarm point</td> <td>NA</td> </tr> <tr> <td>(4) As Found</td> <td>2000</td> </tr> <tr> <td>(5) As left alarm point</td> <td>2000</td> </tr> </table>		(1) Required setpoint	2000 CPM	(2) Required setpoint X 1.10	2200 CPM	(3) Actual alarm point	NA	(4) As Found	2000	(5) As left alarm point	2000
(1) Required setpoint	2000 CPM										
(2) Required setpoint X 1.10	2200 CPM										
(3) Actual alarm point	NA										
(4) As Found	2000										
(5) As left alarm point	2000										

Performed by Robert H. Beggs

Approved by P. J. [Signature] Date 7/4/96
ICM Supervisor

CHANNEL NUMBER MIC_31

SOURCES USED IN THE LAST CAL

TYPE	SERIAL NUMBER	ASSAY DATE	ORIGINAL COUNTS
BA-133	WC-24 $T=10.9 \text{ yrs}$	21-JUL-1988	5259
CS-137	WC-25 $T=30.17 \text{ yrs}$	21-JUL-1988	32254

SOURCES USED IN PREVIOUS CALS

TYPE	SERIAL NUMBER	ASSAY DATE	ORIGINAL COUNTS
BA-133	VT-89	21-JUL-1988	5042.0
BA-133	SRM-4241-5	16-JUL-1984	27972.000
CS-137	194	16-JUL-1984	3307.000

$$A = A_0 e^{\left(\frac{-0.693(7.865 \text{ yr.})}{10.9 \text{ yrs}} \right)}$$

BA-133

$$10\% = 318.9$$

$$= 5259 \left(e^{\frac{-0.500}{10.9}} \right) = 3189 \text{ CPM}$$

[3508 cpm to 2870 cpm]

$$= 32254 \left(e^{\frac{-0.693(7.865 \text{ yr.})}{30.17}} \right) = 26923 \text{ CPM}$$

10% = 2692.3

CS-133

$$[29615 \text{ cpm to } 24231 \text{ cpm}]$$

CHANNEL NUMBER MIC_32

SOURCES USED IN THE LAST CAL

TYPE	SERIAL NUMBER	ASSAY DATE	ORIGINAL COUNTS
BA-133	WC-24	5-AUG-1988	7657.0
CS-137	WC-25	5-AUG-1988	45711.0

SOURCES USED IN PREVIOUS CALS

TYPE	SERIAL NUMBER	ASSAY DATE	ORIGINAL COUNTS
C3-137	194	5-AUG-1988	3754.0
BA-133	SRM-4241-5	5-AUG-1988	25613.0

$$A = A_0 e^{\left(\frac{-0.693(4.851 \text{ yrs})}{30.17 \text{ yrs}} \right)}$$

CS-137

$$= 45711 \left(e^{\frac{-500}{30.17}} \right) = 38168 \text{ CPM} \quad 107\% = 3816.8$$

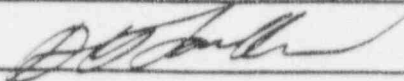
[41984 cpm to 34351 cpm]

BA-133

$$= 7657 \left(\frac{-544 \text{ yr}}{10.9 \text{ yr}} \right) = 4648 \text{ CPM} \quad 107\% = 464.8$$

[5112 cpm to 4183 cpm]

Victoreen Monitor Set Points

MONITOR	CHANNEL	ALERT	HIGH	UNITS
CONTAINMENT				
1) Particulate	31	^{4K} 80K	^{5K} 150K	cpm
2) Gas	32	^{1.5K} 45K	^{2K} 60K	cpm
* CONDENSER AIR EJECTOR	35	250	350	cpm *
1A S/G BLOWDOWN	44	3000	5000	cpm
1B S/G BLOWDOWN	45	3000	5000	cpm
GASEOUS RAD. WASTE	42	^{As} Release	^{Per} permit	
APPROVED: 		DATE: 9/14/88		

2/1/96 JWS

3/1/96 JWS

* THESE VALUES NO GOOD NOW. ALERT IS
 2X BKGD. AND HIGH ALARM IS 3X BKGD.
 TYPICALLY IN 1991 BKGD. IS 20
 SO ALERT IS 40 AND H.A. IS 60.

CRK.
 10/12/91

FOR INFORMATION ONLY

REVISION NO.: 3	PROCEDURE TITLE: CONTROL OF PLANT WORK ORDERS	PAGE: 81 of 83
PROCEDURE NO.: ADM-0010432	ADMINISTRATIVE PROCEDURE ST. LUCIE PLANT	

FIGURE 3
TROUBLESHOOTING/MAINTENANCE NPWO PRE-JOB REVIEW SHEET

Section A **NPS/ANPS**

NPWO No. 5652 ER 63 Unit L

A. Has the Equipment been declared OOS? Yes ☒ No ☐

B. Are the affects confined to the subject Equipment? Yes ☒ No ☐

If A or B are No, a 10CFR50.59 screening is required.
10 CFR 50.59 screening required?

☐ Yes, continue with Section B.
☒ No, perform work per NPWO instructions.

Reason for Disapproval: _____

Performed By: [Signature] Date 6/23/96

Section B **Qualified Reviewer**

10 CFR 50.59 Screening Questions:

A. Does this alteration represent a change to the facility as described in the SAR? Yes ☐ No ☐
(Includes connection of DAS to redundant safety channels)

B. Does this alteration represent a change to procedures described in the SAR? Yes ☐ No ☐

C. Is the alteration associated with the test or experiment not described in the SAR? Yes ☐ No ☐

D. Could the alteration affect nuclear safety in a way not previously evaluated in the SAR? Yes ☐ No ☐

E. Does implementation of this alteration require a change to the Technical Specifications? Yes ☐ No ☐

FSAR Sections reviewed: _____

T.S. Section Reviewed: _____

Screening Results:

If the answer to any of the screening questions is yes, a 10CFR50.59 Safety Evaluation is required.

A. Is 10CFR50.59 Safety Evaluation required?

☐ Yes, submit package to JPN for Safety Evaluation.
☐ No, perform work per NPWO instructions.

B. If Yes, have Engineering perform the evaluation, submit the NPWO, with a copy of the evaluation, for FRG review. Continue with Section C.

Performed By: _____ Date _____

Section C **FRG**

FRG Review No. _____ Date _____

PGM Approval or Designee: _____ Date _____

FRG Approved?

☐ Yes, perform work per NPWO instructions.
☐ No, return package to requestor.

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-67, REVISION 10
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

CALIBRATION CERTIFICATE

Procedure Title and Number	Calibration of the Containment Process Monitor
Frequency	Refueling
Maximum Time Between Calibration	18 Months \pm 25%
Equipment I.D. Number	Channels 31 and 32
Date of Last Calibration	2/25/85
Date of This Calibration	3/1/85
File Number	3460705

Special Instructions:

CALIBRATION DATA

The requirements of the channel functional test in section 8.1 for the Containment Monitor have been satisfied.

Verified by DW

Date 5, 5, 85

S 1 OPS
DATE
DOCT <u>PROCEDURE</u>
DOCN <u>1-C-67</u>
SYS
COMP <u>COMPLETED</u>
ITM <u>10</u>

ST. LUCIE UNIT 1
RECEIVED
DATE <u>3/1/85</u>
BY <u>KK14</u>

ST. LUCIE UNIT 1
CHEMISTRY PROCEDURE NO. 1-C-67, REVISION 10
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

CONTAINMENT MONITOR CALIBRATION CERTIFICATE

PARTICULATE CHANNEL 31

Source #1

Source Type Cs 137
 Serial # 194
 Assay decay calculation:

$$A = A_0 e^{-\lambda t}$$

$$A_0 = 3307 \text{ on } 7-16-84$$

$$A = \text{see attached print out}$$
 Tolerance ($\pm 10\%$) = 2714.3 \rightarrow 3317.5
 Background Scaler 474
 Ratemeter Levels
 local N/A
 remote 3.2 E + 3
 Recorder levels 3.2 E + 3
 Scaler Levels 3,270
 (averaged)
 Corrected Activity (ratemeter levels
 minus background)
2796 cpm

Source #2

Source type Ba 133
 Serial # SRM 4241-5
 Assay decay calculation:

$$A = A_0 e^{-\lambda t}$$

$$A_0 = 27972 \text{ on } 7-16-84$$

$$A = \text{see attached print out}$$
 Tolerance ($\pm 10\%$) = 19,414.7 \rightarrow 23729.1
 Background Scaler 474
 Ratemeter Levels
 local N/A
 remote 2.2 E + 4
 Recorder levels 2.2 E + 4
 Scaler Levels 22,944
 (averaged)
 Corrected Activity (ratemeter levels
 minus background)
22,470 cpm

High Voltage setting 600 V
 (for reference only)

Channel 31 returned to normal service

Verified by [Signature]

Date 7 / 21 / 88

Approved by [Signature]

Date 8 / 17 / 88

Chemistry Supervisor

/R10

Additional Sources		
WC 24	5259 cpm	Ba 133
WC 25	32254 cpm	Cs 137
V.T. 29	5042 cpm	Ba 133

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-67, REVISION 10
 CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

CONTAINMENT MONITOR CALIBRATION CERTIFICATE

NOBLE GAS CHANNEL 32

Source #1	Source #2
Source Type <u>mixed Gas</u>	Source Type <u>mixed Gas</u>
Serial # <u>N/A</u>	Serial # <u>N/A</u>
Assay decay calculation: $A = A_0 e^{-\lambda t}$ <u>$A = 3.54 E 4 \text{ counts/min}$</u>	Assay decay calculation: $A = A_0 e^{-\lambda t}$ <u>$A = 5.33 E 5 \text{ counts/min}$</u>
Tolerance ($\pm 10\%$) = <u>N/A</u>	Tolerance ($\pm 10\%$) = <u>N/A</u>
Background Scaler <u>48</u>	Background Scaler <u>48</u>
Ratemeter Levels	Ratemeter Levels
local <u>N/A</u>	local <u>N/A</u>
remote <u>3000</u>	remote <u>450</u>
Recorder levels <u>5000</u>	Recorder levels <u>500</u>
Scaler Levels <u>2943</u> (averaged)	Scaler Levels <u>450</u> (averaged)
Corrected Activity (scaler reading minus background) <u>2895</u>	Corrected Activity (scaler reading minus background) <u>40.2</u>

High Voltage setting W-250 + 180V
 (for reference only)

Channel 32 returned to normal service

Verified by [Signature]

Date 11/1/88

Approved by [Signature]

Date 5/19/89

Chemistry Supervisor

/R10

ST. LUCIE UNIT 1
CHEMISTRY PROCEDURE NO. 1-C-67, REVISION 10
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

CONTAINMENT MONITOR CALIBRATION CERTIFICATE

NOBLE GAS CHANNEL 32

Source # <u>3</u>	Source # <u>4</u>
Source Type <u>Mixed Gas</u>	Source Type <u>Mixed Gas</u>
Serial # <u>N/A</u>	Serial # <u>N/A</u>
Assay decay calculation:	
$A = A_0 e^{-\lambda t}$	
$A = 4.22 E^{-3} \text{ uCi/inch}$	$A = 1.24 E^{-1} \text{ uCi/inch}$
Tolerance ($\pm 10\%$) = <u>N/A</u>	Tolerance ($\pm 10\%$) = <u>N/A</u>
Background Scaler <u>48</u>	Background Scaler <u>48</u>
Ratemeter Levels	
local <u>N/A</u>	local <u>N/A</u>
remote <u>30,000</u>	remote <u>600,000</u>
Recorder levels <u>30,000</u>	Recorder levels <u>600,000</u>
Scaler Levels <u>28226</u> (averaged)	Scaler Levels <u>527978</u> (averaged)
Corrected Activity (scaler reading minus background)	
<u>28238</u>	<u>527978</u>

High Voltage setting ~~250~~ 780 V
(for reference only) 27

Channel 32 returned to normal service

Verified by D. J. [Signature]

Date 1/4/88

Approved by M. [Signature]

Date 8/19/88

Chemistry Supervisor

/R10

FLORIDA POWER & LIGHT CO.
ST. LUCIE PLANT CHEMISTRY DEPT.

PRELIMINARY ACTIVITY REPORT

REACTOR UNIT#: 1 FILE RELEAS.OTHER1 SAMPLE#: 23
SAMPLE I.D. : U1 CONT.PT.1 SAMPLE TYPE : GAS
SAMPLE TIME : 8- 4-1988 @ 10: 0 SAMPLE VOLUME : 3.400E 01 MLS.
ACQUIRE TIME : 8- 4-1988 @ 10: 7 LIVE TIME : 1.000E 03 SEC.
EFF.FILE NAME: EFF .GT23 ACT MULT FACTOR: 1.000E 00

NUCLIDE	SAMPLE	1 SIGMA	KEYLINE	NET PEAK	NUCLIDE
SYMBOL	UCI/ML	ERROR	ENERGY	AREA	SYMBOL
XE-133	3.544E-04	1.927E-05	81.00	557.	XE-133

1. REVIEW HEADER FOR CORRECT SET UP
2. REVIEW PEAKS FOR DOUBLETS
3. REVIEW ENERGIES FOR PROPER VALUES

FLORIDA POWER & LIGHT CO.
ST. LUCIE PLANT CHEMISTRY DEPT.

PRELIMINARY ACTIVITY REPORT

REACTOR UNIT#: 1 FILE RELEAS.OTHER1 SAMPLE#: 24
SAMPLE I.D. : 1 CONT PT.2 SAMPLE TYPE : GAS
SAMPLE TIME : 8- 4-1988 @ 10:55 SAMPLE VOLUME : 4.600E 03 MLS.
ACQUIRE TIME : 8- 4-1988 @ 11: 0 LIVE TIME : 5.000E 02 SEC.
EFF.FILE NAME: EFF .GT47 / ACT MULT FACTOR: 1.000E 00

NUCLIDE SYMBOL	SAMPLE UCI/ML	SIGMA 1 ERROR	KEYLINE ENERGY	NET PEAK AREA	NUCLIDE SYMBOL
XE-133	9.453E-07	1.357E-07	81.00	12647-236	XE-133
XE-133M	9.194E-07	1.544E-07	233.18	74.	XE-133M
XE-135	6.832E-07	3.267E-08	249.79	448.	XE-135

$T_{01} = 5.333 E-05$

12411

+236

1. REVIEW HEADER FOR CORRECT SET UP
2. REVIEW PEAKS FOR DOUBLETS
3. REVIEW ENERGIES FOR PROPER VALUES

12647


3000 = 3.5 -4
600 = 5.3 -4

FLORIDA POWER & LIGHT CO.
ST. LUCIE PLANT CHEMISTRY DEPT.

PRELIMINARY ACTIVITY REPORT

REACTOR UNIT#: 1 / FILE RELEAS.OTHER1 SAMPLE#: 26
SAMPLE I.D. : 1 CONT PT.3 / SAMPLE TYPE : GAS
SAMPLE TIME : 8- 4-1988 @ 11:25 / SAMPLE VOLUME : 3.400E 01 MLS.
ACQUIRE TIME : 8- 4-1988 @ 11:29 / LIVE TIME : 1.000E 03 SEC.
EFF.FILE NAME: EFF .GT21 / ACT MULT FACTOR: 1.000E 00

NUCLIDE SYMBOL	SAMPLE UCI/ML	SIGMA ERROR	KEYLINE ENERGY	NET PEAK AREA	NUCLIDE SYMBOL
XE-133	4.048E-03	4.842E-05	81.00	7533.	XE-133
XE-133M	1.249E-04	2.673E-05	233.18	34.	XE-133M
XE-135	5.010E-05	5.472E-06	249.79	109.	XE-135



1. REVIEW HEADER FOR CORRECT SET UP
2. REVIEW PEAKS FOR DOUBLETS
3. REVIEW ENERGIES FOR PROPER VALUES

4.223 E-03

FLORIDA POWER & LIGHT CO.
ST. LUCIE PLANT CHEMISTRY DEPT.

DW

PRELIMINARY ACTIVITY REPORT

REACTOR UNIT#: 1 FILE RELEASE.OTHER1 SAMPLE#: 27
SAMPLE I.D. : CONT. GAS PT #4 SAMPLE TYPE : GAS
SAMPLE TIME : 8- 4-1988 @ 12:15 SAMPLE VOLUME : 3.020E 01 MLS.
ACQUIRE TIME : 8- 4-1988 @ 12:27 LIVE TIME : 1.000E 03 SEC.
EFF.FILE NAME: EFF .GT21 ACT MULT FACTOR: 1.000E 00

NUCLIDE SYMBOL	SAMPLE UCI/ML	1 SIGMA ERROR	KEYLINE ENERGY	NET PEAK AREA	NUCLIDE SYMBOL
XE-131M	1.054E-03	2.163E-04	163.93	76.	XE-131M
XE-133	1.341E-03	8.591E-05	81.00	2174.	XE-133
XE-133M	1.998E-03	1.081E-04	233.18	485.	XE-133M
XE-135	1.275E-03	2.700E-05	249.79	2429.	XE-135

Xc 133 9.9305E-2
9.9305E-2

1. REVIEW HEADER FOR CORRECT SET UP
2. REVIEW PEAKS FOR DOUBLETS
3. REVIEW ENERGIES FOR PROPER VALUES

-total 1.036 E-1 *na/mf*

Cs¹³² (2.174) 3.74

Ba¹³³ (2.443) 2.772, 1/16/84

100% 100% 100%

#1 Containment 90.5
Line 1 3.2
3/4/88

1EG
5.882

100,000

28,238

10,000

2,895 cpm

1,000

402

100

30,000

RE-3

0.57

1.35 E-7

μCi/ml
cpm



1

2

3

4

5

GAS SAMPLES
ANALYZED ON GEL IN
LAB

μCi/ml

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-67, REVISION 10
 CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

CONTAINMENT MONITOR CALIBRATION CERTIFICATE

NOBLE GAS CHANNEL 32

Source # 5

Source Type CS 137

Serial # 10 213

Assay decay calculation:

$$A = A_0 e^{-\text{Lambda } t}$$

Original

Tolerance ($\pm 10\%$) = N/A

Background Scaler 154

Ratemeter Levels

local N/A

remote 1200

Recorder levels 1200

Scaler Levels 1291
 (averaged)

Corrected Activity (scaler reading
 minus background)

1137

Source #2

Source Type _____

Serial # _____

Assay decay calculation:

$$A = A_0 e^{-\text{Lambda } t}$$

Tolerance ($\pm 10\%$) = _____

Background Scaler _____

Ratemeter Levels

local N/A

remote _____

Recorder levels _____

Scaler Levels _____
 (averaged)

Corrected Activity (scaler reading
 minus background)

High Voltage setting 780 V
 (for reference only)

Channel 32 returned to normal service

Verified by [Signature]

Date 11/17/87

Approved by [Signature]

Date 11/17/87

Chemistry Supervisor

/R10

ST. LUCIE UNIT 1
CHEMISTRY PROCEDURE NO. 1-C-67, REVISION 10
CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

CONTAINMENT MONITOR CALIBRATION CERTIFICATE

NOBLE GAS CHANNEL 32

Source # <u>13</u>	Source # <u>7</u>
Source Type <u>CS 137</u>	Source Type <u>CS 137</u>
Serial # <u>WC 25</u>	Serial # <u>194</u>
Assay decay calculation: $A = A_0 e^{-\lambda t}$ <u>original</u>	Assay decay calculation: $A = A_0 e^{-\lambda t}$ <u>original</u>
Tolerance ($\pm 10\%$) = <u>N/A</u>	Tolerance ($\pm 10\%$) = <u>N/A</u>
Background Scaler <u>154</u>	Background Scaler <u>154</u>
Ratemeter Levels	Ratemeter Levels
local <u>N/A</u>	local <u>N/A</u>
remote <u>50000</u>	remote <u>1000</u>
Recorder levels <u>50000</u>	Recorder levels <u>1000</u>
Scaler Levels <u>45711</u> (averaged)	Scaler Levels <u>3754</u> (averaged)
Corrected Activity (scaler reading minus background) <u>45711</u>	Corrected Activity (scaler reading minus background) <u>3754</u>

High Voltage setting 780 V
(for reference only)

Channel 32 returned to normal service

Verified by [Signature]

Date 1/15/88

Approved by [Signature]

Date 1/19/88

Chemistry Supervisor

/R10

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-67, REVISION 10
 CALIBRATION OF THE CONTAINMENT PROCESS MONITOR

CONTAINMENT MONITOR CALIBRATION CERTIFICATE

NOBLE GAS CHANNEL 32

Source #1

Source Type Ba 133Serial # SPM 9241-5

Assay decay calculation:

$$A = A_0 e^{-\text{Lambda } t}$$

OriginalTolerance ($\pm 10\%$) = N/ABackground Scaler 154

Ratemeter Levels

local N/Aremote 25000Recorder levels 25000Scaler Levels 2576.7
(averaged)Corrected Activity (scaler reading
minus background)25613

Source #2

Source Type Ba 133Serial # LIC 24

Assay decay calculation:

$$A = A_0 e^{-\text{Lambda } t}$$

OriginalTolerance ($\pm 10\%$) = N/ABackground Scaler 154

Ratemeter Levels

local N/Aremote 25000Recorder levels 3000Scaler Levels 7511
(averaged)Corrected Activity (scaler reading
minus background)7657High Voltage setting 725 V W
(for reference only) 780 VChannel 32 returned to normal serviceVerified by [Signature]Date 3/15/98Approved by [Signature]Date 4/14/98

Chemistry Supervisor

/R10



original

7/16/84

SECRET

[Signature]
-1/16/84

1. THE DATE AT WHICH THE
2. THE DATE WHEN THE
3. THE DATE WHEN THE

4. THE DATE WHEN THE
5. THE DATE WHEN THE



Source Ba 133
Sample SRM 4241-5

Assay decay calculation:

A = age:

*original cal
this source*

Tolerance (-10%) =	
Background scaler	<u>60</u>
Metermeter levels	
Local	<u>22K</u>
Remote	<u>N/A</u>
Scaler levels	<u>28032</u>
Scaler levels (corrected)	<u>27972</u>
Corrected scaler metermeter levels minus background	

Source Type Cs 137
Serial # #194

Assay decay calculation:

A = age:

*original cal
this source*

Tolerance (-10%) =	
Background scaler	<u>60</u>
Metermeter levels	
Local	<u>N/A</u>
Remote	<u>3.5K</u>
Scaler levels	<u>N/A</u>
Scaler levels (corrected)	<u>3367</u>
Corrected scaler metermeter levels minus background	
<u>3307</u>	

700 K

11/16/74

SAMPLE RESULTS REPORT

1

ID NUMERIC: 84165

SAMPLE STATUS: C

ID TEXT: MIC_31-96-07-03-18:07-0005

TODAY'S DATE: 6-NOV-1996 14:19

SAMPLE DATE: 3-JUL-1996 18:07

SAMPLE LOGGED IN BY: FALKNER

SAMPLE POINT	COMPONENT	RESULT	UNITS	MLP LEVEL	MINIMUM VALUE	MAXIMUM VALUE
MIC_31	Calibration					
	Procedure Number	NA				
	Frequency	18 Months				
	Date Of This Calibration	3-JUL-1996 18:08				
	Date Of Last Calibration	11-JAN-1995 07:55				
	# 1 Source Type	This Component Has No Result Entered				
	# 1 Source Serial Number	This Component Has No Result Entered				
	# 1 Original Assay Date	This Component Has No Result Entered				
	# 1 Original Counts Per Minute	This Component Has No Result Entered				
	# 1 Decay Corrected Counts/Min	This Component Has No Result Entered				
	# 1 Upper Limit (+ 10 %)	This Component Has No Result Entered				
	# 1 Lower Limit (- 10 %)	This Component Has No Result Entered				
	If Original, Enter Assay Date	This Component Has No Result Entered				
	Background Count Rate	This Component Has No Result Entered				
	# 1 Source Result (Official)	This Component Has No Result Entered				
	# 1 Ratemeter Reading (If App)	This Component Has No Result Entered				
	# 1 Remote Reading (If App)	This Component Has No Result Entered				
	# 1 Recorder Reading (If App)	This Component Has No Result Entered				
	# 1 Corrected CPM (Official)	This Component Has No Result Entered				
	# 2 Source Type	This Component Has No Result Entered				
	# 2 Source Serial Number	This Component Has No Result Entered				
	# 2 Original Assay Date	This Component Has No Result Entered				
	# 2 Original Counts Per Minute	This Component Has No Result Entered				
	# 2 Decay Corrected Counts/Min	This Component Has No Result Entered				
	# 2 Upper Limit (+ 10 %)	This Component Has No Result Entered				
	# 2 Lower Limit (- 10 %)	This Component Has No Result Entered				
	# 2 Source Result (Official)	This Component Has No Result Entered				
	# 2 Ratemeter Reading (If App)	This Component Has No Result Entered				
	# 2 Remote Reading (If App)	This Component Has No Result Entered				
	# 2 Recorder Reading (If App)	This Component Has No Result Entered				
	# 2 Corrected CPM (Official)	This Component Has No Result Entered				
	# 3 Supplemental Source Type	This Component Has No Result Entered				
	# 3 Supplemental Source Ser #	This Component Has No Result Entered				
	# 3 Supplemental Source CPM	This Component Has No Result Entered				
	# 3 Is This Original Count	This Component Has No Result Entered				
	# 4 Supplemental Source Type	This Component Has No Result Entered				
	# 4 Supplemental Source Ser #	This Component Has No Result Entered				
	# 4 Supplemental Source CPM	This Component Has No Result Entered				
	# 4 Is This Original Count	This Component Has No Result Entered				
	High Voltage Setting (If App)	This Component Has No Result Entered				
	Channel Functional Performed	Yes				
	Did Calibration Pass?	Yes				
	If No, Explain Why	This Component Has No Result Entered				
	If No, Supervisor Evaluation	This Component Has No Result Entered				
	Channel Returned To Service	Yes				
	Calibration Performed By	ILC				
	Was Primary Cal. Performed	This Component Has No Result Entered				
	If Yes, LIMS # Of Primary Cal	This Component Has No Result Entered				
	All Tests Completed (Y/N)	Yes				
	Remarks:	This Component Has No Result Entered				

KKIS

SAMPLE RESULTS REPORT

1

ID NUMERIC: 48033

SAMPLE STATUS: A

ID TEXT: MIC_31-95-01-10-10:24-0003

TODAY'S DATE: 6-NOV-1996 14:34

SAMPLE DATE: 10-JAN-1995 10:24

SAMPLE LOGGED IN BY: GEORGE

SAMPLE POINT	COMPONENT	RESULT	UNIT	MLP LEVEL	MINIMUM VALUE	MAXIMUM VALUE
MIC_31	Intainment	300				
	Procedure Number	1067				
	Frequency	18 Months				
	Date Of This Calibration	11-JAN-1995 07:55				
	Date Of Last Calibration	16-NOV-1994 02:30				
	# 1 Source Type	EA-133				
	# 1 Source Serial Number	WC-24				
	# 1 Original Assay Date	21-JUL-1988 00:00				
	# 1 Original Counts Per Minute	5259	cpm			
	# 1 Decay Corrected Counts/Min	3457	cpm			
	# 1 Upper Limit (+ 10 %)	3802	cpm			
	# 1 Lower Limit (- 10 %)	3111	cpm			
	If Original, Enter Assay Date	This Component Has No Result Entered				
	Background Count Rate	360.0	cpm			
	# 1 Source Result (Official)	3744.0	cpm			
	# 1 Ratemeter Reading (If App)	3500.0	cpm			
	# 1 Remote Reading (If App)	This Component Has No Result Entered				
	# 1 Recorder Reading (If App)	This Component Has No Result Entered				
	# 1 Corrected CPM (Official)	3384.0	cpm			
	# 2 Source Type	CS-137				
	# 2 Source Serial Number	WC-25				
	# 2 Original Assay Date	21-JUL-1988 00:00				
	# 2 Original Counts Per Minute	32254	cpm			
	# 2 Decay Corrected Counts/Min	27794	cpm			
	# 2 Upper Limit (+ 10 %)	30573	cpm			
	# 2 Lower Limit (- 10 %)	25014	cpm			
	# 2 Source Result (Official)	28411.0	cpm			
	# 2 Ratemeter Reading (If App)	30000.0	cpm			
	# 2 Remote Reading (If App)	This Component Has No Result Entered				
	# 2 Recorder Reading (If App)	This Component Has No Result Entered				
	# 2 Corrected CPM (Official)	28051.0	cpm			
	# 3 Supplemental Source Type	This Component Has No Result Entered				
	# 3 Supplemental Source Ser #	This Component Has No Result Entered				
	# 3 Supplemental Source CPM	This Component Has No Result Entered				
	# 3 Is This Original Count	This Component Has No Result Entered				
	# 4 Supplemental Source Type	This Component Has No Result Entered				
	# 4 Supplemental Source Ser #	This Component Has No Result Entered				
	# 4 Supplemental Source CPM	This Component Has No Result Entered				
	# 4 Is This Original Count	This Component Has No Result Entered				
	High Voltage Setting (If App)	500	volts			
	Channel Functional Performed	Yes				
	Did Calibration Pass?	Yes				
	If No, Explain Why	This Component Has No Result Entered				
	If No, Supervisor Evaluation	This Component Has No Result Entered				
	Channel Returned To Service	Yes				
	Calibration Performed By	JHE,JG				
	Was Primary Cal. Performed	No				
	If Yes, LIMS # Of Primary Cal	This Component Has No Result Entered				
	All Tests Completed (Y/N)	Yes				
	Remarks:	REQUIRED NEW DETECTOR - OLD DETECTOR FAILED LOW				

KK/6

SAMPLE RESULTS REPORT

1

ID NUMERIC: 44470

SAMPLE STATUS: A

ID TEXT: MIC_31-94-11-16-02:30-0001

TUTAY'S DATE: 6-NOV-1996 14:19

SAMPLE DATE: 16-NOV-1994 02:30

SAMPLE LOGGED IN BY: GEORGE

FILE POINT	COMPONENT	RESULT	UNITS	MP LEVEL	MINIMUM VALUE	MAXIMUM VALUE
31	Component #	1067				
	Procedure Number	18 Months				
	Frequency	16-NOV-1994 02:30				
	Date Of This Calibration	18-MAY-1993 00:00				
	Date Of Last Calibration	EA-133				
	# 1 Source Type	WC-24				
	# 1 Source Serial Number	21-JUL-1988 00:00				
	# 1 Original Assay Date	5259	cpm			
	# 1 Original Counts Per Minute	3491	cpm			
	# 1 Decay Corrected Counts/Min	3840	cpm			
	# 1 Upper Limit (+ 10 %)	3142	cpm			
	# 1 Lower Limit (- 10 %)	This Component Has No Result Entered				
	If Original, Enter Assay Date	400.0	cpm			
	Background Count Rate	4056.0	cpm			
	# 1 Source Result (Official)	This Component Has No Result Entered				
	# 1 Ratemeter Reading (If App)	This Component Has No Result Entered				
	# 1 Remote Reading (If App)	This Component Has No Result Entered				
	# 1 Recorder Reading (If App)	3656.0	cpm			
	# 1 Corrected CRM (Official)	CS-137				
	# 2 Source Type	WC-25				
	# 2 Source Serial Number	21-JUL-1988 00:00				
	# 2 Original Assay Date	32254	cpm			
	# 2 Original Counts Per Minute	27892	cpm			
	# 2 Decay Corrected Counts/Min	30681	cpm			
	# 2 Upper Limit (+ 10 %)	25103	cpm			
	# 2 Lower Limit (- 10 %)	26323.0	cpm			
	# 2 Source Result (Official)	This Component Has No Result Entered				
	# 2 Ratemeter Reading (If App)	This Component Has No Result Entered				
	# 2 Remote Reading (If App)	This Component Has No Result Entered				
	# 2 Recorder Reading (If App)	25923.0	cpm			
	# 2 Corrected CRM (Official)	This Component Has No Result Entered				
	# 3 Supplemental Source Type	This Component Has No Result Entered				
	# 3 Supplemental Source Ser #	This Component Has No Result Entered				
	# 3 Supplemental Source CRM	This Component Has No Result Entered				
	# 3 Is This Original Count	This Component Has No Result Entered				
	# 4 Supplemental Source Type	This Component Has No Result Entered				
	# 4 Supplemental Source Ser #	This Component Has No Result Entered				
	# 4 Supplemental Source CRM	This Component Has No Result Entered				
	# 4 Is This Original Count	This Component Has No Result Entered				
	High Voltage Setting (If App)	This Component Has No Result Entered				
	Channel Functional Performed	Yes				
	Did Calibration Pass?	Yes				
	If No, Explain Why	This Component Has No Result Entered				
	If No, Supervisor Evaluation	This Component Has No Result Entered				
	Channel Returned To Service	Yes				
	Calibration Performed By	LLJHE				
	Was Primary Cal. Performed	No				
	If Yes, LIMS # Of Primary Cal	This Component Has No Result Entered				
	All Tests Completed (Y/N)	Yes				
	Remarks:	This Component Has No Result Entered				

← Calibration Date

KK17

SAMPLE RESULTS REPORT

1

ID NUMERIC: 84166

SAMPLE STATUS: C

ID TEXT: MIC_32-96-07-03-18:09-0003

TODAY'S DATE: 6-NOV-1996 14:20

SAMPLE DATE: 3-JUL-1996 18:09

SAMPLE LOGGED IN BY: FAULKNER

SAMPLE POINT	COMPONENT	RESULT	UNITS	M/LP LEVEL	MINIMUM VALUE	MAXIMUM VALUE
MIC_32	CONTAINMENT	542	20000			
	Procedure Number	NA				
	Frequency	18 Months				
	Date Of This Calibration	3-JUL-1996 18:09				
	Date Of Last Calibration	17-SEP-1995 01:34				
	# 1 Source Type	This Component Has No Result Entered				
	# 1 Source Serial Number	This Component Has No Result Entered				
	# 1 Original Assay Date	This Component Has No Result Entered				
	# 1 Original Counts Per Minute	This Component Has No Result Entered				
	# 1 Decay Corrected Counts/Min	This Component Has No Result Entered				
	# 1 Upper Limit (+ 10 %)	This Component Has No Result Entered				
	# 1 Lower Limit (- 10 %)	This Component Has No Result Entered				
	If Original, Enter Assay Date	This Component Has No Result Entered				
	Background Count Rate	This Component Has No Result Entered				
	# 1 Source Result (Official)	This Component Has No Result Entered				
	# 1 Ratemeter Reading (If App)	This Component Has No Result Entered				
	# 1 Remote Reading (If App)	This Component Has No Result Entered				
	# 1 Recorder Reading (If App)	This Component Has No Result Entered				
	# 1 Corrected CPM (Official)	This Component Has No Result Entered				
	# 2 Source Type	This Component Has No Result Entered				
	# 2 Source Serial Number	This Component Has No Result Entered				
	# 2 Original Assay Date	This Component Has No Result Entered				
	# 2 Original Counts Per Minute	This Component Has No Result Entered				
	# 2 Decay Corrected Counts/Min	This Component Has No Result Entered				
	# 2 Upper Limit (+ 10 %)	This Component Has No Result Entered				
	# 2 Lower Limit (- 10 %)	This Component Has No Result Entered				
	# 2 Source Result (Official)	This Component Has No Result Entered				
	# 2 Ratemeter Reading (If App)	This Component Has No Result Entered				
	# 2 Remote Reading (If App)	This Component Has No Result Entered				
	# 2 Recorder Reading (If App)	This Component Has No Result Entered				
	# 2 Corrected CPM (Official)	This Component Has No Result Entered				
	# 3 Supplemental Source Type	This Component Has No Result Entered				
	# 3 Supplemental Source Ser #	This Component Has No Result Entered				
	# 3 Supplemental Source CPM	This Component Has No Result Entered				
	# 3 Is This Original Count	This Component Has No Result Entered				
	# 4 Supplemental Source Type	This Component Has No Result Entered				
	# 4 Supplemental Source Ser #	This Component Has No Result Entered				
	# 4 Supplemental Source CPM	This Component Has No Result Entered				
	# 4 Is This Original Count	This Component Has No Result Entered				
	High Voltage Setting (If App)	This Component Has No Result Entered				
	Channel Functional Performed	Yes				
	Did Calibration Pass?	Yes				
	If No, Explain Why	This Component Has No Result Entered				
	If No, Supervisor Evaluation	This Component Has No Result Entered				
	Channel Returned To Service	Yes				
	Calibration Performed By	I&C				
	Was Primary Cal. Performed	No				
	If Yes, LIMS # Of Primary Cal	This Component Has No Result Entered				
	All Tests Completed (Y/N)	Yes				
	Remarks:	This Component Has No Result Entered				

KK/8

SAMPLE RESULTS REPORT

1

ID NUMERIC: 64372

SAMPLE STATUS: A

ID TEXT: MIC_32-95-09-17-01:33-0002

TODAY'S DATE: 6-NOV-1996 14:19

SAMPLE DATE: 17-SEP-1995 01:33

SAMPLE LOGGED IN BY: GEORGE

SAMPLE POINT	COMPONENT	RESULT	UNITS	MLP LEVEL	MINIMUM VALUE	MAXIMUM VALUE
MIC_32 →	Containment #1	25	annell			
	Procedure Number	1c67				
	Frequency	18 Months				
	Date Of This Calibration	17-SEP-1995 01:34		← Cal Date		
	Date Of Last Calibration	17-NOV-1994 02:30				
	# 1 Source Type	ba-133				
	# 1 Source Serial Number	wc-24				
	# 1 Original Assay Date	5-AUG-1988 00:00				
	# 1 Original Counts Per Minute	7657.0	cpm			
	# 1 Decay Corrected Counts/Min	4828.0	cpm			
	# 1 Upper Limit (+ 10 %)	5311.0	cpm			
	# 1 Lower Limit (- 10 %)	4345.0	cpm			
	If Original, Enter Assay Date	This Component Has No Result Entered				
	Background Count Rate	26.0	cpm			
	# 1 Source Result (Official)	4922.0	cpm			
	# 1 Ratemeter Reading (If App)	This Component Has No Result Entered				
	# 1 Remote Reading (If App)	This Component Has No Result Entered				
	# 1 Recorder Reading (If App)	This Component Has No Result Entered				
	# 1 Corrected CRM (Official)	4896.0	cpm			
	# 2 Source Type	cs-137				
	# 2 Source Serial Number	wc-25				
	# 2 Original Assay Date	5-AUG-1988 00:00				
	# 2 Original Counts Per Minute	45711.0	cpm			
	# 2 Decay Corrected Counts/Min	38814.0	cpm			
	# 2 Upper Limit (+ 10 %)	42695.0	cpm			
	# 2 Lower Limit (- 10 %)	34933.0	cpm			
	# 2 Source Result (Official)	39766.0	cpm			
	# 2 Ratemeter Reading (If App)	This Component Has No Result Entered				
	# 2 Remote Reading (If App)	This Component Has No Result Entered				
	# 2 Recorder Reading (If App)	This Component Has No Result Entered				
	# 2 Corrected CRM (Official)	39740.0	cpm			
	# 3 Supplemental Source Type	This Component Has No Result Entered				
	# 3 Supplemental Source Ser #	This Component Has No Result Entered				
	# 3 Supplemental Source CCRM	This Component Has No Result Entered				
	# 3 Is This Original Count	This Component Has No Result Entered				
	# 4 Supplemental Source Type	This Component Has No Result Entered				
	# 4 Supplemental Source Ser #	This Component Has No Result Entered				
	# 4 Supplemental Source CCRM	This Component Has No Result Entered				
	# 4 Is This Original Count	This Component Has No Result Entered				
	High Voltage Setting (If App)	This Component Has No Result Entered				
	Channel Functional Performed	Yes				
	Did Calibration Pass?	Yes				
	If No, Explain Why	This Component Has No Result Entered				
	If No, Supervisor Evaluation	This Component Has No Result Entered				
	Channel Returned To Service	Yes				
	Calibration Performed By	gg				
	Was Primary Cal. Performed	No				
	If Yes, LIMS # Of Primary Cal	This Component Has No Result Entered				
	All Tests Completed (Y/N)	Yes				
	Remarks:	detector replaced				

KK19

SAMPLE RESULTS REPORT

1

ID NUMERIC: 44478

SAMPLE STIMUS: A

ID TEXT: MIC_32-94-11-17-02:30-0001

TODAY'S DATE: 6-NOV-1996 14:20

SAMPLE DATE: 17-NOV-1994 02:30

SAMPLE LOGGED IN BY: GEORGE

SAMPLE POINT	COMPONENT	RESULT	UNITS	MLP LEVEL	MINIMUM VALUE	MAXIMUM VALUE
MIC_32	ATTACHMENT	1067				
	Procedure Number	1067				
	Frequency	18 Months				
	Date Of This Calibration	17-NOV-1994 02:30				
	Date Of Last Calibration	18-MAY-1993 00:00				
	# 1 Source Type	EA-133				
	# 1 Source Serial Number	WC-24				
	# 1 Original Assay Date	5-AUG-1988 00:00				
	# 1 Original Counts Per Minute	7657	cpm			
	# 1 Decay Corrected Counts/Min	5096	cpm			
	# 1 Upper Limit (+ 10 %)	5605	cpm			
	# 1 Lower Limit (- 10 %)	4586	cpm			
	If Original, Enter Assay Date	This Component Has No Result Entered				
	Background Count Rate	35.0	cpm			
	# 1 Source Result (Official)	5421.0	cpm			
	# 1 Ratemeter Reading (If App)	This Component Has No Result Entered				
	# 1 Remote Reading (If App)	This Component Has No Result Entered				
	# 1 Recorder Reading (If App)	This Component Has No Result Entered				
	# 1 Corrected CPM (Official)	5386.0	cpm			
	# 2 Source Type	CS-137				
	# 2 Source Serial Number	WC-25				
	# 2 Original Assay Date	5-AUG-1988 00:00				
	# 2 Original Counts Per Minute	45711	cpm			
	# 2 Decay Corrected Counts/Min	39564	cpm			
	# 2 Upper Limit (+ 10 %)	43520	cpm			
	# 2 Lower Limit (- 10 %)	35607	cpm			
	# 2 Source Result (Official)	38383.0	cpm			
	# 2 Ratemeter Reading (If App)	This Component Has No Result Entered				
	# 2 Remote Reading (If App)	This Component Has No Result Entered				
	# 2 Recorder Reading (If App)	This Component Has No Result Entered				
	# 2 Corrected CPM (Official)	38348.0	cpm			
	# 3 Supplemental Source Type	This Component Has No Result Entered				
	# 3 Supplemental Source Ser #	This Component Has No Result Entered				
	# 3 Supplemental Source CPM	This Component Has No Result Entered				
	# 3 Is This Original Count	This Component Has No Result Entered				
	# 4 Supplemental Source Type	This Component Has No Result Entered				
	# 4 Supplemental Source Ser #	This Component Has No Result Entered				
	# 4 Supplemental Source CPM	This Component Has No Result Entered				
	# 4 Is This Original Count	This Component Has No Result Entered				
	High Voltage Setting (If App)	This Component Has No Result Entered				
	Channel Functional Performed	Yes				
	Did Calibration Pass?	Yes				
	If No, Explain Why	This Component Has No Result Entered				
	If No, Supervisor Evaluation	This Component Has No Result Entered				
	Channel Returned To Service	Yes				
	Calibration Performed By	LLJHB				
	Was Primary Cal. Performed	No				
	If Yes, LIMS # Of Primary Cal	This Component Has No Result Entered				
	All Tests Completed (Y/N)	Yes				
	Remarks:	This Component Has No Result Entered				

KK110