

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE UNIT
I&C PROCEDURE NO. 1-1220053
REVISION 1

1.0 TITLE:

CALIBRATION OF THE CONTROL ROOM OUTSIDE AIR INTAKE MONITORS

2.0 REVIEW AND APPROVAL:

Reviewed by Facility Review Group _____ June 23, 1989

Approved by _____ G. J. Boissy _____ Plant Manager _____ July 13, 1989

Revision 1 Reviewed by FRG _____ 04/09 1992

Approved by _____ G. J. Boissy _____ Plant Manager _____ 04/10 1992

3.0 PURPOSE:

To provide instructions for the calibration of the Control Room Outside Air Intake Monitors.

4.0 PRECAUTIONS AND LIMITS:

- 4.1 Follow applicable Health Physics precautions when handling radioactive materials.
- 4.2 Obtain a dose rate meter to measure the general background dose rate in the vicinity of the detectors.
- 4.3 Beta detector windows are very thin materials which can easily be damaged causing light leaks. Be very careful when handling these detectors, especially when attaching sources to the window. Insure there is no foreign material present on either the source or the window.

FOR INFORMATION ONLY	
THIS DOCUMENT IS NOT CONTROLLED. BEFORE USE, VERIFY INFORMATION WITH A CONTROLLED DOCUMENT.	
FLORIDA POWER AND LIGHT CO.	
ST. LUCIE PLANT	
DATE VERIFIED	INITIAL
5/6/93	MB

S 1 OPS
DATE
DOCT PROCEDURE
DOCN 1-1220053
SYS
COMP COMPLETED
ITM 1

Fac: PSL Unit: 01
MASTER
WORK ORDER TASK

93006886 01

ER/PWO 63 / 8083
LOCATION: 915
PAGE 3 of

Work/Repairs Performed (cont.): _____

Continued on Additional Sheets: Y N

Component: _____ Sys: _____ Train: _____
Associate: _____ Assign Priority: C2
Name: O.A.I. INTAKE MONITORS CH. 46 & Work Typ: 6
47
Location: CONTROL RM. W/O LMD: 2
Tsk LMD: 2
Defect/Request: 012FYP8083 O.A.I. CH. 46/47 IC 1-1
2200

Fac: PSL Unit: 01
MASTER
WORK ORDER TASK
93006886 01
ER/PWO 63 / 8083
LOCATION: 915
PAGE 2 of 3

JOURNEYMANS WORK REPORT

Actual Start Date:	Time:	Actual Completion Date:	Time:
5/5/93	1:30 pm	5/6/93	12:00 pm

Note: Journeyman shall sign and date text after their entires.

Trouble Found:

This section is Not Applicable for PMs or other planned jobs _____

Re-fueling Cal is due. *Robert J. Paul*
5/5/93

TEST EQUIP.

PSL-655

PSL

PSL

PSL

PSL

Work/Repairs Performed:

Performed refueling cal IAW IC1-122053.

Robert J. Paul
5/6/93

Continued on Additional Sheets: Y (N)

Suggestions For Future Planning/Variance Reason: _____

Supv/Foreman/Chief	Date	Supervisor	Date	QC Inspector	Date
--------------------	------	------------	------	--------------	------

P. J. Momen 5-8-93

OUTAGE

PSL #1

Component: _____ Sys: _____ Train: _____
Associate: _____ Assign Priority: C2
Name: O.A.I. INTAKE MONITORS CH. 46 & Work Typ: 6
47
Location: CONTROL RM. W/O LMD: 2
Tsk LMD: 2
Defect/Request: 012FYP8083 O.A.I. CH. 46/47 IC 1-1
2200

Fac: PSL Unit: 01
MASTER
WORK ORDER TASK
93006886 01
ER/PWO 63 / 8083
LOCATION: 915
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Detailed Explanation:

PM ID: FYP0315
DUE BY DT: 04/5/93 EARLY DT: 11/30/92 LATE DT: 08/28/93

Work Request: _____ Def. Tag No: _____ Loc: _____ More: _____
Trbl/Brkdn: _____ LCO: _____ Unit Condition Required: _____
NPRDS: N Failure Date: _____ Time: _____ Detection: _____ Status: _____ Sympt: _____
Originator: _____ Date: _____ Dept: _____
Appr. By: _____ Date: _____

Task Determination Data:

10 CFR 50.49: N	EQ Doc Pkg: NA	Safety Class: _____
Reg Guide 1.97: N	Fire Prot Req'd: N	Q Group: C
ASME XI (ISI) Req'd: N	NCR: NA	MCL List: _____
IST Required: N	PCM: NA	Assigned To: _____
PMT Required: N	Seismic Cat: N	Est M/H: 60.00
RWP Required: N	RWP No: _____	Crew Qty: 2
Sec Clearance: _____	Scaffold Req: _____	Insul Rem: _____
Clearance Req'd: N	Clearance No: _____	

QC Requirements:
QL-A TS-10-4

QC Required: Y

More: _____

Work Order Task Description:

** NOTIFY OPS. PRIOR TO STARTING PROCEDURE.

** PERFORM CALIBRATION OF CONTROL ROOM OUTSIDE AIR INTAKE PER
PROC IC 1-1220053.

GUSMANO

More: _____

Planned by: RFJ0X07 JACKSON R F Date: 03/18/93
Pkg Apprd by: RFJ0X07 JACKSON R F Date: 03/18/93 Time: 14:51
QC Approval: RWB0QIC BROWN R W Date: 03/18/93

***** OPERATIONS APPROVAL TO START *****

* NPS Start Permission: _____ LCO (Y/N): _____
* Start Date/Time: _____

NPS Completion Notif: _____ Major Failure: _____
Compl. Date/Time: 5-6-93 2105 Major Action: _____
Deficiency Tag Removed (Y/N): _____

KK101

ST. LUCIE UNIT 1
I&C PROCEDURE NO. 1-1220053, REVISION 1
CALIBRATION OF THE CONTROL ROOM OUTSIDE AIR INTAKE MONITORS

4.0 PRECAUTIONS AND LIMITS: (continued)

- 4.4 Should the instrument fail the calibration procedure, or become inoperable, it shall be repaired and recalibrated as necessary.
- 4.5 The calibration frequency shall be on a refueling interval not to exceed 18 months.
- 4.6 The ALERT alarm setpoint should be 2X the channel recorder background and the HIGH alarm setpoint should 3X the channel recorder background.

/R1

5.0 RELATED SYSTEM STATUS:

- 5.1 The Outside Air Intake Monitor Systems must be operational.

6.0 REFERENCES:

- 6.1 Victoreen Technical Manual 8770-8386, latest revision.

6.2 FUSAR

- 1. Outside Air Intake Control Room 12.2.2.6

7.0 RECORDS REQUIRED:

- 7.1 A completed copy of this procedure shall be maintained in the plant files in accordance with QI 17-PR/PSL-1, "Quality Assurance Records".
- 7.2 A copy of the assay report for the radiation check sources and data sheets associated with this procedure should be retained and included as a calibration "package" upon completion.

8.0 MATERIAL AND EQUIPMENT REQUIRED:

- 8.1 Keithley DMM model 192 or equivalent
- 8.2 Counter/Scaler

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9.0 DETAILED PROCEDURE:

Definitions

NOTE

The following definitions are taken from the Appendix B, Technical Specifications, and should be considered when performing the calibration.

Continuous Recording

Recording of a measured parameter on a chart by a single pen or a multipoint recorder with less than one-minute interval between successive printing of the same parameter.

Channel Calibration

A Channel Calibration shall be the adjustment of the channel output such that it corresponds with specified range and accuracy to known values of the parameter which the channel monitors. The Channel Calibration shall encompass the entire channel including the sensor and alarm and/or trip functions, and shall include the Channel Functional Test.

Channel Function Test

A Channel Functional Test shall be the injection of a simulated signal into the channel as close to the primary sensor as practicable to verify operability including alarm and/or trip functions.

9.1 Channel Functional Test

NOTE

Perform channel functional test on one channel at a time.

/R1

NOTE

The channel functional test may be performed at any period within the scope of this channel calibration procedure. The channel functional test includes alarm and/or trip functions and therefore satisfies the requirement for checking these parameters in the channel calibration procedure.

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CALIBRATION OF THE CONTROL ROOM OUTSIDE AIR INTAKE MONITORS

9.0 DETAILED PROCEDURE: (continued)

9.1 (continued)

1. To prevent the control room ventilation system from cycling to the Recirculate mode while performing this procedure, remove the following relays in the Radiation Monitoring Cabinet A (Remove relay for channel under test only):
 - A. For channel # 46: remove relay K46B
 - B. For channel # 47: remove relay K47B
2. Verify the operability of the Outside Air Intake process monitor by injecting a simulated signal to activate the ALERT and HIGH alarms. Ensure that the alarms are activated at their respective designated setpoints and that audible and visual indications are received.
3. Check the operation of the FAIL function by disconnecting either the detector input signal or the high voltage cable. Ensure that the FAIL light goes out after a 1-3 minute time delay. (It is normally energized.) Reconnect removed cabling after completion of the check. Perform the check for each channel.

9.2 Special Materials or Equipment

1. Radiation Check Sources

NOTE

The radiation check sources used in this calibration shall be corrected for decay prior to utilization. This correction shall be noted on the calibration form.

2. Scaler with a 2 minute time base (MS-3 or equivalent).

NOTE

Enter the requested information on the appropriate data sheet whenever "RECORD" is noted in the procedure.

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9.0 DETAILED PROCEDURE: (continued)

9.3 Calibration of the Gaseous Detector:

1. Stop the 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 an audible and visual "flow fault" alarm.
2. Partially withdraw the ratemeter from its bin to allow access to the ratemeter internals.
3. Select CALIBRATE with the function switch. Record the setpoints of the ALERT and HIGH alarms so that they may be returned to these values after completion of the channel calibration. To preclude interference, set up the ALERT and HIGH alarm setpoints to their respective full scale readings.

/R1

NOTE

Alarm setpoints should be set as low as possible to achieve maximum detection sensitivity, after calibration steps have been completed, and monitor has been placed back in service. Recommended values are:

Alert = 2X Channel Recorder Background
High = 3X Channel Recorder Background

/R1

4. Select OPERATE. Connect a scaler to the particulate ratemeter. "Connect red terminal to R-16, black terminal ground to box".
5. Measure and record the general area background dose rate in the vicinity of the detectors. Note that one survey is sufficient for all sections of this calibration procedure.
6. Perform at least 4 background count rates. Record the scaler, ratemeter, and recorder readings on the calibration sheet.

/R1

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CALIBRATION OF THE CONTROL ROOM OUTSIDE AIR INTAKE MONITORS

9.0 DETAILED PROCEDURE: (continued)

9.3 (continued)

7. Disconnect the H.V. cable from the detector. Carefully remove the detector from its shield. (Cabling may be removed as necessary.)

NOTE

It is most important that the high voltage be secured by disconnecting the H.V. cable from the detector prior to removing it from its shield to prevent damaging the detector from light leaks in the beta window.

8. Request H.P. assistance to perform the following:

Center the radiation check source on the end window of the detector, ensuring that the active side of source is facing the detector. Ensure that no particles are present on the source that could damage the window. Tape the source in position. Record the serial no. and original activity of the source on the calibration data sheet.

/R1

9. Carefully reinsert the detector into its shield and replace cabling as necessary. Reconnect the H.V. cable AFTER connecting the signal cable, if the signal cable was removed.
10. Perform at least 4 measurements on the scaler. Compare these readings, minus the background of step 9.3.6, 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. The high voltage adjustment R-115 can be used to adjust the operating voltage. Discriminator adjustment R-3 will affect the readings on the lower end. If readings do not fall within the $\pm 10\%$ tolerance, adjust R-115 so that the high end readings fall with $\pm 10\%$ tolerance, then adjust R-3 so that the low end readings will fall within $\pm 10\%$ tolerance. Meter face reading can be adjusted by using R-1 (meter cal.). Recorder can be adjusted by using R-2 (Recorder Cal.). The scaler readings, meter face readings, and the recorder readings should all fall within a $\pm 10\%$ tolerance. If high voltage is adjusted more than 50 volts, or a new detector is installed, or if monitor cannot be adjusted to within $\pm 10\%$ tolerance go to step 9.4 New Calibration.

/R1

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9.0 DETAILED PROCEDURE: (continued)

9.3 (continued)

11. Record the following data on the calibration sheet:

 Ratemeter reading
 Recorder reading
 Scaler readings (several 2 minute runs plus average)
 Original calibration data showing decay correction of source

12. Disconnect the H.V. cable from the detector. Request H.P. to carefully remove the detector and the radiation check source and attach a second source in its place.
- Record
- the serial no. and the original activity of this source. /R1

13. Carefully reinsert the detector into its shield and replace cabling as necessary. Reconnect the high voltage cable AFTER connecting the signal cable if the signal cable was removed. /R1

- 14.
- Record
- the following data on the calibration sheet:

 Ratemeter reading
 Recorder readings
 Scaler readings (several 2 minute runs plus average)
 Original calibration data showing decay correction of source

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

16. Replace the relay K46B or K47B for the channel under test.

Performed by: Ch #46



Ch #47



/R1

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CALIBRATION OF THE CONTROL ROOM OUTSIDE AIR INTAKE MONITORS

9.0 DETAILED PROCEDURE: (continued)

9.3 (continued)

17. Select calibrate. Reset the ALERT and HIGH alarm setpoints to the recommended values:

ALERT = 2X the channel recorder background

HIGH = 3X the channel recorder background

Request Operations to remove the Unit 1 and 2 control rooms' HVAC from recirculation. /R1

18. Verify the operability of the Outside Air Intake process monitor by injecting a simulated signal to activate the ALERT and HIGH alarms and control functions. Ensure that the alarms are activated at their respective setpoints and the audible and visual indications are received and the control room HVAC is in recirculation. /R1

19. Disconnect the scaler from the ratemeter. Remove any sources from the detector and replace the detector in its shield. /R1

20. Select OPEFATE. Notate the period of the calibration on the recorder paper.

9.4 New Calibration

1. Turn the drawer being calibrated off. Disconnect the H.V. cable from the detector and carefully install a check source. Place detector back in place and reconnect H.V. cable.
2. Run a H.V. plateau in 50 volt increments and plot the results on semi-log graph paper, cpm vs. voltage. Find the operating voltage (approximately $1/3 - 1/2$ of the plateau) and set H.V. at this setting. /R1
3. Turn the drawer being calibrated off. Disconnect H.V. cable from detector and carefully remove check source. Place detector back in place and reconnect H.V. cable.

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9.0 DETAILED PROCEDURE: (continued)

9.4 - (continued)

4. Isotopic correlation is obtained by introducing a representative gaseous solution into the detector sampler. The gas may be added externally by utilizing a roto-flex pump or similar system to provide a recirculation path via the sampler inlet and outlet valves and necessary tygon tubing. Ensure that the sampler is isolated upstream and down stream of the inlet and outlet valves. With the gaseous solution circulating through the sample, obtain several scaler readings to determine the counts per minute.
5. Collect a sample of the gaseous solution in a collection chamber (Marinelli) and count it on a gamma analyzer (e.g. HPGE) to determine uci/cc. /R1
6. Plot ccpm (cpm-BKG) vs uci/cc for the channel being calibrated. Repeat steps 9.4.4 and 9.4.5 so that at least 4 points can be determined on the graph. Plot results on Log-Log graph paper. Return to Step 9.3.6 and complete Steps 9.3.6 through 9.3.20. Correlation of original calibration data in Step 9.3.10 is not necessary since data generated in Section 9.4.4 "New Calibration" becomes the new data from which future calibrations will be obtained. /R1

9.5 Channel Restoration /R1

1. Once testing of a channel is completed, notify ANPS and proceed to the next channel. /R1
2. Notify Operations, testing of outside air intake monitor is completed. /R1

ST. LUCIE UNIT 1
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CALIBRATION OF THE CONTROL ROOM OUTSIDE AIR INTAKE MONITORS

CALIBRATION RECORD

Procedure Title and Number	Calibration of the Control Room Outside Air Intake Monitors
Frequency	Refueling
Maximum time between calibrations	18 months
Equipment I.D. number	Channels 46 & 47
Date of last calibration	7-24-92 ⁹² 5-24-92 - 5-24-93
Date of this calibration	5-6-93
File Number	

Special Instructions: NONE

Calibration Data:

Section
Number:

- 9.1 The requirements of the Channel Functional Test for the Outside Air Intake Monitor have been satisfied.

Verified by RJB Date 5/6/93

CHANNEL # 46

/R1

- 9.3.3 Alarm setpoints:

As Found:

/R1

Alert 200 cpm
High 300 cpm

- 9.3.5 General area background <1 Mr/hr

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Section
Number:

9.3.6 Background count rate:

Scaler	<u>23</u> cpm	Average	<u>18.4</u> cpm
	<u>23</u> cpm	Ratemeter	<u>30.</u> cpm
	<u>14</u> cpm	Channel Recorder	<u>30</u> cpm
	<u>18</u> cpm		
	<u>14</u> cpm		

9.3.8 Radiation check source:

Type Tc⁹⁹
Serial No. HP-11
Original Activity 12,939 dpm Date / /

9.3.11	Ratemeter	<u>4000</u> cpm	ccpm (Average cpm-background)
	Recorder	<u>4200</u> cpm	= <u>3991.6</u>
	Scaler	<u>3998</u> cpm	
		<u>3989</u> cpm	
		<u>4008</u> cpm	
		<u>4051</u> cpm	
		<u>4008</u> cpm	
	Average	<u>4010</u> cpm	

Original calibration data showing decay correction for Tc⁹⁹ source, serial no. HP-11 (type)

9.3.12 Radiation check source

Type Tc⁹⁹
Serial No. HP-74
Original Activity 18,200 dpm

/R1

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Section
Number:

9.3.14 Ratemeter 5500 cpm ccpm (Average cpm-background)
 Recorder 5500 cpm = 5557.2
 Scaler 5673 cpm
 5617 cpm
 5633 cpm
 5535 cpm
 5573 cpm
 Average 5575.6 cpm

Original calibration data showing decay correction for Tc⁹⁹ source, serial
 no. HP-74 (type)

9.3.19 As Left:

Alert 200 cpm
 High 300 cpm

CHANNEL # 47

9.3.3 Alarm Setpoints:

As Found:

Alert 200 cpm
 High 300 cpm

9.3.6 Background count rate:

Scaler	<u>23</u>	cpm	Average	<u>25</u>	cpm
	<u>22</u>	cpm	Ratemeter	<u>40</u>	cpm
	<u>25</u>	cpm	Channel Recorder	<u>40</u>	cpm
	<u>22</u>	cpm			
	<u>31</u>	cpm			

9.3.8 Radiation check source:

Type Tc⁹⁹
 Serial No. HP-11
 Original Activity 12,939 dpm

ST. LUCIE UNIT 1
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CALIBRATION OF THE CONTROL ROOM OUTSIDE AIR INTAKE MONITORS

Section
Number:

9.3.11 Ratemeter 5500 cpm ccpm (Average cpm-background)
 Recorder 5500 cpm = 4442
 Scaler 4443 cpm
 4548 cpm
 4496 cpm
 4407 cpm
 4429 cpm
 Average 4467 cpm

Original calibration data showing decay correction for Tc⁹⁹ source, serial
no. HP-11 (type)

9.3.12 Radiation Check Source:

Type Tc⁹⁹
 Serial Number HP-74
 Original Activity 18,200 dpm

9.3.14 Ratemeter 7000 cpm ccpm (Average cpm-background)
 Recorder 7000 cpm = 6362
 Scaler 6358 cpm
 6471 cpm
 6365 cpm
 6406 cpm
 6335 cpm
 Average 6387 cpm

Original calibration data showing decay correction for Tc⁹⁹ source, serial
no. HP-74 (type)

9.3.19 As Left:

Alert 200 cpm
 High 300 cpm

MEMORANDUM

TO: Frank Gusmano

DATE: 5-MAY-93

FROM: Linda E. Pugh

SUBJECT: Control Room Outside Air Intake Monitor Set-Points for Channels 46 and 47

Per the baseline calibration performed on PWD 91033376 01, the following values are to be used:

Channel	HP SOURCE NO.	CCPM	ACCEPTANCE RANGE
A -46	HP-11	3965	3569 - 4362
A -46	HP-74	5653	5088 - 6218
B -47	HP-11	4815	4334 - 5297
B -47	HP-74	6919	6227 - 7611

No decay corrections are required, since Tc-99 has a very long half-life (2.13E5 years).

If you have any questions, please do not hesitate to call.

Performed by: C.H. DeVilling C.H. DeVilling

Approved by: L.E. Pugh L.E. Pugh

Approved by: H.M. Mercer H.M. Mercer

COPY

Component: RM-26-13 Sys: 26 Train:
 Associate: Assign Priority: A1
 Name: RADIATION MONITOR (P.I.G.) FOR Work Type: 5
 PLANT T. ENT STACK (SA)
 Location: RA3/63/S-RA2/W-RAF LMD: 2

Fac: PSL Unit: 02
 CLOSED
 WORK ORDER TASK
 95023334 01

Defect/Request: RM-26-13: LOSS OF COUNTS

ER/PWO: 64 / 5159
 Chg Loc: 910
 PAGE 1 of 4

Detailed Explanation:

Work Request: 95013635 Def Tag: Loc: More:
 Trbl/Brkdown: Y LCO: N Unit Cond Req: 8
 NPRDS: N Fail Date: Time: Det: Stat: Symp:
 Originator: RXKOUXM KUYKENDALL R Date: 08/25/95 Dept: IC
 Approve By: JDT00QZ TOTTON J D Date: 08/25/95

Task Determination Data:

IST Required : N	NCR/CR : N/A	Safety Class: SR
PMT Required : Y	PCM : N/A	Q Group : 1E
10 CFR 50.49 : N	EQ Doc Pkg : N/A	Assign To : AD 1
Reg Guide 1.97 : N	Seismic Cat : I	Est M/H : 16.00
ASME XI(ISI) Req'd : N	Scaffold Req : N	Crew Qty : 2
Security Clearance: N	Fire Prot Req: N.	Insul Rem : N
Clearance Required: N	Clearance No :	
RWP Required: Y RWP No: 5	RCA M/H: L1: 12.0 L2:	L3:

QC Requirements: QC Required : Y
 QL-A

More:

Work Order Task Description:

SEE PAGE 2 FOR TASK DESCRIPTION.

More: Y

Planned By : PJCOP10 COSSENTINO P J Date: 09/21/95
 Pkg Appr By : PJCOP10 COSSENTINO P J Date: 09/21/95 Time: 08:02
 QC Approval : DSM00FK MELODY D S Date: 09/21/95

***** OPERATIONS APPROVAL TO START *****
 *
 * NPS Start Permission: TOTTON J LCO(Y/N): *
 * Start Date/Time : 08/25/95 / 13:29 *
 *

NPS Completion Notif: TOTTON J Major Failure: *
 Compl. Date/Time: 10/25/95 / 14:43 Major Action : *
 Deficiency Tag Removed (Y/N): _____

GG11

Component: RM-26-13 Sys: 26 Train:
Associate: Assign Priority: A1
Name: RADIATION MONITOR (P.I.G.) FOR Work Type: 5
PLANT VENT STACK (SA)
Location: RAB/63/S-RA2/W-RAF LMD: 2
Defect/Request: RM-26-13: LOSS OF COUNTS

Fac: PSL Unit: 02
CLOSED
WORK ORDER TASK
95023334 01
ER/PWO: 64 / 5159
Chg loc: 910
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Continuation of Task Description:

- =====
1. VERIFY THAT YOU ARE WORKING ON THE CORRECT UNIT -----
AND COMPONENT(S): SIGNATURE/DATE
=====
2. COORDINATE ALL WORK WITH OPS, CHEMISTRY, AND H.P.
3. INVESTIGATE REPORTED PROBLEM WITH RM-26-13 LOSS OF COUNTS.
USE AP 0010124, LIFTED LEADS, AND/OR AP 0010142, SENSITIVE SYSTEMS
AS REQUIRED WHEN LIFTING LEADS, USING JUMPERS OR PULLING FUSES.
4. MAKE MINOR REPAIRS/ADJUSTMENTS AS REQUIRED AND DOCUMENT THEM IN THE
JOURNEYMAN'S WORK REPORT.
5. REMOVE WATER IN MONITOR AS REQUIRED TO RESTORE PROPER OPERATION.
6. IF OTHER REPAIRS ARE REQUIRED, INITIATE A SCOPE CHANGE TO THIS PWO.
7. IF NECESSARY, PERFORM FUNCTIONAL TESTS OF THE RM-80 POWER SUPPLIES
USING IC 2-1220057.
8. IF NECESSARY, PERFORM FUNCTIONAL TESTS USING IC 2-1220055.
9. ASSIST CHEMISTRY WITH CALIBRATIONS IF NECESSARY.
10. ENSURE SEISMIC EQUIPMENT IS REMOUNTED PROPERLY IF MOVED.
11. PERFORM POST MAINTENANCE TESTING PER QI 11-4, APPENDIX D.
- .
- .

SYSTEM SUPERVISOR: ANDY DELGADO

Component: RM-26-13 Sys: 26 Train:
Associate: Assign Priority: A1
Name: RADIATION MONITOR (P.I.G.) FOR Work Type: 5
PLANT VENT STACK (SA)
Location: RAB/63/S-RA2/W-RAF LMD: 2
Defect/Request: RM-26-13: LOSS OF COUNTS

Fac: PSL Unit: 02
CLOSED
WORK ORDER TASK
95023334 01
ER/PWO: 64 / 5159
Chg loc: 910
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JOURNEYMANS WORK REPORT

Actual Start Date:	Time:	Actual Completion Date:	Time:
08/25/95	13:00	10/25/95	16:00

Note: Journeyman shall sign and date text after their entries.

Trouble Found/Work Performed:

OBTAINED PERMISSION FROM OPS. INITIATED SCOPE CHANGE. SHUT UNIT DOWN. REMOVED WATER AND STARTED WORK ON OTHER UNIT, RM-26-14.
8-26-95 L. ASTROM

RETURNED RM-26-13 BACK TO SERVICE FOR 1/2 HOUR TO ENABLE CHEMISTRY TO PERFORM THEIR WEEKLY FUNCTIONAL. 8-29-95 L. ASTROM

REMOVED INTERNALS, I.E. ELECTRONICS AND LOAD FROM RM-26-13.
9-1-95 L. ASTROM

DISCONNECTED RM-26-13 FROM SKID AND BROUGHT TO I/C COVERED WORK AREA TO CLEAN, SANDBLAST AND PAINT. 9-6-95 L. ASTROM

ALL CAPACITORS WERE TESTED AS PER ENG PACKAGE. ALL TEST RESULTS WERE NOTED ON INDIVIDUAL SHEETS WHICH WILL BE ATTACHED TO THIS PWO. THE REMAINING CAPACITORS WILL BE MRMD TO STORES WITH THEIR RESPECTIVE DATA SHEETS. ALL TEST RESULTS WERE SAT. 9-7-95 J. SORRENTINO

REBUILT THE J-BOX ASSEMBLY FOR RIM-26-13. CLEANED, PAINTED, RELASHED BOX, AND INSTALLED NEW ELECTRONIC CIRCUIT (RESISTOR AND TWO CAPACITORS) AS PER DWG # 0281-0690. 9-7-95 J. SORRENTINO

INSTALLED BOX IN SKID. REINSTALLED INTERNALS. 9-8-95 L. ASTROM

RECEIVED H.V.P.S. S/N 2374 AND INSTALLED IT IN RM-26-13. AFTER ENERGIZING IT THE POWER SUPPLY COULD NOT BE ADJUSTED FOR THE CORRECT VOLTAGE (ONLY READ 488 VOLTS DC). REMOVED IT AND REPLACED IT WITH TEMPORARY P.S. P.S. MRMD TO STORES. 9-19-95 J. SORRENTINO

OBTAINED NEW H.V. POWER SUPPLY FROM STORES AND INSTALLED ON

Continued on Additional Sheets: Y
Suggestions For Future Planning/Variance Reason:

Supv/Foreman/Chief	Date	Supervisor	Date	QC Inspector	Date
	/ /	F GUSMANO	10/29/95		/ /

Component: RM-26-13 Sys: 26 Train:
Associate: Assign Priority: A1
Name: RADIATION MONITOR (P.I.G.) FOR Work Type: 5
PLANT VENT STACK (SA)
Location: RAB/63/S-RA2/W-RAF LMD: 2
Defect/Request: RM-26-13: LOSS OF COUNTS

Fac: PSL Unit: 02
CLOSED
WORK ORDER TASK
95023334 01
ER/PWO: 64 / 5159
Chg loc: 910
PAGE 4 of 4

Continuation of Trouble Found/Work Performed:

PARTICULATE CHANNEL WITH SAT RESULTS. STILL AWAITING COAX CONN ON
CABLE TO RETURN THIS UNIT/CHANNEL (PARTICULATE) TO SERVICE.
9-28-95 L. ASTROM

REPLACED CONNECTOR FOR PARTICULATE CHANNEL AND TURNED IT OVER TO
OPS DEPT. 10-25-95 J. SORRENTINO

SCOPE CHANGE #1: SHUT DOWN RM-26-13. ENSURE IT IS IN O.O.S. LOG.
(2) REMOVE WATER FROM PARTICULATE BOX. (3) REMOVE ELECTRONICS, LEAD
DETECTOR HOUSING AND REMAINDER OF PARTICULATE BOX INTERNALS. (4)
REMOVE PARTICULATE BOX, SANDBLAS, REPAIR RUST HOLES, ETC., AND PAINT.
(5) REPLACE PARTICULATE BOX. (5) REPLACE/REPAIR ELECTRONICS, LEAD
DETECTOR HOUSING AND REMAINDER OF PARTICULATE BOX INTERNALS. (7)
PERFORM APPLICABLE PMT.

Continued on Additional Sheets: N

Component: RM-26-13 Sys: 26 Train:
Associate: Assign Priority: A1
Name: RADIATION MONITOR (P.I.G.) FOR Work Type: 5
 PLANT VENT STACK (SA)
Location: RAB/63/S-RA2/W-RAF LMD: 2

Defect/Request: RM-26-13: LOSS OF COUNTS

Fac: PSL Unit: 02
 CLOSED
 WORK ORDER TASK

 95023334 01

 ER/PWO: 64 / 5159
 Chg Loc: 910
 PAGE 1

CONTINGENCY PARTS

Qty	UI	M-S NBR	Stock Code	Unit Cost	On Hand	Cmtd	Avail	Actual
1	EA		0085147 1	2647.0000	1		1	1
DESC: POWER SUPPLY, HIGH VOLTAGE, 500-1250 VDC.								
1	EA		0197236 1		2		2	1
DESC: CONNECTOR, PL, COAX, STR, BNC								

COPY

Component: RM-26-13 Sys: 26 Train:
Associate: Assign Priority: A1
Name: RADIATION MONITOR (P.I.G.) FOR Work Type: 5
PLANT VENT STACK (SA)
Location: RAB/63/S-RA2/W-RAF LMD: 2
Defect/Request: WATER INTRUSSION IN PART.SAMPLE ENC
LOSU

Pac: PSL Unit: 02
CLOSED
WORK ORDER TASK
95018668 01
ER/PWO: 64 / 4883
Chg Loc: 910
PAGE 1 of 3

Detailed Explanation:

REMOVE WATER

Work Request: 95011049 Def Tag: 74806 Loc: ON SKID More:
Trbl/Bkdown: Y LCO: N Unit Cond Req: 8
NPRDS: N Fail Date: Time: Det: Stat: Symp:
Originator: FPG0QXG GUSMANO F P Date: 06/30/95 Dept: IC
Approve By: DDE0JER EMLING D D Date: 06/30/95

Task Determination Data:

IST Required	: N	NCR/CR	: N/A	Safety Class:	SR
PMT Required	: Y	PCM	: N/A	Q Group	: 1E
10 CFR 50.49	: N	EQ Doc Pkg	: N/A	Assign To	: AD 1
Reg Guide 1.97	: N	Seismic Cat	: I	Est M/H	: 16.00
ASME XI (ISI) Req'd	: N	Scaffold Req	: N	Crew Qty	: 2
Security Clearance:	N	Fire Prot Req	: N	Insul Rem	: N
Clearance Required:	N	Clearance No	:		
RWP Required: Y		RWP No: 5		RCA M/H: L1: 12.0	L2: L3:

QC Requirements: QC Required : Y
QL-A

More:

Work Order Task Description:

SEE PAGE 2 FOR TASK DESCRIPTION.

More: Y

Planned By : MEWOCIT WILLIS M E Date: 06/30/95
Pkg Appr By : MEWOCIT WILLIS M E Date: 06/30/95 Time: 13:40
QC Approval : JADUGV DYER J A Date: 06/30/95

***** OPERATIONS APPROVAL TO START *****
*
* NPS Start Permission: LCO(Y/N):
* Start Date/Time: / / :
*

NPS Completion Notif: Major Failure: ****
Compl. Date/Time: / / : Major Action : **
Deficiency Tag Removed (Y/N):

66/2

Component: RM-26-13 Sys: 26 Train:
Associate: Assign Priority: A1
Name: RADIATION MONITOR (P.I.G.) FOR Work Type: 5
PLANT VENT STACK (SA)
Location: RAB/63/S-RA2/W-RAF LMD: 2
Defect/Request: WATER INTRUSSION IN PART.SAMPLE ENC
LOSU

Fac: PSL Unit: 02
CLOSED
WORK ORDER TASK
95018668 01
ER/PWO: 64 / 4883
Chg loc: 910
PAGE 2 of 3

Continuation of Task Description:

- =====
1. VERIFY THAT YOU ARE WORKING ON THE CORRECT UNIT -----
AND COMPONENT(S): SIGNATURE/DATE
=====
2. COORDINATE ALL WORK WITH OPS, CHEMISTRY, AND H.P.
3. INVESTIGATE REPORTED PROBLEM WITH RM-26-13 WATER INTRUSION.
USE AP 0010124, LIFTED LEADS, AND/OR AP 0010142, SENSITIVE SYSTEMS
AS REQUIRED WHEN LIFTING LEADS, USING JUMPERS OR PULLING FUSES.
4. MAKE MINOR REPAIRS/ADJUSTMENTS AS REQUIRED AND DOCUMENT THEM IN THE
JOURNEYMAN'S WORK REPORT.
5. REMOVE WATER IN MONITOR AS REQUIRED TO RESTORE PROPER OPERATION.
6. IF OTHER REPAIRS ARE REQUIRED, INITIATE A SCOPE CHANGE TO THIS PWO.
7. IF NECESSARY, PERFORM FUNCTIONAL TESTS OF THE RM-80 POWER SUPPLIES
USING IC 2-1220057.
8. IF NECESSARY, PERFORM FUNCTIONAL TESTS USING IC 2-1220055.
9. ASSIST CHEMISTRY WITH CALIBRATIONS IF NECESSARY.
10. ENSURE SEISMIC EQUIPMENT IS REMOUNTED PROPERLY IF MOVED.
11. PERFORM POST MAINTENANCE TESTING PER QI 11-4, APPENDIX D.

SYSTEM SUPERVISOR: ANDY DELGADO

Component: RM-26-13 Sys: 26 Train:
Associate: Assign Priority: A1
Name: RADIATION MONITOR (P.I.G.) FOR Work Type: 5
PLANT VENT STACK (SA)
Location: RAB/63/S-RA2/W-RAF LMD: 2
Defect/Request: WATER INTRUSSION IN PART.SAMPLE ENC
LOSU

Fac: PSL Unit: 02
CLOSED
WORK ORDER TASK
95018668 01
ER/PWO: 64 / 4883
Chg loc: 910
PAGE 3 of 3

JOURNEYMANS WORK REPORT

Actual Start Date:	Time:	Actual Completion Date:	Time:
06/30/95	:	07/11/95	:

Note: Journeyman shall sign and date text after their entries.

Trouble Found/Work Performed:

06/30/95 ASRTOM

REMOVED WATER FROM PARTICULATE DRTHCRON BOX AND RESTORED RM-26-13 TO N
ORMAL.

07/11/95 KUYKENDALL

RM-26-13 PARTICULATE CHANNEL WORKING SAT FOR SEVERAL DAYS. A STAR WILL
BE WRITTEN TO ADDRESS THE WATER INTRUSION PROBLEM.

Continued on Additional Sheets:

Suggestions For Future Planning/Variance Reason:

Supv/Foreman/Chief	Date	Supervisor	Date	QC Inspector	Date
	/ /		/ /		/ /

COPY

Component: RM-26-13 Sys: 26 Train:
Associate: Assign Priority: A3
Name: RADIATION MONITOR (P.I.G.) FOR Work Type: 1
PLANT VENT STACK (SA)
Location: RAB/63/S-RA2/W-RAF LMD: 2
Defect/Request: RESPONSE TO STAR # 951390A

Fac: PSL Unit: 02
CLOSED
WORK ORDER TASK
96007367 01
ER/PWO: 64 / 6490
Chg Loc: 910
PAGE 1 of 3

Detailed Explanation:
PERFORM LOSS OF POWER TEST PER ATTACHMENT 1, PAGE 4 OF STAR

Work Request: 96005111 Def Tag: Loc: More:
Trbl/Brkdown: N LCO: N Unit Cond Req: 8
NPRDS: N Fail Date: Time: Det: Stat: Symp:
Originator: RJB0QRF BECKER R J Date: 03/19/96 Dept: IC
Approve By: GEB0M06 BOUSMAN G E Date: 03/19/96

Task Determination Data:
IST Required : N NCR/CR : NA Safety Class: SR
PMT Required : Y PCM : NA Q Group : 1E
10 CFR 50.49 : N EQ Doc Pkg : N/A Assign To : PG 1
Reg Guide 1.97 : N Seismic Cat : I Est M/H : 8.00
ASME XI (ISI) Req'd : N Scaffold Req : N Crew Qty : 2
Security Clearance: N Fire Prot Req: N Insul Rem : N
Clearance Required: Clearance No :
RWP Required: Y RWP No: RCA M/H: L1: L2: L3:

QC Requirements: QC Required : Y
QL-A

More:

Work Order Task Description:

SEE PAGE 2 FOR TASK DESCRIPTION.

More: Y

Planned By : WAPOQQF PAULSEN W A Date: 03/21/96
Pkg Appr By : WAPOQQF PAULSEN W A Date: 03/21/96 Time: 07:36
QC Approval : DAGOAKC GINGRAS D A Date: 03/21/96

***** OPERATIONS APPROVAL TO START *****
* NPS Start Permission: DIAZ C LCO(Y/N): *
* Start Date/Time : 04/09/96 / 08:10 *

NPS Completion Notif: TOTTON J Major Failure: *
Compl. Date/Time: 04/11/96 / 11:10 Major Action : *
Deficiency Tag Removed (Y/N):

664

Component: RM-26-13 Sys: 26 Train:
Associate: Assign Priority: A3
Name: RADIATION MONITOR (P.I.G.) FOR Work Type: 1
 PLANT VENT STACK (SA)
Location: RAB/63/S-RA2/W-RAF LMD: 2

Defect/Request: RESPONSE TO STAR # 951390A

Fac: PSL Unit: 02
 CLOSED
 WORK ORDER TASK

96007367 01

ER/PWO: 64 / 6490
Chg loc: 910
PAGE 2 of 3

Continuation of Task Description:

- =====
1. VERIFY THAT YOU ARE WORKING ON THE CORRECT UNIT
 AND COMPONENT(S):
- =====

SIGNATURE/DATE

2. COORDINATE ALL WORK WITH OPS, CHEMISTRY, AND H.P.
 USE AP 0010124, LIFTED LEADS, AND/OR AP 0010142, SENSITIVE SYSTEMS
 AS REQUIRED WHEN LIFTING LEADS, USING JUMPERS OR PULLING FUSES.

3. PERFORM BATTERY LOAD TEST FOR RM-26-13 , FORWARD RESULTS TO
 NUCLEAR ENGINEERING FOR EVALUATION.

VERIFIED BY: DATE:

4. PERFORM POWER DOWN TEST IN ACCORDANCE WITH ATTACHED PAGE 4 OF 11
VERIFIED BY: DATE:

5. RECORD EXISTING FIRMWARE VERSIONS AND REVISIONS LEVELS FOR ALL
 RADIATION MONITORS IN THE PC-11 LOOP (SEE ATTACHED LIST). DOCUMENT ALL
 TEST RESULTS AND FORWARD DATA TO NUCLEAR ENGINEERING FOR EVALUATION.
VERIFIED BY: DATE:

SYS. SUPR. F. GUSMANO

Component: RM-26-13 Sys: 26 Train:
Associate: Assign Priority: A3
Name: RADIATION MONITOR (P.I.G.) FOR Work Type: 1
PLANT VENT STACK (SA)
Location: RAB/63/S-RA2/W-RAF LMD: 2
Defect/Request: RESPONSE TO STAR # 951390A

Fac: PSL Unit: 02
CLOSED
WORK ORDER TASK
96007367 01
ER/PWO: 64 / 6490
Chg loc: 910
PAGE 3 of 3

JOURNEYMANS WORK REPORT

Actual Start Date:	Time:	Actual Completion Date:	Time:
04/09/96	08:00	04/11/96	15:00

Note: Journeyman shall sign and date text after their entries.

Trouble Found/Work Performed:

BATTERY VOLTAGE - 4.56 VDC. WE WERE UNABLE TO COMPLETE THIS TASK DUE TO PLANT CONDITIONS AS PER ANPS. TO RESUME AT A LATER DATE.
4-9-96 J. SORRENTINO

POWER WAS REMOVED AS PER INSTRUCTIONS ON STAR 951390A. NO PROBLEMS WERE OBSERVED WHEN POWER WAS RESTORED. LEFT SAT (VERSION 26 - REV 8) SOFTWARE/FIRMWARE. 4-11-96 J. SORRENTINO

Continued on Additional Sheets:

Suggestions For Future Planning/Variance Reason:

Supv/Foreman/Chief	Date	Supervisor	Date	QC Inspector	Date
	/ /	F GUSMANO	08/05/96		/ /

Component:

Associate:

Name: O.A.I. INTAKE MONITORS CH. 46 & Work Type: 7

Location: CONTROL ROOM

Defect/Request: PM1C 2603 O.A.I. CH. 46/47 IC 1-122

Sys: 26 Train:

Assign Priority: C4

LMD: 2

PSL #

Fac: PSL Unit: 0

MASTER
WORK ORDER TASK

94021219 01

ER/PWO: 63 / 232

Chg Loc: 515

PAGE 1 of

Detailed Explanation:

PM ID:

DUE BY DT: 10/15/94 EARLY DT: 06/02/94 LATE DT: 02/27/95

Work Request:

Trbl/Brkdown:

NPRDS: N Fail Date:

Originator:

Approve By:

Def Tag:

LCO:

Time:

Loc:

Det:

Date:

Date:

Unit Cond Req:

Stat:

Symp:

Dept:

More:

NPRD

TKM

Task Determination Data:

IST Required : N

PMT Required : N

RWP Required : N

10 CFR 50.49 : N

Reg Guide 1.97 : N

ASME XI (ISI) Regd : N

Security Clearance: N

Clearance Required: N

NCR/CR

PCM

RWP No

EQ Doc Pkg

Seismic Cat

Scaffold Req

Fire Prot Req

Clearance No

NA

NA

NA

NA

NA

NA

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NA

NA

Safety Class: N/A

Q Group : C

Assign To

Est M/H : 60.00

Crew Qty : 2

Insul Rem : N

QC Requirements:

QL-A / TS-10.4

QC Required : Y

Work Order Task Description:

** COMPLY WITH SENSITIVE SYSTEMS PROC AP 0010142 AS APPLICABLE.

** PERFORM CALIBRATION OF CONTROL ROOM OUTSIDE AIR INTAKE (O.A.I.)
PER IC 1-1220053.

GUSMANO

More:

More:

Planned By : GEBOM06 BOUSMAN

Pkg Appr By : GEBOM06 ROUSMAN

QC Approval : DAGOAKC GINGRAS

G Date: 08/25/94

G Date: 08/25/94 Time: 09:54

D A Date: 08/25/94

OPERATIONS APPROVAL TO START

NPS Start Permission:

Start Date/Time : 8-25-94

LCO (Y/N):

NPS Completion Notif:

Compl. Dat./Time:

Deficiency Tag Removed (Y/N):

Major Failure:

Major Action:

KK/13

A

Component:
Associate:
Name: O.A.I. INTAKE MONITORS CH. 46 & Work Type: 7
47
Location: CONTROL ROOM
Defect/Request: PM1C 2603 O. .I. CH. 46/47 IC 1-122
0053

Sys: 26 Train:
Assign Priority: C4
LMD: 2

Fac: EST Unit:
MASTER
WORK ORDER TASI
94021219 01
ER/PWO: 63 / 23
Chg loc. 015
PAGE 2 of

JOURNEYMANS WORK REPORT

Actual Start Date: 4/4/95	Time: 0700	Actual Completion Date: 4/11/95	Time: 1530
------------------------------	---------------	------------------------------------	---------------

Note: Journeyman shall sign and date text after their entries.

Trouble Found:
This Section is NOT Applicable for PMs or other planned jobs

_____ PM _____ TEST EQUIP
_____ PSL-878
_____ PSL-593
_____ PSL
_____ PSL
_____ PSL

Work Performed:
Performed OAI Cal. IAW IC1-1220053 on Channels
46 and 47. Robert J. Beck
4/11/95

Suggestions For Future Planning/Variance Reason: Continued on Additional Sheets: Y (N)

Supv/Foreman/Chief	Date	Supervisor	Date	QC Inspector	Date
		J. J. W. -	6-7-95	QC ROUTED	

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE UNIT
I&C PROCEDURE NO. 1-1220053
REVISION 2



1.0 TITLE:

CALIBRATION OF THE CONTROL ROOM OUTSIDE AIR INTAKE MONITORS

2.0 REVIEW AND APPROVAL:

Reviewed by Facility Review Group _____ 6/23 1989

Approved by G. J. Boissy Plant General Manager _____ 7/13 1989

Revision 2 Reviewed by FRG _____ 9/15 1994

Approved by C. L. Burton Plant General Manager _____ 9/15 1994

3.0 PURPOSE:

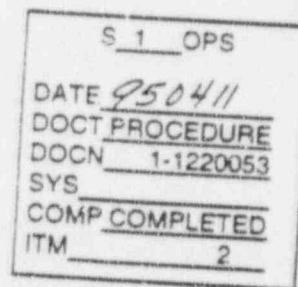
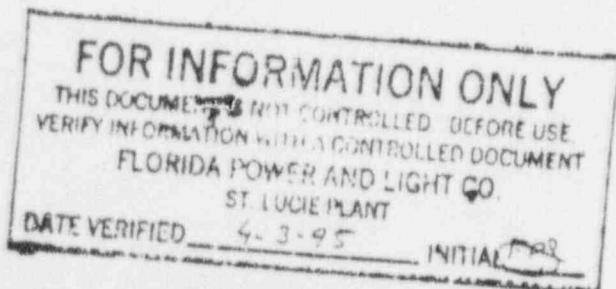
To provide instructions for the calibration of the Control Room Outside Air Intake Monitors.

4.0 PRECAUTIONS AND LIMITS:

4.1 Follow applicable Health Physics precautions when handling radioactive materials.

4.2 Obtain a dose rate meter to measure the general background dose rate in the vicinity of the detectors.

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



ST. LUCIE UNIT 1
 I&C PROCEDURE NO. 1-1220053, REVISION 2
 CALIBRATION OF THE CONTROL ROOM OUTSIDE AIR INTAKE MONITORS

CALIBRATION RECORD

Procedure Title and Number	Calibration of the Control Room Outside Air Intake Monitors
Frequency	Refueling
Maximum time between calibrations	18 months
Equipment I.D. number	Channels 46 & 47
Date of last calibration	
Date of this calibration	4/11/95
File Number	

Special Instructions: _____

Calibration Data: _____

Section
 Number:

9.1 The requirements of the Channel Functional Test for the Outside Air Intake Monitor have been satisfied.

Verified by [Signature] Date 4/4/95

CHANNEL # 46

9.3.3 Alarm setpoints:

As Found:

Alert 200 cpmHigh 300 cpm

9.3.5 General area background 4 Mr/hr

ST. LUCIE UNIT 1
I&C PROCEDURE NO. 1-1220053, REVISION 2
CALIBRATION OF THE CONTROL ROOM OUTSIDE AIR INTAKE MONITORS

Section
Number:

9.3.6 Background count rate:

Scaler	<u>57</u> cpm	Average	<u>62.2</u> cpm
	<u>67</u> cpm	Ratemeter	<u>60</u> cpm
	<u>61</u> cpm	Channel Recorder	<u>60</u> cpm
	<u>63</u> cpm		
	<u>63</u> cpm		

9.3.8 Radiation check source:

Type Tc-99
Serial No. HP-74
Original Activity 18,200 DPM Date 11 / 3 / 83

9.3.11

Ratemeter	<u>5500</u> cpm	ccpm (Average cpm-background)
Recorder	<u>5500</u> cpm	
Scaler	<u>5677</u> cpm	= <u>5467.6</u>
	<u>5471</u> cpm	
	<u>5487</u> cpm	
	<u>5485</u> cpm	
	<u>5529</u> cpm	
Average	<u>5529.8</u> cpm	

Original calibration data showing decay correction for Tc-99 source, serial no. HP-74 (type)

9.3.12 Radiation check source

Type Tc-99
Serial No. HP-11
Original Activity 12,939 DPM DATE 4 / 29 / 75

ST. LUCIE UNIT 1
 I&C PROCEDURE NO. 1-1220053, REVISION 2
 CALIBRATION OF THE CONTROL ROOM OUTSIDE AIR INTAKE MONITORS

Section
 Number:

9.3.14 Ratemeter 3800 cpm
 Recorder 3800 cpm
 Scaler 3813 cpm
 3811 cpm
 3845 cpm
 3849 cpm
 3754 cpm
 Average 3814.4 cpm

ccpm (Average cpm-background)
 = 3752.2

Original calibration data showing decay correction for Tc-99 source, serial
 no. HP-11 (type)

9.3.19 As Left:

Alert 200 cpm
 High 300 cpm

CHANNEL # 47

9.3.3 Alarm Setpoints:

As Found:

Alert 250 cpm
 High 350 cpm

9.3.6 Background count rate:

Scaler 70 cpm
 62 cpm
 67 cpm
 69 cpm
 61 cpm

Average 65.8 cpm
 Ratemeter 65 cpm
 Channel Recorder 65 cpm

9.3.8 Radiation check source:

Type Tc-99
 Serial No. HP-11
 Original Activity 12,939 DPM

ST. LUCIE UNIT 1
 I&C PROCEDURE NO. 1-1220053, REVISION 2
 CALIBRATION OF THE CONTROL ROOM OUTSIDE AIR INTAKE MONITORS

Section
 Number:

9.3.11 Ratemeter 3900 cpm
 Recorder 3900 cpm
 Scaler 3957 cpm
 3953 cpm
 4013 cpm
 3972 cpm
 4018 cpm
 Average 3982 cpm

ccpm (Average cpm-background)
 = 3917

Original calibration data showing decay correction for Tc-99 source, serial
 no. HP-11 (type)

9.3.12 Radiation Check Source:

Type Tc-99
 Serial Number HP-74
 Original Activity 18,200 DPM

9.3.14 Ratemeter 5500 cpm
 Recorder 5500 cpm
 Scaler 5590 cpm
 5493 cpm
 5545 cpm
 5695 cpm
 5532 cpm
 Average 5571 cpm

ccpm (Average cpm-background)
 = 5506

Original calibration data showing decay correction for Tc-99 source, serial
 no. HP-74 (type)

9.3.19 As Left:

Alert 250 cpm
 High 350 cpm

REVISION NO.: 1
PROCEDURE NO.: HPP-22
PROCEDURE TITLE: AIR SAMPLING
HEALTH PHYSICS PROCEDURE
ST. LUCIE PLANT
PAGE: 23 of

AIR SAMPLE DATA SHEET

Date: 4/11/95 Time: 1041 Sample No.: 951-1047
Location (Elev. 2.2' ft.): _____ RWP No.: 95-12
Work Description: CONTROL ROOM AIR INTAKE AIRPUMP GAS SAMPLE
Time On: _____ Time Off: _____ Total Time (min.): _____
Initial Flow: _____ Final Flow: _____ Average Flow: _____ cfm/lpm
Avg. Flow: _____ (cfm) X Tot. Min. _____ X 2.83E4 ml/l = Vol. _____ ml
(lpm) X Tot. Min. _____ X 1000 ml = Vol. _____ ml
(1 cubic foot = 2.83E4 ml) (Standard Volume = 40 ft.³ = 1.132E6 ml)
Sampler Type: JIMPLELLI Ser. No. _____ Cal. Due: _____
Respiratory Protection in Use? Yes _____ No _____ Type? _____
Particulate Act (uCi/ml) = net CPM X 4.5E-07 (uCi/dpm) PF = _____
Sample Vol (ml) X Counter Eff (decimal) X 0.64

(1 DAC LONG LIVED ALPHA = 3.0E-12 uCi/ml)

(1 DAC GROSS BETA = 3.0E-09 uCi/ml)

Beta skin exposure is to be calculated.

NOTE

Nuclide Type	Volume (ml)*	Tot. Activ. (uCi/ml)	Total DAC	Tot. Beta Skin Exp (mRem/hr)
Partic.	N.T.			
Iodine	N.T.			
Noble Gas	N.T.			

Counted on: ☒ MCA _____ Gas Prop. _____ GM (1 DAC unknown Beta/Gamma = 3.0E-9 uCi/ml)
Scaler Used: _____ Ser. No.: _____ Total cpm: _____ Bkg.: _____ Net cpm: _____
Effic.: _____ Cal. Due Date: _____

ALPHA	Date	Time	EH	Total cpm	Bkgd cpm	CCPM	Activity (uCi/ml)	DAC
Init.								
6 hr.								
24 hr.								
120 hr.								

²⁴¹Pu Conc. = _____ Long Lived Alpha Conc. X 5. ²⁴¹Pu DAC = ²⁴¹Pu Conc. / 3.0E-10 uCi/ml

ALPHA counted on: _____ Gas Prop. _____ ZnS
Ser. No.: _____ Cal. Due Date: _____ Scaler Used: _____
* Standard Volumes
Partic and/or Iodine = 1.132E6 ml
Remarks: _____ Noble Gas = 4600 ml

FOR INFORMATION ONLY

This document is not controlled. Before use, verify information with a controlled document.

DATE VERIFIED 6-95 INITIAL DB

SOPS
DATE 950411
DOCT HPP-22-1
DOCN 951-1047
SYS HP

Sampled by: D. Walling
Logged by: P. Proctor
Counted by: C. Proctor
Reviewed by: _____

REVISION NO. 1	PROCEDURE TITLE AIR SAMPLING	PAGE: 23 of 26
PROCEDURE NO.: HPP-22	HEA. "H PHYSICS PROCEDURE ST. LUCIE PLANT	

HPP-22.1 AIR SAMPLE DATA SHEET

Date: 4/11/95 Time: 10:08 Sample No.: 951-1043
 Location (Elev. 62' ft.): Control Room Back Room RWP No.: 95-02
 Work Description: 015 Air Intake Gas Sample
 Time On: _____ Time Off: _____ Total Time (min.): _____
 Initial Flow: _____ Final Flow: _____ Average Flow: _____ cfm/lpm
 Avg. Flow: _____ (cfm) X Tot. Min. _____ X 2.83E4 ml/ft³ = Vol. _____ ml
 _____ (lpm) X Tot. Min. _____ X 1000 ml = Vol. _____ ml
 (1 cubic foot = 2.83E4 ml) (Standard Volume = 40 ft.³ = 1.132E6 ml)
 Sampler Type: Manually Ser. No. _____ Cal. Due: _____
 Respiratory Protection in Use? Yes _____ No ☒ Type? _____
 Particulate Act (uCi/ml) = net CPM X 4.5E-07 (uCi/dpm) PF = _____
Sample Vol (ml) X Counter Eff (decimal) X 0.64

(1 DAC LONG LIVED ALPHA = 3.0E-12 uCi/ml) (1 DAC GROSS BETA = 3.0E-09 uCi/ml)

Beta skin exposure is to be calculated.

NOTE

Nuclide Type	Volume (ml)*	Tot. Activ. (uCi/ml)	Total DAC	Tot. Beta Skin Exp (mRem/hr)
Partic.	<u>NT</u>			
Iodine	<u>NT</u>			
Noble Gas	<u>4600</u>	<u>1.46E-4</u>	<u>1.45</u>	<u>5.18</u>

Counted on: ☒ MCA _____ Gas Prop. _____ GM (1 DAC unknown Beta/Gamma = 3.0E-9 uCi/ml)
 Scaler Used: _____ Ser. No.: _____ Total cpm: _____ Bkg.: _____ Net cpm: _____
 Effc.: _____ Cal. Due Date: _____

ALPHA	Date	Time	EH	Total cpm	Bkgd cpm	CCPM	Activity (uCi/ml)	DAC
Int.								
5 hr.								
24 hr.								
120 hr.								

$^{241}\text{Pu Conc.} = \text{Long Lived Alpha Conc.} \times 5$ $^{241}\text{Pu DAC} = \frac{^{241}\text{Pu Conc}}{3.0E-10 \text{ uCi/ml}}$

TOTAL AIR SAMPLE DAC = _____

ALPHA counted on: _____ Gas Prop. _____ ZnS
 Ser. No.: _____ Cal. Due Date: _____ Scaler Used: _____
 * Standard Volumes
 Partic and/or Iodine = 1.132E6 ml Noble Gas = 4600 ml
 Remarks: _____

S 1 OPS

DATE 950411
 DOCT HPP-22.1
 DOCN 951-1043
 SYS HP
 COMP _____

Sampled by: Dovell Counted by: Chapman
 Logged by: Chapman Reviewed by: _____

This document is not controlled. Before use, verify information with a controlled document.
 DATE VERIFIED 4/1/95 INITIAL CB

THIS DOCUMENT IS NOT CONTROLLED. Before use, verify information with a controlled document.
DATE VERIFIED 4-11-95 INITIAL CD

REVISION NO.: 1	PROCEDURE TITLE: AIR SAMPLING	PAGE: 23 of 26
PROCEDURE NO.: HPP-22	HEALTH PHYSICS PROCEDURE ST. LUCIE PLANT	
HPP-22.1 AIR SAMPLE DATA SHEET		

Date: 4-11-95 Time: 10:15 Sample No.: 951-1042
 Location (Elev. 22 ft.): _____ RWP No.: 45-13
 Work Description: CENTRAL ROOM AIR INTAKE GAS SAMPLER
 Time On: _____ Time Off: _____ Total Time (min.): _____
 Initial Flow: _____ Final Flow: _____ Average Flow: _____
 Avg. Flow: _____ (cfm) X Tot. Min. _____ X 2.83E4 ml/min = Vol. _____ cfm/lpm
 (1 cubic foot = 2.83E4 ml) (Standard Volume = 40 ft.³ = 1.132E6 ml) X 1000 ml = Vol. _____ ml
 Sampler Type: 1.132E6 ml Ser. No. _____ Cal. Due: _____
 Respiratory Protection in Use? Yes _____ No ✓ Type? _____ PF = _____
 Particulate Act (uCi/ml) = _____ net CPM X 4.5E-07 (uCi/dpm) _____
 Sample Vol (ml) X Counter Eff (decimal) X 0.64

(1 DAC LONG LIVED ALPHA = 3.0E-12 uCi/ml) (1 DAC GROSS BETA = 3.0E-09 uCi/ml)

Beta skin exposure is to be calculated. NOTE

Nuclide Type	Volume (ml)*	Tot. Actv. (uCi/ml)	Total DAC	Tot. Beta Skin Exp (mRem/hr)
Partic.				
Iodine				
Noble Gas				
Counted on: <u>✓</u> MCA _____ Gas Pmp. _____ GM (1 DAC unknown Beta/Gammas = 3.0E-9 uCi/ml)				
Scaler Used: _____ Ser. No.: _____ Total cpm: _____ Bkg.: _____ Net cpm: _____				
Effic.: _____ Cal. Due Date: _____				

ALPHA	Date	Time	EH	Total cpm	Bkgd cpm	CCPM	Activity (uCi/ml)	DAC
InR								
8 hr.								
24 hr.								
120 hr.								

²⁴¹Pu Conc. = _____ Long Lived Alpha Conc. X 5. ²⁴¹Pu DAC = ²⁴¹Pu Conc X 3.0E-10 uCi/ml = _____

ALPHA counted on: _____ Gas Pmp. _____ ZnS
 Ser. No.: _____ Cal. Due Date: _____ Scaler Used: _____
 * Standard Volumes
 Partic and/or Iodine = 1.132E6 ml
 Noble Gas = 4600 ml
 Remarks: _____

Sampled by: [Signature] Counted by: [Signature]
 Logged by: _____

SOPS
 DATE 950411
 DOCT HPP-22.1
 DOCN 0015

VICTOREEN, INC.

TITLE: BETA SCINTILLATION POINT SOURCE CALIBRATION

CUSTOMER: N/A

DOCUMENT: CAL-BETA

REV. 1

ATTACHMENT A

Sheet 1 of 2

BETA POINT SOURCE CALIBRATION DATA SHEET

Customer Florida Power Light P.O. C 95935 90120
Project _____ S.O. 90248

IDENTIFICATION

Detector Model Number 843-20 Serial Number 852
PM Tube Model Number WR1052

Channel Description N/A
Sampler Model Number N/A S/N N/A Tag Number N/A
Readout Model Number 942100 S/N 201 Tag Number Cal Due 7-6

TEST EQUIPMENT

Scaler Model Number N/A S/N N/A Calibration Due Date N/A
Voltmeter Model Number 805CA S/N 5530020 Calibration Due Date 2-25-97
High Voltage Probe

Model Number 80K-6 S/N NV1-5 Calibration Due Date ~~1-25-95~~ 2-3-95

VICTOREEN Standard Geometry S/N 119
Customer Standard Geometry S/N N/A

BETA AREA REFERENCE SOURCE DATA

APEA REF. SOURCE	GROSS COUNTS	COUNT TIME	GROSS CPM	NET CPM	% DEVIATION
Background	5.50E2	10 min	5.50E1	--	--
14C	1.65E6	10 min	1.63E5	1.65E5	0%
137Cs	1.37E5	2 min	6.85E4	6.84E4	+ 1.6%
36Cl	4.49E5	2 min	2.245E5	2.244E5	- .3%
99Tc	3.81E4	2 min	4.405E4	4.4E4	+ 2.3%
90Sr	2.53E5	2 min	1.265E5	1.264E5	2.0%
High Voltage Panel	<u>731</u>	Lower Disc.	<u>.200 V</u>	Upper Disc.	<u>7.00 V</u>
	<u>7.29E2</u>				

GREEN, INC.

E: BETA SCINTILLATION POINT SOURCE CALIBRATION
 CUSTOMER: N/A
 DOCUMENT: CAL-BETA1

REV. 1 CUST. S.O. 095935 96
 VICO S.O. 90248

ATTACHMENT A

Sheet 2 of

BETA POINT SOURCE CALIBRATION DATA SHEET

Detector Model Number 843-20 S/N 852 Tag Number ---

TAU DETERMINATION

	GROSS COUNTS	COUNT TIME	GROSS CPM	NET CPM
Background	3.7E2	10min	3.7E1	---
C ₁	7.8E6	2min	3.9E6	3.9E6
cc	1.27E7	2min	6.35E6	6.35E6
C ₂	7.51E6	2min	3.755E6	3.755E6

Calculated
 Tau 4.4556E 0
 Minutes

DATA IN CUSTOMER STANDARD GEOMETRY

SOURCE	S/N	ACTIVITY	ASSAY DATE	GROSS COUNTS	COUNT TIME	GROSS CPM	NET CPM
Background	---	---	---				
¹⁴ C	A1	0.159 μ Ci	6/27/87				

DATA IN SAMPLER

SOURCE	GROSS COUNTS	COUNT TIME	GROSS CPM	NET CPM	ISOTOPE	ACTIVITY
Background						
Check Source						

Conducted By
 QA Review By

Date 12-14-94
 Date 2/14/95

MEMORANDUM

TO: Frank Gusmano

DATE: 5-May-93

FROM: Linda E. Pugh

SUBJECT: Unit 1 Control Room Outside Air Intake Monitor Net Source Count Rate Values for Channels 47 and 48

Per the baseline calibration performed on PW0 91033376 01, the following values and sources are to be used:

CHANNEL	HP SOURCE NO.	CCPM	ACCEPTANCE RANGE (+/-10%)
A-46	HP-11	3965	3569 - 4362
A-46	HP-74	5653	5088 - 6218
B-47	HP-11	4815	4334 - 5297
B-47	HP-74	6919	6227 - 7611

These values can be used for future calibrations, since no decay correction is required for Tc-99 due to its very long half-life (2.13×10^5 years). If a new baseline calibration is performed, these values will be changed at that point in time.

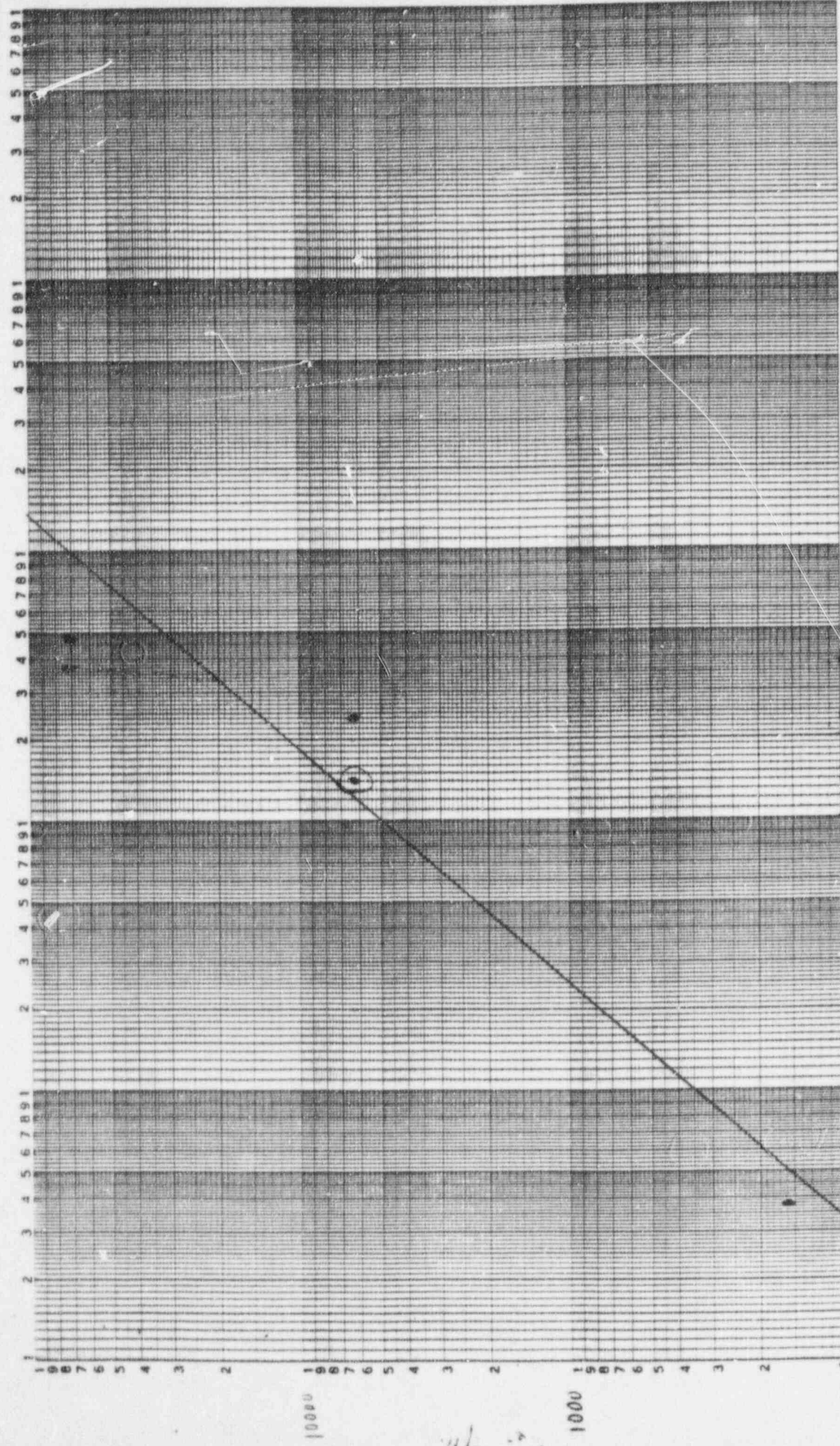
If you have any questions, please do not hesitate to call (x3441).

Performed by: C. H. DeVilling C. H. DeVilling

Approved by: L. E. Pugh L. E. Pugh

Approved by: H. M. Mercer H. M. Mercer

3 CYCLES 8.5 CYCLES



10^{-4} 10^{-3}
 10^{-5} 10^{-6}
 (μl/cc) 2.4 E-9 4.8 E-9 3.9 E-9
 1 10 1
 a - 3.8 E-6
 b - 1.4 E-9
 c - 3.9 E-9

PSL #1

Component: RE-26-47 Sys: 26 Train: 1
 Associate: Assign Priority: B2
 Name: RADIATION DETECTOR FOR SOUTH OU Work Type: 5
 TSIDE AIR INTAKE
 Location: RAB/62/S-RA3/E-RAJ LMD: 2
 Defect/Request: CHANNEL WILL NOT CAL/REPLACE DETECT
 OR &

Fac: PSL Unit: 01
 MASTER
 WORK ORDER TASK
 95010013 01
 ER/PWO: 63 / 3437
 Chg Loc: 915
 PAGE 1 of 4

85

NPRD
 IKM

Detailed Explanation:
 CALIBRATE CHANNEL

Work Request: 95006264 Def Tag: C74749 Loc: CR DEF LOG
 Trbl/Brkdown: Y LCO: N Unit Cond Req: 8
 NPRDS: N Fail Date: 04/06/95 Time: 12:09 Det: D Stat: A Symp: B
 Originator: FPG0QXG GUSMANO F P Date: 04/06/95 Dept: IC
 Approve By: RML0KWA LAMB R M Date: 04/06/95

Task Determination Data:
 IST Required : N NCR/CR : N/A Safety Class: QR
 PMT Required : Y PCM : N/A Q Group : N/A
 10 CFR 50.49 : N EQ Doc Pkg : N/A Assign To : FG 1
 Reg Guide 1.97 : N Seismic Cat : D Est M/H : 6.00
 ASME XI (ISI) Regd : N Scaffold Req : N Crew Qty : 2
 Security Clearance: N Fire Prot Req: N Insul Rem : N
 Clearance Required: N Clearance No :
 RWP Required: Y RWP No: RCA M/H: L1: L2: L3:

QC Requirements: QC Required : Y
 QL-A TS-10.4

More:

Work Order Task Description:

SEE PAGE 2 FOR TASK DESCRIPTION.

More: Y

Planned By : GEBOM06 BOUSMAN G Date: 04/07/95
 Pkg Appr By : GEBOM06 BOUSMAN G Date: 04/07/95 Time: 07:06
 QC Approval : DSM00FK MELODY D S Date: 04/07/95

***** OPERATIONS APPROVAL TO START *****
 * NPS Start Permission: C. J. [Signature] LCO (Y/N): ---
 * Start Date/Time : 4-7-95 1045
 *

NPS Completion Notif: [Signature] Major Failure: ---
 Compl. Date/Time: 4/11/95 1421 Major Action : ---
 Deficiency Tag Removed (Y/N): ---

KK/14
 a

Fac: PSL Unit: 01
MASTER
WORK ORDER TASK
95010013 01
ER/PWO: 63 / 3437
Chg loc: 915
PAGE 2 of 4

XXX

22 APR 1967 4/6

SIGNATURE/DATE

XX

PRIOR TO STARTING WORK REVIEW PROCEDURE 0010142 TO DETERMINE IF THE
SYSTEM/COMPONENT BEING WORKED ON REQUIRES PROCEDURE ADHERENCE.

INVESTIGATE THE DEFECT/WORK REQUEST USING TEDB LISTED DRAWINGS AND
TECH MANUALS AS A REFERENCE.

MAKE REPAIRS/REPLACE AS NECESSARY AND DOCUMENT ALL WORK PERFORMED ON JOURNEYMANS WORK SHEET.

CALIBRATE AS NECESSARY USING TECH MANUAL AS REFERENCE.

AFTER REPAIRS ARE COMPLETED PERFORM POST MAINTENANCE TESTING PER
QI 11-4 APPENDIX A.

SYSTEM SUPV. GUSMANO

Component: RE-26-47 Sys: 26 Train:
Associate: Assign Priority: B2
Name: RADIATION DETECTOR FOR SOUTH O Work Type: 5
TSIDE AIR INTAKE
Location: RAB/62/S-RA3/E-RAJ LMD: 2
Defect/Request: CHANNEL WILL NOT CAL/REPLACE DETECT
OR &

Fac: PSL Unit: 01
MASTER
WORK ORDER TASK
95010013 01
ER/PWO: 63 / 3437
Chg loc: 915
PAGE 3 of 4

JOURNEYMAN'S WORK REPORT

Actual Start Date:	Time:	Actual Completion Date:	Time:
4/7/95	0700	4/11/95	1530

Note: Journeyman shall sign and date text after their entries.

Trouble Found:

This Section is NOT Applicable for PMs or other planned jobs

TEST EQUIP.

Detector will not calibrate. *[Signature]*
4/8/95
PSL 878
PSL 593
PSL
PSL
PSL

Work Performed:

Removed, replaced and calibrated detector FAW
IC1-1220053. *[Signature]*
4/11/95

DETECTOR WAS CALIBRATED UNDER PWO 2326/63. F. J. *[Signature]* 5-1-95

Continued on Additional Sheets: Y ☒ N

Suggestions For Future Planning/Variance Reason:

Supv/Foreman/Chief	Date	Supervisor	Date	QC Inspector	Date
		<i>[Signature]</i>	5-8-95	QC ROUTED	

APPENDIX A

2.0 POSTMAINTENANCE TEST SHEETS (A.O.O) GENERAL FORM

[illegible]

**NUCLEAR POWER PLANT
REQUISITION ON STORES
OR
MATERIAL RETURNED MEMO**

STOREROOM	
SYMBOL	LOC'N CODE

TRANSMITTAL		BATCH
MO.	NUMBER	NUMBER

P.W.O. NO. 3437	C.W.O./PCM NO.	P.O. NO.	ROS <input checked="" type="checkbox"/> ₁ MRM <input type="checkbox"/> ₁₂
WA. NO.	JOB DESCRIPTION RE-26-47	PRINT APPROVAL <i>F. G. ...</i>	RPA NO.
PREPARED BY <i>R. Bech</i>	DATE 4/7/95	APPROVED <i>T. ...</i>	SUB P.O. NO.

	DESCRIPTION	QUALITY LEVEL	M & S NO.			Unit Of Issue	QUANTITY		S I	S L R	P.O. / ITEM / R.I.R. NUMBER
			CLASS	ITEM	CD		Ordered	Actual Issue			
1.	Detector		775	877454	EA	1	1				95935-90120
2.											
3.	S/N 852										
4.											
5.											
6.											
7.											
8.											
9.											
10.											
11.											
12.											
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24.											
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26.											
27.											
28.											
29.											
30.											
31.											
32.											

ITEM NO.	WORK ORDER VEHICLE RPT AREA	BLK ER	ACCOUNT OR PROJECT NUMBER	LOCN CODE	TOTALS	QUANTITY	DATE:
	3437	63	300 00	915		LINE CT.	
MATERIAL RECEIVED BY: <i>Robert J. Bech</i> 773					MATERIAL ISSUED BY: <i>JB</i> 4/7/95		

S 1 - OPS

K.J.M.

DATE 450411

DOCT 1784 A

DOCN 3437

10013

SYS IC + 26

COMP Detector

ITM RE-26-47

(XI 11-4

The above is a further summary of the
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UNIT 1

LIQUID WASTE DISCHARGE
MONITOR CH 43

PRIMARY CAL FOR
NEW MONITOR

KK/LS

UNIT 1
ST. LUCIE UNIT 1
CHEMISTRY PROCEDURE NO. 1-C-64, REVISION 16
CALIBRATION OF THE LIQUID WASTE DISCHARGE RADIATION MONITOR

CALIBRATION CERTIFICATE

Procedure Title and Number	Calibration of the Liquid Waste Discharge Radiation Monitor
Frequency	Refueling
Maximum Time Between Calibrations	18 Months \pm 25%
Equipment Identification Number	Channel 43 / R-6627
Date of Last Calibration	NA - New Skid
Date of This Calibration	5/4/93
Special Instructions:	Primary Cal. For New Monitor

CALIBRATION DATA

The requirements of the Channel Functional Test for the Liquid Waste Discharge radiation monitor have been satisfied (Reference Section 8.1).

Verified by El Meyer Date 5/4/93

PSL CHEMISTRY DEPT.

FOR INFORMATION ONLY

THIS DOCUMENT IS NOT CONTROLLED. REFUSE USE
VERIFY INFORMATION WITH A CONTROLLED DOCUMENT

FLORIDA POWER AND LIGHT CO.
ST. LUCIE PLANT

DATE VERIFIED 5/4/93 INITIAL EM

DATE VERIFIED _____ INITIAL _____

ST. LUCIE UNIT 1
CHEMISTRY PROCEDURE NO. 1-C-64, REVISION 16
CALIBRATION OF THE LIQUID WASTE DISCHARGE RADIATION MONITOR

CALIBRATION CERTIFICATE

CHANNEL 43

LIQUID WASTE DISCHARGE MONITOR

Source #1

Source Type <u>Waste Liquid</u>
Serial # <u># 1</u>
Assay decay calculation:
$A = A_0 e^{\frac{-0.693 \times t}{T_{1/2} \times 365.25 \text{ days/year}}}$
Assay Results = <u>1.03 E-5 μci/cc</u>
Conv. Const. = <u>3.64 E+8 cpm/μci/cc</u>
Tolerance ($\pm 10\%$) = _____
Background Levels <u>440</u>
Ratemeter levels
remote <u>4.19 E+3</u>
Recorder levels _____
Corrected Activity (ratemeter levels minus background)
<u>3.75 E+3</u>

Source #2

Source Type <u>Waste Liquid</u>
Serial # <u># 2</u>
Assay decay calculation:
$A = A_0 e^{\frac{-0.693 \times t}{T_{1/2} \times 365.25 \text{ days/year}}}$
Assay Results = <u>3.68 E-5 μci/cc</u>
Conv. Const. = <u>4.08 E+8 cpm/μci/cc</u>
Tolerance ($\pm 10\%$) = _____
Background Levels <u>440</u>
Ratemeter levels
remote <u>1.53 E+4</u>
Recorder levels _____
Corrected Activity (ratemeter levels minus background)
<u>1.50 E+4</u>

$T_{1/2}$ = nuclide half-life in years
 t = elapsed time from original activity in days
 e = natural log base
 A = Activity in counts per minute (cpm) this date.
 A_0 = original Activity in cpm on assay date

High Voltage setting 750 (for reference only)

Channel 43/6627 returned to normal service

Verified by EP 9/11/93 Date 5/4/93

Approved by [Signature] Date 5/6/93
Chemistry Supervisor

Average of 4 Conversion
Constants = 3.06 E+8 cpm/ μ ci/cc

1

ST. LUCIE UNIT 1
CHEMISTRY PROCEDURE NO. 1-C-64, REVISION 16
CALIBRATION OF THE LIQUID WASTE DISCHARGE RADIATION MONITOR

CALIBRATION CERTIFICATE

CHANNEL 43
LIQUID WASTE DISCHARGE MONITOR

Source #1

Source Type <u>Waste Liquid</u>
Serial # <u>#3</u>
Assay decay calculation:
$A = A_0 e^{\frac{-0.693 \times t}{T_{1/2} \times 365.25 \text{ days/year}}}$
Assay Results = <u>$8.33E-4 \mu\text{Ci/cc}$</u>
Conv. Const. = <u>$2.78E+8 \text{ CPM}/\mu\text{Ci/cc}$</u>
Tolerance ($\pm 10\%$) = _____
Background Levels <u>440</u>
Ratemeter levels
remote <u>$2.32E+5$</u>
Recorder levels _____
Corrected Activity (ratemeter levels minus background)
<u>$2.32E+5$</u>

Source #2

Source Type <u>Waste Liquid</u>
Serial # <u>#4</u>
Assay decay calculation:
$A = A_0 e^{\frac{-0.693 \times t}{T_{1/2} \times 365.25 \text{ days/year}}}$
Assay Results = <u>$7.18E-3 \mu\text{Ci/cc}$</u>
Conv. Const. = <u>$1.74E+8 \text{ CPM}/\mu\text{Ci/cc}$</u>
Tolerance ($\pm 10\%$) = _____
Background Levels <u>440</u>
Ratemeter levels
remote <u>$1.25E+6$</u>
Recorder levels _____
Corrected Activity (ratemeter levels minus background)
<u>$1.25E+6$</u>

$T_{1/2}$ = nuclide half-life in years
 t = elapsed time from original activity in days
 e = natural log base
 A = Activity in counts per minute (cpm) this date.
 A_0 = original Activity in cpm on assay date
 High Voltage setting 750 (for reference only)
 Channel 43/6627 returned to normal service

Verified by *[Signature]* Date 5/4/93

Approved by *[Signature]* Date 5/6/93
Chemistry Supervisor

1

ST. LUCIE UNIT 1
CHEMISTRY PROCEDURE NO. 1-C-64, REVISION 16
CALIBRATION OF THE LIQUID WASTE DISCHARGE RADIATION MONITOR

1

CALIBRATION CERTIFICATE

CHANNEL 43

LIQUID WASTE DISCHARGE MONITOR

Source #1

Source Type <u>BA-133</u>
Serial # <u>WC-24</u>
Assay decay calculation:
$A = A_0 e^{\frac{-0.693 \times t}{T_{1/2} \times 365.25 \text{ days/year}}}$ <p><i>Original</i></p>
Tolerance ($\pm 10\%$) = <u>NA</u>
Background Levels <u>$4.03 E+4$</u>
Ratemeter levels
remote <u>$2.54 E+6$</u>
Recorder levels _____
Corrected Activity (ratemeter levels minus background)
<u>$2.50 E+6 \text{ cpm}$</u>

Source #2

Source Type <u>CS-137</u>
Serial # <u>WC-25</u>
Assay decay calculation:
$A = A_0 e^{\frac{-0.693 \times t}{T_{1/2} \times 365.25 \text{ days/year}}}$ <p><i>Original</i></p>
Tolerance ($\pm 10\%$) = <u>NA</u>
Background Levels <u>$4.03 E+4$</u>
Ratemeter levels
remote <u>$1.62 E+6$</u>
Recorder levels _____
Corrected Activity (ratemeter levels minus background)
<u>$1.58 E+6 \text{ cpm}$</u>

 $T_{1/2}$ = nuclide half-life in years

t = elapsed time from original activity in days

e = natural log base

A = Activity in counts per minute (cpm) this date.

 A_0 = original Activity in cpm on assay dateHigh Voltage setting 750 (for reference only)Channel 43/6627 returned to normal serviceVerified by Ed May Date 5/4/93Approved by [Signature] Date 5/6/93

Chemistry Supervisor

ST. LUCIE UNIT 1
CHEMISTRY PROCEDURE NO. 1-C-64, REVISION 16
CALIBRATION OF THE LIQUID WASTE DISCHARGE RADIATION MONITOR

CALIBRATION CERTIFICATE

CHANNEL 43

LIQUID WASTE DISCHARGE MONITOR

Source #1

Source Type <u>Cs-137</u>
Serial # <u>81-516</u>
Assay decay calculation:
$A = A_0 e^{\frac{-0.693 \times t}{T_{1/2} \times 365.25 \text{ days/year}}}$
Original
Tolerance ($\pm 10\%$) = <u>NA</u>
Background Levels <u>4.03 E+4</u>
Ratemeter levels
remote <u>1.36 E+6</u>
Recorder levels _____
Corrected Activity (ratemeter levels minus background)
<u>1.32 E+6 cpm</u>

Source #2

Source Type <u>Ba-133</u>
Serial # <u>SRM-4241-5</u>
Assay decay calculation:
$A = A_0 e^{\frac{-0.693 \times t}{T_{1/2} \times 365.25 \text{ days/year}}}$
Original
Tolerance ($\pm 10\%$) = <u>NA</u>
Background Levels <u>4.03 E+4</u>
Ratemeter levels
remote <u>1.02 E+6</u>
Recorder levels _____
Corrected Activity (ratemeter levels minus background)
<u>9.80 E+5 cpm</u>

$T_{1/2}$ = nuclide half-life in years

t = elapsed time from original activity in days

e = natural log base

A = Activity in counts per minute (cpm) this date.

A_0 = original Activity in cpm on assay date

High Voltage setting 750 (for reference only)

Channel 43/6627 returned to normal service

Verified by [Signature] Date 5/4/93

Approved by [Signature] Date 5/6/93
Chemistry Supervisor

1

ST. LUCIE UNIT 1
CHEMISTRY PROCEDURE NO. 1-C-64, REVISION 16
CALIBRATION OF THE LIQUID WASTE DISCHARGE RADIATION MONITOR

FUNCTIONAL TEST CERTIFICATE

Procedure Title and Number	
Frequency	Quarterly
Maximum Time Between Functional Test	115 Days
Tolerance	≤ 110% of Alarm Setpoint
Equipment Name	Liquid Waste Radiation Monitor
Equipment I.D. Number	R-6627
Date of Last Functional Test	N/A New Monitor Skid
Date of This Functional Test	5/4/93

/R16

/R16

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.

FUNCTIONAL TEST

A. Original Data Base Values	
(1) Local Mode	OFF
(2) Conversion Constant	3.19 E+8 cpm/uci/cc
(3) High Voltage Status	ON, 750 Volts
B. Verify all alarms activate and (if applicable) valves close.	
(1) Circuit failure	Yes
(2) Downscale failure	Yes
(3) Controls not set in operate mode	Yes
C. Verify high alarm activates at less than or equal to 110% of actual setpoint. Record the following:	
(1) Required setpoint	5.30 E-03 uci/cc
(2) Required setpoint X 1.10	5.83 E-03
(3) As Found	5.60 E-03
(4) As left alarm point	5.60 E-03
D. Returned Data Base to Original Values in Step A	Init. ENCL

/R16

/R16

PSL CHEMISTRY DEPT.
FOR INFORMATION ONLY
 THIS DOCUMENT IS NOT CONTROLLED BEFORE USE
 VERIFY INFORMATION WITH A CONTROLLED DOCUMENT.
 FLORIDA POWER AND LIGHT CO.
 ST. LUCIE PLANT
 DATE VERIFIED 5/4/93 INITIAL F

Performed by CT Moya

Approved by [Signature] Date 5/6/93

FLORIDA POWER & LIGHT CO. ST. LUCIE PLANT CHEMISTRY DEPARTMENT
FINAL ACTIVITY REPORT OF FILE : MONIT_MISC.DAT ND Samp # 6

WMM

REACTOR UNIT#: 1 & 2

LIMS NO. : FYI LIMS ID : non-transferable
SAMPLE I.D. : LRW SOURCE #1 SAMPLE TYPE : LIQ
SAMPLE TIME : 5- 2-1993 @ 20:45 SAMPLE VOLUME : 4.000E+03 cc.s
ACQUIRE TIME : 5- 2-1993 @ 21:38 LIVE TIME : 2.000E+03 SEC.
EFF.FILE NAME: GT73.CNF ACT MULT FACTOR: 1.000E+00

NUCLIDE SYMBOL	SAMPLE UCI/ML	KEYLINE KEV.	NET PEAK AREA	PEAK % EFF	PEAK % ABUND
CR-51	8.872E-07	320.08	128.	5.00E-01	9.80
MN-54	5.358E-08	834.83	33.	2.08E-01	99.98
CO-58	5.340E-06	810.75	3361.	2.14E-01	99.45
CO-60	6.043E-07	1173.21	281.	1.58E-01	99.90
AG-110	4.699E-07	884.67	200.	1.97E-01	73.00
SB-122	0.000E+00	564.10	112.	3.00E-01	66.00
SB-124	1.809E-07	1691.02	30.	1.15E-01	48.80
I-131	1.452E-07	364.48	154.	4.43E-01	81.20
NB-95	1.397E-07	765.83	93.	2.26E-01	100.00
NB-97	6.511E-07	657.92	251.	2.60E-01	98.34
CS-134	1.134E-06	795.85	624.	2.18E-01	85.40
CS-137	8.534E-07	661.64	555.	2.58E-01	85.14

SUMMATIONS & RATIOS

0.000E+00 UCI/ML IS NOBLE GAS TOTAL
7.536E-06 UCI/ML IS CRUD TOTAL
1.452E-07 UCI/GM IS DOSE EQUIV. I-131
0.000E+00 IS I-131/I-133 RATIO
2.778E-06 UCI/ML IS FISSION PRODUCT TOTAL
1.328E+00 IS CS-134/CS-137 RATIO
1.046E-05 UCI/ML IS GROSS WITH RB-88
1.046E-05 UCI/ML IS GROSS WITHOUT RB-88

1.03E-5

W 1027

FLORIDA POWER & LIGHT CO. ST. LUCIE PLANT CHEMISTRY DEPARTMENT
FINAL ACTIVITY REPORT OF FILE : MONIT_MISC.DAT ND Samp # 7

REACTOR UNIT#: 1 & 2

LIMS NO. : FYI LIMS ID : non-transferable
SAMPLE I.D. : LRW #2 SAMPLE TYPE : LIQ
SAMPLE TIME : 5- 2-1993 @ 9:30 SAMPLE VOLUME : 4.000E+03 cc.s
ACQUIRE TIME : 5- 2-1993 @ 22:53 LIVE TIME : 2.000E+03 SEC.
EFF.FILE NAME: GT73.CNF ACT MULT FACTOR: 1.000E+00

NUCLIDE SYMBOL	SAMPLE UCI/ML	KEYLINE KEV.	NET PEAK AREA	PEAK % EFF	PEAK % ABUND
CR-51	3.904E-06	320.08	557.	4.99E-01	9.80
MN-54	2.778E-07	834.83	171.	2.08E-01	99.98
CO-58	2.004E-05	810.75	12549.	2.14E-01	99.45
CO-60	2.187E-06	1173.21	1018.	1.58E-01	99.90
AG-110	1.192E-06	884.67	507.	1.97E-01	73.00
SB-122	5.190E-07	564.10	262.	3.00E-01	66.00
SB-124	6.663E-07	1691.02	110.	1.15E-01	48.80
I-131	4.910E-07	364.48	497.	4.42E-01	81.20
NB-95	4.355E-07	765.83	288.	2.26E-01	100.00
CS-134	4.175E-06	795.85	2295.	2.18E-01	85.40
CS-137	3.390E-06	661.64	2205.	2.58E-01	85.14

SUMMATIONS & RATIOS

0.000E+00 UCI/ML IS NOBLE GAS TOTAL
-2.879E-05 UCI/ML IS CRUD TOTAL
4.910E-07 UCI/GM IS DOSE EQUIV. I-131
0.000E+00 IS I-131/I-133 RATIO
-8.000E-06 UCI/ML IS FISSION PRODUCT TOTAL
1.232E+00 IS CS-134/CS-137 RATIO
3.728E-05 UCI/ML IS GROSS WITH RB-88
3.728E-05 UCI/ML IS GROSS WITHOUT RB-88

3.48E-5

FLORIDA POWER & LIGHT CO. ST. LUCIE PLANT CHEMISTRY DEPARTMENT
FINAL ACTIVITY REPORT OF FILE : MONIT_MISC.DAT NO Samp # 8

REACTOR UNIT#: 1 & 2

LIMS NO. : FYI LIMS ID : non-transferable
SAMPLE I.D. : LRW #3 SAMPLE TYPE : LIQ
SAMPLE TIME : 5- 2-1993 @ 22:25 SAMPLE VOLUME : 1.000E+03 cc.
ACQUIRE TIME : 5- 3-1993 @ 1:34 LIVE TIME : 2.000E+03 SEC.
EFF.FILE NAME: GT73.CNF ACT MULT FACTOR: 1.000E+00

NUCLIDE SYMBOL	SAMPLE UCI/ML	KEYLINE KEV.	NET PEAK AREA	PEAK % EFF	PEAK % ABUND
AR-41	6.013E-06	1293.64	173.	1.45E-01	99.16
CR-51	1.669E-04	320.08	6015.	4.99E-01	9.80
MN-54	1.066E-05	834.83	1641.	2.08E-01	99.98
CO-58	3.264E-04	810.75	51306.	2.14E-01	99.45
FE-59	4.419E-06	1099.22	306.	1.66E-01	56.50
CO-60	8.297E-05	1173.21	9660.	1.57E-01	99.90
AG-110	7.379E-06	884.67	785.	1.97E-01	73.00
SN-113	4.565E-06	391.40	895.	4.14E-01	64.00
SB-122	5.866E-06	564.10	828.	3.00E-01	66.00
SB-124	1.328E-05	1691.02	551.	1.15E-01	48.80
I-131	4.073E-06	364.48	1069.	4.42E-01	81.20
NB-95	3.826E-05	765.83	6364.	2.25E-01	100.00
ZR-95	2.587E-05	756.74	2396.	2.28E-01	55.00
NB-97	5.373E-05	657.92	1400.	2.60E-01	98.34
SB-125	6.513E-06	427.90	545.	3.83E-01	29.50
CS-134	4.640E-05	795.85	6378.	2.18E-01	85.40
CS-137	3.963E-05	661.64	6446.	2.58E-01	85.14

SUMMATIONS & RATIOS

6.013E-06 UCI/ML IS NOBLE GAS TOTAL
-6.225E-04 UCI/ML IS CRUD TOTAL
4.073E-06 UCI/GM IS DOSE EQUIV. I-131
0.000E+00 IS I-131/I-133 RATIO
-2.104E-04 UCI/ML IS FISSION PRODUCT TOTAL
1.171E+00 IS CS-134/CS-137 RATIO
8.430E-04 UCI/ML IS GROSS WITH RB-88
8.430E-04 UCI/ML IS GROSS WITHOUT RB-88

8.33E-4

6048

FLORIDA POWER & LIGHT CO. ST. LUCIE PLANT CHEMISTRY DEPARTMENT
ANAL ACTIVITY REPORT OF FILE : MONIT_MISC.DAT NO Samp # 9

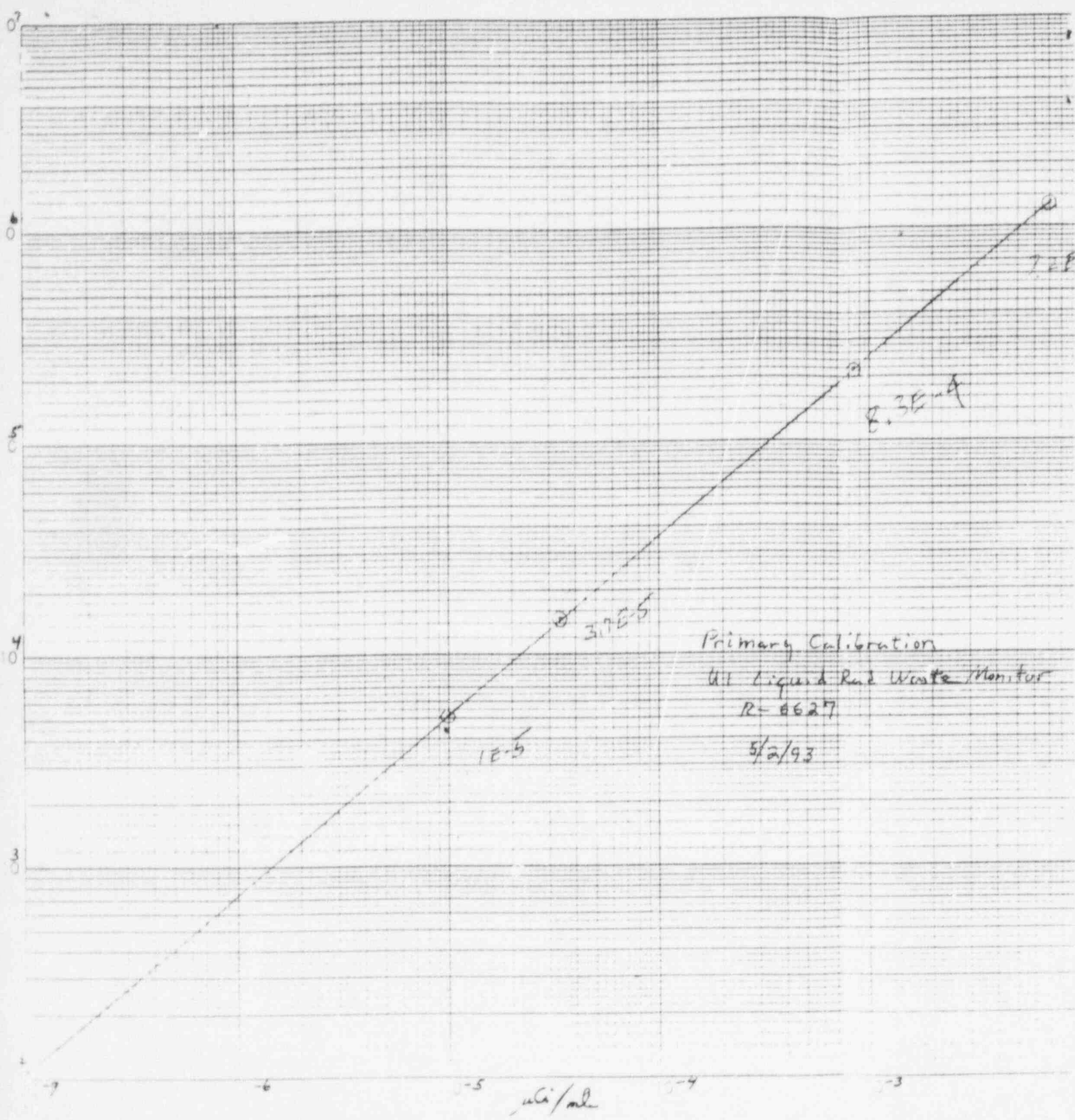
REACTOR UNIT#: 1 & 2
LIMS NO. : FYI LIMS ID : non-transferable
SAMPLE I.D. : LRW #4 SAMPLE TYPE : LIQ
SAMPLE TIME : 5- 2-1993 @ 23:10 SAMPLE VOLUME : 2.00E+02 cc.s
ACQUIRE TIME : 5- 3-1993 @ 2:36 LIVE TIME : 2.000E+03 SEC
EFF.FILE NAME: GT73.CNF ACT MULT FACTOR: 1.000E+00

NUCLIDE SYMBOL	SAMPLE UCI/ML	KEYLINE KEY.	NET PEAK AREA	PEAK % EFF	PEAK % ABUND
AR-41	1.067E-04	1293.64	554.	1.45E-01	99.16
NA-24	3.988E-06	1368.53	69.	1.38E-01	100.00
CR-51	2.117E-03	320.08	15252.	4.99E-01	9.80
MN-54	1.389E-04	834.83	4277.	2.08E-01	99.98
CO-58	2.268E-03	810.75	71282.	2.14E-01	99.45
FE-59	7.526E-05	1099.22	1042.	1.66E-01	56.50
CO-60	9.462E-04	1173.21	22028.	1.57E-01	99.90
AG-110	1.294E-05	884.67	276.	1.97E-01	73.00
SN-113	6.905E-05	391.40	2708.	4.14E-01	64.00
SB-122	0.000E+00	564.10	945.	3.00E-01	66.00
SB-124	9.102E-05	1691.02	755.	1.15E-01	48.80
I-131	2.109E-05	364.48	110.	4.42E-01	81.20
NB-95	5.227E-04	765.83	17343.	2.25E-01	100.00
ZR-95	3.753E-04	756.74	6750.	2.28E-01	55.00
NB-97	1.620E-04	657.92	750.	2.59E-01	98.34
RU-103	1.666E-05	497.08	715.	3.37E-01	86.40
SB-125	4.919E-05	427.90	824.	3.84E-01	29.50
CS-134	1.787E-04	795.85	4912.	2.18E-01	85.40
CS-137	1.563E-04	661.64	5082.	2.58E-01	85.14

SUMMATIONS & RATIOS

1.067E-04 UCI/ML IS NOBLE GAS TOTAL
5.722E-03 UCI/ML IS CRUD TOTAL
2.109E-05 UCI/GM IS DOSE EQUIV. I-131
0.000E+00 IS I-131/I-133 RATIO
1.461E-03 UCI/ML IS FISSION PRODUCT TOTAL
1.144E+00 IS CS-134/CS-137 RATIO
7.311E-03 UCI/ML IS GROSS WITH RB-88
7.311E-03 UCI/ML IS GROSS WITHOUT RB-88

7.18E-3



Primary Calibration

U1 Liquid Rad Waste Monitor

R-8627

5/2/93

SAMPLE RESULTS REPORT

1

ID NUMERIC: 81523

SAMPLE STATUS: A

ID TEXT: MIC_R_6627-96-06-04-18:30-0002

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

SAMPLE DATE: 4-JUN-1996 18:30

SAMPLE LOGGED IN BY: HUFFOR

SAMPLE POINT	COMPONENT	RESULT	UNITS	MLP LEVEL	MINIMUM VALUE	MAXIMUM VALUE
MIC_R_6627	Liquid Discharge	Monitor Unit		Common		Treatment System
	Procedure Number	1-C-64				
	Frequency	18 Months				
	Date Of This Calibration	4-JUN-1996 18:30				← calibration Date
	Date Of Last Calibration	13-JAN-1996 12:30				
	# 1 Source Type	EA-133				
	# 1 Source Serial Number	WC-24				
	# 1 Original Assay Date	4-MAY-1993 00:00				
	# 1 Original Counts Per Minute	2499700.0	cpm			
	# 1 Decay Corrected Counts/Min	2046627.0	cpm			
	# 1 Upper Limit (+ 10 %)	2251290.0	cpm			
	# 1 Lower Limit (- 10 %)	1841965.0	cpm			
	If Original, Enter Assay Date	This Component Has No Result Entered				
	Background Count Rate	256000.0	cpm			
	# 1 Source Result (Official)	2410000.0	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)	2154000	ccpm			
	# 2 Source Type	CS-137				
	# 2 Source Serial Number	WC-25				
	# 2 Original Assay Date	4-MAY-1993 00:00				
	# 2 Original Counts Per Minute	1579700.0	cpm			
	# 2 Decay Corrected Counts/Min	1471543.0	cpm			
	# 2 Upper Limit (+ 10 %)	1618697.0	cpm			
	# 2 Lower Limit (- 10 %)	1324388.0	cpm			
	# 2 Source Result (Official)	1810000.0	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)	1554000	ccpm			
	# 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)	920	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	WMH				
	Was Primary Cal. Performed	No				
	If Yes, LIMS # Of Primary Cal	This Component Has No Result Entered				
	All Tests Completed (Y/N)	Yes				
	Remarks:	Plant Management notified K.E. Biechel, that our procedure 1-C-64 was considered still valid. Requested by shift Chemistry Supervision to perform monitor calibr calibration.				

KK/16

1

ID TEXT: MLC R 6627-96-01-13-12:30-0001

SAMPLE LOGGED IN BY: SERRUTO

KK/17

OUTAGE

PSL #1

Component: RSC-26-1

Associate:

Sys: 26

Train:

Assign Priority: B2

Fac: PSL Unit: 01

MASTER

Name: PARTICULATE IODINE AND NOBLE GA Work Type: 5

S MONITOR FOR PLANT STACK EXHAUST

WORK ORDER TASK

Location: RAP/62/N-RA2/E-RAG

MD: 2

96013741 01

Defect/Request: PERFORM 18 MONTH CALIBRATION

ER/PWO: 63 / 5623

Chg Loc: 915

PAGE 1 of 4

TECH. SPEC

Detailed Explanation:

CALIBRATION DUE 5/28/96. TECH/SPEC, PROC. 1-1400250
(SEE NO. 96003475)

85

Work Request: 96009283

Def Tag:

Loc:

More:

Trbl/Brkdown: N

LCO: N

NPRDS: N Fail Date:

Time:

Unit Cond Req: 8

Originator: FPG00XG GUSMANO

Det:

Stat:

Symp:

Approve By: MEWOCIT WILLIS

F P

Date: 05/25/96

Dept: IC

M E

Date: 05/25/96

Task Determination Data:

IST Required : N NCF/CR : N/A

PMT Required : Y PCM : N/A

10 CFR 50.49 : N EQ Doc Pkg : N/A

Reg Guide 1.97 : Y Seismic Cat : N

ASME XI(ISI) Req'd : N Scaffold Req : N

Security Clearance: N Fire Prot Req: N

Clearance Required: N Clearance No :

RWP Required: Y RWP No: RCA M/H: L1:

Safety Class: QR

Q Group : N/A

Assign To : FG 1

Est M/H : 16.00

Crew Qty : 2

Insul Rem : N

L2: L3:

QC Requirements:

QC Required : Y

QA-A (QR & TECH SPEC)

More:

Work Order Task Description:

SEE PAGE 2 FOR TASK DESCRIPTION.

More: Y

Planned By : TKM00VF MILLER

T K Date: 05/25/96

kg Appr By : TKM00VF MILLER

T K Date: 05/25/96 Time: 13:37

Approval : RWB00IC BROWN

R W Date: 05/25/96

OPERATIONS APPROVAL TO START

NPS Start Permission:

Start Date/Time :

LCO(Y/N):

PS Completion Notif:

Compl. Date/Time:

Efficiency Tag Removed (Y/N):

Major Failure:

Major Action:

6-7-96 0415 -296 1430

KK118

Component: RSC-26-1

Sys: 26 Train:

Associate:

Assign Priority: B2

Name: PARTICULATE DODINE AND NOBLE GA Work Type: 5

S MONITOR FOR PLANT STACK EXHAUST

Location: RAB/62/N-RAD/E-RAG

LMD: 2

Fac: PSL Unit: 01

MASTER

WORK ORDER TASK

96013741 01

Defect/Request: PERFORM 18 MONTH CALIBRATION

ER/PWO: 63 / 562

Chg loc: 915

PAGE 2 of

Continuation of Task Description:

.....
* VERIFY THAT YOU ARE WORKING ON THE CORRECT UNIT AND COMPONENT. *
* *

1. USE ADM 001042, FIGURES 3&4, AND AP 0010142, SENSITIVE SYSTEMS, AS REQUIRED WHEN LIFTING LEADS, PULLING FUSES OR INSTALLING JUMPERS
2. PERFORM 18 MONTH CAL OF RSC-26-1 AS PER APPLICABLE SECTIONS OF 1&C 1-1400250 (REV 0).
3. PERFORM POST MAINTENANCE TEST PER QI 11-4 APPENDIX B.
4. DOCUMENT ALL WORK AND PARTS USED IN JOURNEYMAN'S WORK REPORT.

SYSTEM SUPERVISOR: GUSMANO

Component: RSC-26-1 Sys: 26 Train:
Associate: Assign Priority: B2
Name: PARTICULATE IODINE AND NOBLE G Work Type: 5
S MONITOR FOR PLANT STACK EXHAUST
Location: RAB/62/N-RA2/E-RAG LMD: 2
Defect/Request: PERFORM 18 MONTH CALIBRATION

Fac: PSL Unit: 01
MASTER
WORK ORDER TASK
96013741 01
ER/PWO: 63 / 5623
Chg loc: 915
PAGE 3 of 4

JOURNEYMANS WORK REPORT

Actual Start Date:	Time:	Actual Completion Date:	Time:
6/2/96	00:00	6/2/96	7:30

Note: Journeyman shall sign and date text after their entries.

Trouble Found:

This Section is NOT Applicable for PMs or other planned jobs

TEST EQUIP.

PSL

PSL

PSL

PSL

PSL

Work Performed:

Performed 18 Mo Cal Found that
when monitor was placed back into service channel
5 was showing a slightly negative number. The
number even though it is extremely small -2.2×10^{-8}
should not be negative in value. *[Signature]* 6/2/96

Worked problem with channel 5 under
P.W. 5688/63 *[Signature]* 6/5/96

Continued on Additional Sheets: ☒ N
Suggestions For Future Planning/Variance Reason:

Supv/Foreman/Chief	Date	Supervisor	Date	QC Inspector	Date
		<i>[Signature]</i>	6-16-96	<i>[Signature]</i>	6-29-96

Component: RSC-26-1 Sys: 26 Train:
Associate: Assign Priority: B2
Name: PARTICULATE IODINE AND NOBLE GA Work Type: 5
S MONITOR FOR PLANT STACK EXHAUST
Location: RAB/62/N-RA2/E-RAG LMD: 2
Defect/Request: PERFORM 18 MONTH CALIBRATION

Pac: PSL Unit: 01
MASTER
WORK ORDER TASK
96013741 01
ER/PWO: 63 / 5623
Chg loc: 915
PAGE 4 of 4

Continuation of Trouble Found/Work Performed:

Re-accomplished calibration and performed functional test.

No other problems found at this time.

Robert J. Beck

6/7/96

Received air permission to continue. Performed step 8.1 → 8.1.8 of
IR 1-1400250 for channel 5 with sat results. Retained monitor
to service, closed case 100. 6/7/96 *John B.*

Continued on Additional Sheets: Y N

REVISION NO.:

2

PROCEDURE TITLE

CONTROL OF PLANT WORK ORDERS

PAGE

80 of 82

PROCEDURE NO.:

ADM-0010432

ADMINISTRATIVE PROCEDURE

ST. LUCIE PLANT

FIGURE 3

TROUBLESHOOTING/MAINTENANCE NPWO PRE-JOB REVIEW SHEET

TROUBLESHOOTING/MAINTENANCE NPWO PRE-JOB REVIEW SHEET

NPWO No. 5623 ER 63 NPS/ANPS Unit 01

A. The Equipment has been declared OOS or is not being relied upon to perform its intended function?

Yes ☒ No ☐

B. Are the affects confined to the subject Equipment?

Yes ☒ No ☐

If A and B are Yes 10CFR50.59 screening is not required.

Continuous Work

Yes ☐ No ☐Performed By: C. J. [Signature]Date 6/2/96

Reason for Disapproval: _____

OPS

Qualified Reviewer

10 CFR 50.59 Screening Questions:

A. Does this alteration represent a change to the facility as described in the SAR? (Includes connection of DAS to redundant safety channels)

Yes ☐ No ☐

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. Sections 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 ☐ No ☐

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

Performed By: _____

Date _____

FRG

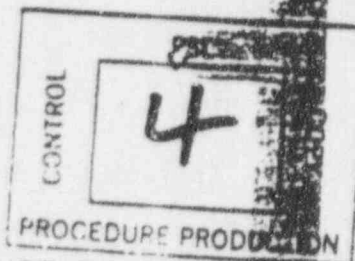
FRG Review No. _____

Date _____

PGM Approval or Designee: _____

Date _____

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE UNIT 1
3 C PROCEDURE NO. 1-1400250
REVISION 1

1.0 TITLE

CALIBRATION OF THE PLANT VENT, FUEL BUILDING EXHAUST, ECCS, PING
AND STEAM LINE MONITORS

2.0 REVIEW AND APPROVAL

Reviewed by Plant Nuclear Safety Committee _____ 3/6 1996

Approved by J. Scarola Plant General Manager _____ 3/6 1996

Revision 1 Reviewed by Facility Review Group _____ 6/3 1996

Approved by J. Scarola Plant General Manager _____ 6/3 1996

3.0 PURPOSE:

3.1 Part I of this procedure provides instructions for the calibration of the Plant Vent, FHB, ECCS PING, monitors. The Effluent monitors are all identical SPING-4 units. The PING - 3B is used as a mobile back-up for the effluent monitors.

3.2 Part II of this procedure provides instructions for the calibration of the Steam Line Monitors.

3.3 The following list of abbreviations will be used throughout this procedure:

PV	-	Plant Vent
FHB	-	Fuel Handling Building
ECCS	-	Emergency Core Cooling System
SPING	-	System Particulate Iodine Noble Gas
Tech Spec	-	Technical Specifications
ODCM	-	Offsite Dose Calculation Manual
CT	-	Control Terminal
FUSAR	-	Final Updated Safety Analysis Report
PSL	-	Plant Saint Lucie
D.A.M.	-	Data Acquisition Module
Cs	-	Cesium
Ba	-	Barium
Sr	-	Strontium

FOR INFORMATION ONLY

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VERIFY INFORMATION WITH A CONTROLLED DOCUMENT.

FLORIDA POWER AND LIGHT CO.

ST. LUCIE PLANT

DATE VERIFIED 6/3/96 INITIAL SP

S 1 OPS	
DATE	<u>960607</u>
DOCT	<u>PROCEDURE</u>
DOCN	<u>1-1400250</u>
SYS	
COMP	<u>COMPLETED</u>
ITM	

ST. LUCIE UNIT 1
I & C PROCEDURE NO. 1-1400250, REVISION 1
CALIBRATION OF THE PLANT VENT, FUEL BUILDING EXHAUST,
ECCS, PING AND STEAM LINE MONITORS

8.0 INSTRUCTIONS: (continued)

8.1 Channel Functional Test

NOTE

Functional tests are required for channels 05, 07 and 09 on the PV, ECCS, FHB and PING monitors. Additionally, a channel 01 functional is required on the FHB. Steamline monitors, require a functional on channels 01 and 02.

/R1

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

Performed by: Robert J. Reichen

2. To verify the high alarm setpoint: At control room CT, insert edit key and turn to edit enable. Press File and the channel number you are testing. Press the + button until the conversion constant is displayed. Press Edit and enter the new calculated conversion constant to give a high alarm. Alarm must occur at < 110% of setpoint.

1-5 = +5.80E-08
1-7 = +1.54E-03
1-9 = +2.68E-01

Record Normal Conversion Constant Value: _____

Calculated Conversion Constant =

Normal Conversion Constant X $\frac{\text{High Alarm Setpoint}}{\text{Current Reading}}$ X 1.05

3. Return conversion constant to normal after alarm annunciation.

Performed by: Robert J. Reichen

IV

4. A Backup method to test the high alarm is to use a wand source placed on the detector. The source must be moved gradually closer to the detector to be able to note the reading when the alarm occurs.

Performed by: N/ABYD

5. To verify a circuit failure: At local skid, disconnect the grey signal cable at the IE box for the channel you are testing. Alarm will occur in 20-30 minutes and Fail led will light. Reconnect the grey signal cable after verifying alarm.

Performed by: Robert J. Reichen

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CALIBRATION OF THE PLANT VENT, FUEL BUILDING EXHAUST,
ECCS, PING AND STEAM LINE MONITORS

8.0 INSTRUCTIONS: (continued)

8.1 (continued)

6. To verify instrument not set in operate mode: At local skid, switch toggle to Maintenance or Calibrate position. The Maintenance led will light. Return toggle to normal after verifying alarm. This test can be performed at the control room CT by placing the channel in Standby to verify alarm of the channel when not in operate mode.

Performed by: Robert J. Beck

7. Verify valve lineup in accordance with procedure 1-C-62 (N/A for Steam Line Monitor). If any discrepancies, notify Operations or Chemistry.

Performed by: Robert J. Beck

8. Complete a Function Test Certificate after monitor is returned to normal operation and verify activity readings are normal compared to the daily readings.

Performed by: Robert J. Beck

8.2 Special Materials

1. Radiation Check Sources

- A. Refer to the Chemistry source data base to determine which sources can be used for a calibration. At least 2 different sources are used for calibration.

NOTE

When performing decay calculations for sources to be used, ensure that A_0 is obtained from the last primary calibration date, not the last secondary calibration date.

- E. Correlation of the channels to specific activity and the subsequent graphs of activity, in microcurie/cc versus cpm, shall be done as part of the primary calibration.

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ECCS, PING AND STEAM LINE MONITORS

8.0 INSTRUCTIONS (continued)

8.2 (continued)

1. (continued)

NOTE

Prior to calibrating one or more channels using the button sources, it is necessary to EDIT the calibration constants of the applicable channel. Change the constant to +1.00 + 00 to effect channel readout in cpm.

- C. Calibration sources are located in the Unit 1 Chemistry Hot Lab. For the type and serial number, refer to the Chemistry source data base located in either the Chemistry offices or the ICM System Supervisor's office.

/R1

8.3 Calibration of Channels 01 and 05 (Beta Particulate and Low Range Gas)

NOTE

Channel is calibrated ONLY on the FHB SPING.

/R1

1. The calibration of these two channels will be performed with the use of BA-133 and CS-137 sources or those sources as delineated in Section 8.2.1. Refer to the original calibration data for radioactive decay calculations. Record the calculations and new values on the calibration sheet. Original calibration data is found in the Process Monitor Data Base Book which is located in the Chemistry Department.

/R1

Performed by: Robert G. BushNOTE

To prevent spurious Control Room alarms while calibrating, either place the appropriate channel in STANDBY, turn the alarm features OFF or place the skid in the CALIBRATE mode.

2. Initiate a purge on the system by pushing the flush button on the skid. Let skid flush to clear any radioactive gases, etc., from the system. Stop the pump and leave OFF during the calibration. Record the channel background count rate on the Calibration Certificate.

/R1

Performed by: Robert G. Bush

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8.0 INSTRUCTIONS. (continued)

8.3 (continued)

3. Remove the particulate filter holder and mid-range gas detector using the special crowbar as required. Using a flashlight, look into the now empty slots and inspect the end faces of the detectors for damaged mylar windows or any abnormalities. Repair as necessary prior to calibration.

Performed by: Robert J. Reul

NOTE

If performing calibration of the FHB SPIN, perform steps 8.3.4 through 8.3.7.
If performing calibration of channel 5 only, perform step 8.3.8.

/R1

4. Place a source, corresponding to Step 8.3.1, in the special source holder and insert the source holder into the particulate filter holder slot.

Performed by: N/A JP

5. Leave the source on the detector for 30 minutes, then obtain an average count rate in cpm for the channel. This may be done through the local SPING-4 display or from the system control terminals in the Control Room (CT-1 or CT-2). Record the count rate on the Calibration Certificate.

/R1

Performed by: Robert J. Reul

6. Compare the corrected count rate (cpm-background) to the decay corrected readings taken from the original channel calibration. Adjust the detector high voltage as required to obtain maximum correlation of the data. (High voltage is adjusted at the applicable detectors' interface (IB) box; refer to the SPING-4 Tech Manual.) Recheck background if high voltage is adjusted. Record corrected cpm.

Performed by: Robert J. Reul

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ECCS, FLOW AND STEAM LINE MONITORS

8.0 INSTRUCTIONS: (continued)

8.3 (continued)

7. After having attained the required stabilized count rate from the first source, carefully remove the source holder and replace the source with a second source corresponding to Step 8.3.1. Reinsert the source holder, wait 30 minutes and then obtain an average count rate as before. If voltage adjustments are required at this step, it is necessary to recheck the first source and background count rate to ensure accuracy. Record count rate on the Calibration Certificate. /R1

Performed by: Robert G. Dech

8. Calibrate remaining Channel 05 in the same manner using Steps 8.3.5 through 8.3.8, moving the source holder to the mid range slot as necessary. /R1

Performed by: Robert G. Dech

9. Remove the source holder and replace the particulate holder and/or the mid range gas detector. Return all calibration constants to their normal values and return all alarms to OPERATE status (remove from Standby mode). Restart the sample pump to clear EXTERNAL FAIL alarm. /R1

Performed by: Robert G. Dech IV Robert G. Dech

10. Perform a functional check on the calibrated channel and complete a Functional Test Certificate. /R1

Performed by: Robert G. Dech

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CALIBRATION OF THE PLANT VENT, FUEL BUILDING EXHAUST,
ECCS, PING AND STEAM LINE MONITORS

8.0 INSTRUCTIONS (continued)

8.4 Calibration of Channels 07 and 09 (Mid and High Range Gas)

NOTE

It is preferable to calibrate these channels using high activity button or wand-type sources due to ALARA considerations and distinct disadvantages associated with passing several microcurie/cc range gas through the lower range channels.

1. EDIT or check the calibration constants for Channels 07 and 09 have been changed to $+1.00 \pm 00$.

Performed by: Robert J. Beck

2. Refer to the Chemistry source data base to determine the sources to be utilized. Decay-correct these readings to correspond to the present calibration date. Enter these readings on the calibration certificate.

Performed by: Robert J. Beck

3. Perform 3.3.2, then remove the mid range detector and insert it into the source holder containing one of the high activity sources.

Performed by: Robert J. Beck

4. Leave the source on the detector for 30 minutes. Obtain an average count rate in cpm.

Performed by: Robert J. Beck

5. Compare the corrected count rate (cpm-background) to the decay corrected readings determined in Step 8.4.2. Record count rates on the calibration certificate.

Performed by: Robert J. Beck

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CALIBRATION OF THE PLANT VENT, FUEL BUILDING EXHAUST
ECOS, PING AND STEAM LINE MONITORS

8.0 INSTRUCTIONS: (continued)

8.4 (continued)

6. After having attained the required stabilized count rate from the first source, carefully remove the detector and replace the source with a second source corresponding to Step 8.4.2. Reinsert the detector, wait 30 minutes and then obtain an average count rate as before. Record count rates on the calibration certificate.

Performed by: Robert J. Decker

7. Calibrate Channel 09 in this manner, using Steps 8.4.1 through 8.4.6.

Performed by: Robert J. Decker

8. Return all calibration constants to their normal values and return all alarms to OPERATE status (remove from Standby mode). Restart sample pump.

Performed by: C. J. [Signature] IV Robert J. Decker

9. Perform a functional test on the calibrated channel and complete a Functional Test Certificate.

8.5 Primary Calibrations

1. Primary calibrations are done by utilizing Procedure C-77.

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CALIBRATION OF THE PLANT VENT, FUEL BUILDING EXHAUST,
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PART II
CALIBRATION OF THE STEAM LINE MONITORS

8.0 INSTRUCTIONS: (continued)

8.1 Special Materials or Equipment

1. BA-103 wand-type radioactive check source and any other high activity sources that have been related to the primary calibration.
2. Detector and source holding fixture.

NOTE

The steam line monitors consist of an energy compensated G.M. tube in a lead shield. The monitors are located on the main steam lines adjacent to the steam dumps. The units are addressed as the 05 units (A, 05-01, B 05-02) on the CT-1 and CT-2 System Control Terminals located in the Control Room. Local control and display is at the D.A.M. unit which is located on the 19' elevation of the R.A.B., just inside door #42.

NOTE

Prior to calibrating the channels, it is necessary to EDIT the calibration constants. Change the constant to +1.00 + 00 to effect channel readout in cpm.

NOTE

To prevent spurious Control Room alarms while calibrating, either place the applicable channel in STANDBY, turn the alarm OFF or place the D.A.M. unit in the CALIBRATE mode.

- 8.2 Record the channel background count rate on the calibration certificate.

Performed by: N/A (signature)

- 8.3 Remove the detector from its shield and place the detector in the source holder. Place one of the high activity sources in the source holder. Leave the source in place for 30 minutes, then compare the corrected count rate (rate minus background) to the decay corrected readings taken from the primary calibration as obtained from the Chemistry source data base. Record count rates on the calibration certificate.

Performed by: N/A (signature) IV N/A

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ECCS, PING AND STEAM LINE MONITORS

8.0 INSTRUCTIONS: (continued)

- 8.4 After having attained the required stabilized count rate from the first source, replace it with a second source. Wait 30 minutes and then obtain an average count rate as before. Record all data on the calibration certificate.

Performed by: 1/A (signature)

- 8.5 Repeat steps 8.2 through 8.4 for the other steam line monitor, if applicable.

Performed by: N/A (signature)

- 8.6 After the calibration is complete, return the monitors to their normal status and re-enter the normal calibration constants.

Performed by: N/A (signature) IV N/A

- 8.7 Perform Channel Functional Test as per 8.1 and complete a Functional Test Certificate.

Performed by N/A (signature)

- 8.8 Verify readings return to normal as compared to the daily readings and notify the Control Room that testing is completed.

Performed by: N/A (signature) IV N/A

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 I & C PROCEDURE NO. 1-1400250, REVISION 1
 CALIBRATION OF THE PLANT VENT, FUEL BUILDING EXHAUST,
 ECCS, PING AND STEAM LINE MONITORS

Procedura Title and Number	Calibration of the Plant Vent Monitor, FHB, ECCS and Steam Line Monitors 1-C-66
Frequency	Refueling
Maximum Time Between Calibrations	18 Months
Equipment I.D. Number	Channels
Date of last Calibration	12-20-94
Date of this Calibration	6/7/96
Special Instructions:	
Calibration Data:	See attached Calibration Certificates

1.0 Channel functional test performed.

Channel	Initial	Channel	Initial
1	N/A	5-1	N
5	8/12	5-2	A
7	8/12		
9	8/12		

2.0 When all calibrations have been completed, return all channels and system lineups to a normal operating condition

Performed by [Signature] Date 6-2-96

IV by [Signature] Date 6-7-96

ST. LUCIE UNIT 1
I & C PROCEDURE NO. 1-1400250, REVISION 1
CALIBRATION OF THE PLANT VENT, FUEL BUILDING EXHAUST,
ECCS PING AND STEAM LINE MONITORS

FUNCTIONAL TEST CERTIFICATE

Frequency	Monthly
Maximum Time Between Functional Test	36 Days
Tolerance	≤ 110% of Alarm Setpoint
Equipment Name	Plant Vent PING
Equipment I.D. Number	1-9
Date of Last Functional Test	NOTE 5-29-96
Date of This Functional Test	6/7/96
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.	
FUNCTIONAL TEST	
A. Original Data Base Values	
(1) Calibration Constant	$+2.68 \times 10^{-1}$
(2) Standby On/Off	RPD
B. Verify all alarms activate and (if applicable) valves close.	
(1) Circuit failure	RPD
(2) Downscale failure	RPD
(3) Controls not set in operate mode	RPD
C. Verify high alarm activates at less than or equal to 110% of actual setpoint. Record the following:	
(1) Required setpoint	$+3.24 \times 10^1$
(2) Required setpoint X 1.10	$+1.51 \times 10^1$
(3) As Found	$+3.24 \times 10^1$
(4) As left alarm point	$+3.24 \times 10^1$
D. Return Data Base to Original Values in Step A	Init. RPD

Performed by Kimberly Risher Date 6/7/96

Approved by Frank Swann Date 6/16/96
I & C Supervisor

ST. LUCIE UNIT 1
I & C PROCEDURE NO. 1-1400250, REVISION 1
CALIBRATION OF THE PLANT VENT, FUEL BUILDING EXHAUST,
ECCS, PING AND STEAM LINE MONITORS

FUNCTIONAL TEST CERTIFICATE

Frequency	Monthly
Maximum Time Between Functional Test	38 Days
Tolerance	≤ 110% of Alarm Setpoint
Equipment Name	Plant Vent PING
Equipment I.D. Number	1-5
Date of Last Functional Test	NOTE
Date of This Functional Test	6/7/96

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.

FUNCTIONAL TEST

A. Original Data Base Values

(1) Calibration Constant	+ 5.80 × 10 ⁻⁸
(2) Standby On/Off	YES

B. Verify all alarms activate and (if applicable) valves close.

(1) Circuit failure	YES
(2) Downscale failure	YES
(3) Controls not set in operate mode	YES

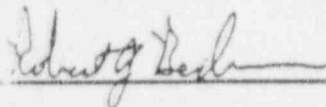
C. Verify high alarm activates at less than or equal to 110% of actual setpoint. Record the following:

(1) Required setpoint	+ 2.31 × 10 ⁻³
(2) Required setpoint × 1.10	+ 4.06 × 10 ⁻³
(3) As Found	+ 2.31 × 10 ⁻³
(4) As left alarm point	+ 2.31 × 10 ⁻³

D. Return Data Base to Original Values in Step A

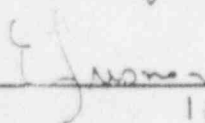
Init.	YES
-------	-----

Performed by



Date 6/7/96

Approved by



Date 6/16/96

I & C Supervisor

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CALIBRATION OF THE PLANT VENT, FUEL BUILDING EXHAUST,
ECCS, PING AND STEAM LINE MONITORS

FUNCTIONAL TEST CERTIFICATE

Frequency	Monthly
Maximum Time Between Functional Test	38 Days
Tolerance	≤ 110% of Alarm Setpoint
Equipment Name	Plant Vent SPENG
Equipment I.D. Number	1-7
Date of Last Functional Test	NOTE
Date of This Functional Test	6/7/96

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.

FUNCTIONAL TEST

A. Original Data Base Values	
(1) Calibration Constant	+1.54 - 03
(2) Standby On/Off	2/12
B. Verify all alarms activate and (if applicable) valves close.	
(1) Circuit failure	2/12
(2) Downscale failure	2/12
(3) Controls not set in operate mode	2/12
C. Verify high alarm activates at less than or equal to 110% of actual setpoint. Record the following:	
(1) Required setpoint	$+5.06 \times 10^{-1}$
(2) Required setpoint X 1.10	$+8.66 \times 10^{-1}$
(3) As Found	$+5.06 \times 10^{-1}$
(4) As left alarm point	$+5.06 \times 10^{-1}$
D. Return Data Base to Original Values in Step A	Init. 2/12

Performed by Robert J. Dech Date 6/7/96

Approved by P. Swanson Date 6/11/96
 I & C Supervisor

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I & C PROCEDURE NO. 1-1400250, REVISION 1
CALIBRATION OF THE PLANT VENT, FUEL BUILDING EXHAUST,
ECCS, PING AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE
MONITOR CHANNEL CHANNEL TYPE

Source #1

Source Type BH-133Serial # WC-24

Assay decay calculation:

$$A = A_0 e^{\left(\frac{-.693t}{T}\right)}$$

$$A = 10681 \left(e^{\frac{-.693(7.85 \text{ yr})}{10.9}} \right) = 6450 \text{ CPM}$$

Tolerance ($\pm 10\%$) = 5835.6 to 7132.4Background levels 9.39 CPM

Ratemeter levels

As found 1.18×10^4 CPMAs left 6.46×10^3 CPMCorrected Activity (ratemeter
levels minus background)6450 CPM

Source #2

Source Type CS-137Serial # WC-25

Assay decay calculation:

$$A = A_0 e^{\left(\frac{-.693t}{T}\right)}$$

$$A = 40591 \left(e^{\frac{-.693(7.85 \text{ yr})}{20.17}} \right) = 33885 \text{ CPM}$$

Tolerance ($\pm 10\%$) = 30496.5 to 37272.5Background levels 9.39 CPM

Ratemeter levels

As found 5.38×10^4 CPMAs left 3.58×10^4 CPMCorrected Activity (ratemeter
levels minus background)35790 CPMChannel 1-5 returned to normal service

NOTE
Time must be in the same units (years, days, weeks, etc.) for both T and t in
the above equations.

Verified by

Robert J. Beckman

Approved by

V. J. [Signature]

I & C Supervisor

6/7/966/16/96

Date

/R1

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CALIBRATION OF THE PLANT VENT, FUEL BUILDING EXHAUST,
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CALIBRATION CERTIFICATE
MONITOR _____ **CHANNEL** 1-7 **CHANNEL TYPE** _____

Source #1

Source Type CS-137

Serial # TR-43

Assay decay calculation:

$$A = A_0 e^{\left(\frac{-.693t}{T}\right)}$$

$$A = 1680 \left(e^{\frac{-.693(11.11 \text{ yr})}{30.17}} \right) = 1302 \text{ CPM}$$

Tolerance ($\pm 10\%$) = 1171.8 to 1432.2

Background levels 3.6 CPM

Ratemeter levels

As found 4.1 $\times 10^3$ CPM

As left 1.3 $\times 10^3$ CPM

Corrected Activity (ratemeter levels minus background)

366 CPM

Source #2

Source Type CO-60

Serial # TR-44

Assay decay calculation:

$$A = A_0 e^{\left(\frac{-.693t}{T}\right)}$$

$$A = 1690 \left(e^{\frac{-.693(11.11 \text{ yr})}{5.26}} \right) = 390 \text{ CPM}$$

Tolerance ($\pm 10\%$) = 351 to 429

Background levels 3.6 CPM

Ratemeter levels

As found 4.08 $\times 10^2$ CPM

As left 4.08 $\times 10^2$ CPM

Corrected Activity (ratemeter levels minus background)

404 CPM

Channel 1-7 returned to normal service**NOTE**

Time must be in the same units (years, days, weeks, etc.) for both T and t in the above equations.

Verified by

Approved by

Robert G. Neale

V. Sumner

I & C Supervisor

6/4/966/16/96

Date

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ECCS, PING AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

MONITOR CHANNEL 1-9 **CHANNEL TYPE**

Source #1

Source Type BA-133Serial # BK-322

Assay decay calculation:

$$A = A_0 e^{\left(\frac{-.693t}{T}\right)}$$

$$A = 1289 \left(e^{\frac{-.693(5 \text{ yrs})}{10.9}} \right) = 909 \text{ CPM}$$

Tolerance ($\pm 10\%$) = 844 to 1032Background levels 2.7 CPM

Ratemeter levels

As found 909 CPMAs left 909 CPM

Corrected Activity (ratemeter levels minus background)

906 CPM

Source #2

Source Type CS-137Serial # BK-323

Assay decay calculation:

$$A = A_0 e^{\left(\frac{-.693t}{T}\right)}$$

$$A = 1559 \left(e^{\frac{-.693(5)}{10.17}} \right) = 1389 \text{ CPM}$$

Tolerance ($\pm 10\%$) = 1250 to 1528Background levels 2.7 CPM

Ratemeter levels

As found 1303 CPMAs left 1303 CPM

Corrected Activity (ratemeter levels minus background)

1300 CPM

/R1

/R1

/R1

Channel 1-9 returned to normal service**NOTE**

Time must be in the same units (years, days, weeks, etc.) for both T and t in the above equations.

Verified by

Robert G. Beck6/4/96

Approved by

J. S. [Signature]6/16/96

I & C Supervisor

Date

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CALIBRATION OF THE PLANT VENT, FUEL BUILDING EXHAUST,
ECCS, PING AND STEAM LINE MONITORS

8.0 INSTRUCTIONS: (continued)

8.1 Channel Functional Test

NOTE

Functional tests are required for channels 05, 07 and 09 on the PV, ECCS, FHB and PING monitors. Additionally, a channel 01 functional is required on the FHB. Steamline monitors, require a functional on channels 01 and 02.

/R1

1. Notify RCC that you will be performing a functional test and which alarms to expect.

Performed by: *[Signature]*

2. To verify the high alarm setpoint: At control room CT, insert edit key and turn to edit enable. Press File and the channel number you are testing. Press the + button until the conversion constant is displayed. Press Edit and enter the new calculated conversion constant to give a high alarm. Alarm must occur at < 110% of setpoint.

Record Normal Conversion Constant Value: $5.80E-04$

$$\text{Calculated Conversion Constant} = \frac{2.5375E-04 \times 1.05}{2.31E-03} = 2.664E-04$$

$$\text{Normal Conversion Constant} \times \frac{\text{High Alarm Setpoint}}{\text{Current Reading}} \times 1.05$$

$5.28E-04$

3. Return conversion constant to normal after alarm annunciation.

Performed by: *[Signature]*IV *[Signature]*

4. A Backup method to test the high alarm is to use a wand source placed on the detector. The source must be moved gradually closer to the detector to be able to note the reading when the alarm occurs.

Performed by: *[Signature]*

N/A. Primary method used

5. To verify a circuit failure: At local skid, disconnect the grey signal cable at the IB box for the channel you are testing. Alarm will occur in 20-30 minutes and Failed will light. Reconnect the grey signal cable after verifying alarm.

Performed by: *[Signature]*

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CALIBRATION OF THE PLANT VENT, FUEL BUILDING EXHAUST,
ECOS, PING AND STEAM LINE MONITORS

8.0 INSTRUCTIONS: (continued)

8.1 (continued)

6. To verify instrument not set in operate mode. At local skid, switch toggle to Maintenance or Calibrate position. The Maintenance led will light. Return toggle to normal after verifying alarm. This test can be performed at the control room CT by placing the channel in Standby to verify alarm of the channel when not in operate mode.

Performed by: J.A. [Signature]

7. Verify valve lineup in accordance with procedure 1-C-62 (N/A for Steam Line Monitor). If any discrepancies, notify Operations or Chemistry. /R1

Performed by: J.F. [Signature]

8. Complete a Function Test Certificate after monitor is returned to normal operation and verify activity readings are normal compared to the daily readings.

Performed by: L.M. [Signature]

8.2 Special Materials

1. Radiation Check Sources

- A. Refer to the Chemistry source data base to determine which sources can be used for a calibration. At least 2 different sources are used for calibration. /R1

NOTE

When performing decay calculations for sources to be used, ensure that A_0 is obtained from the last primary calibration date, not the last secondary calibration date

- B. Correlation of the channels to specific activity and the subsequent graphs of activity, in microcurie/cc versus cpm, shall be done as part of the primary calibration.

ST LUCIE UNIT 1
 I & C PROCEDURE NO. 1-1400250, REVISION 1
 CALIBRATION OF THE PLANT VENT, FUEL BUILDING EXHAUST,
 ECCS, RING AND STEAM LINE MONITORS

Procedure Title and Number	Calibration of the Plant Vent Monitor, FHB, ECCS and Steam Line Monitors 1-C-66
Frequency	Refueling
Maximum Time Between Calibrations	18 Months
Equipment I.D. Number	Channels
Date of last Calibration	
Date of this Calibration	
Special Instructions:	
Calibration Data:	

1.0 Channel functional test performed.

Channel	Initial
1	---
5	---
7	---
9	---

Channel	Initial
5-1	---
5-2	---

2.0 When all calibrations have been completed, return all channels and system lineups to a normal operating condition.

Performed by _____ Date ____/____/____

IV by _____ Date ____/____/____

R

N

ST. LUCIE UNIT 1
I & C PROCEDURE NO. 1-1400250, REVISION 1
CALIBRATION OF THE PLANT VENT, FUEL BUILDING EXHAUST,
ECCO, PING AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

MONITOR CHANNEL CHANNEL TYPE

Source #1

Source Type _____
Serial # _____
Assay decay calculation:
$A = A_0 e^{(-.693t/T)}$
Tolerance (±10%) = _____
Background levels _____
Ratemeter levels _____
As found _____
As left _____
Corrected Activity (ratemeter levels minus background)

Source #2

Source Type _____
Serial # _____
Assay decay calculation:
$A = A_0 e^{(-.693t/T)}$
Tolerance (±10%) = _____
Background levels _____
Ratemeter levels _____
As found _____
As left _____
Corrected Activity (ratemeter levels minus background)

/R1

/R1

/R1

Channel _____ returned to normal service

NOTE

Time must be in the same units (years, days, weeks, etc.) for both T and t in the above equations.

Verified by _____

Approved by _____

I & C Supervisor

Date _____

ST. LUCIE UNIT 1
I & C PROCEDURE NO. 1-1400250, REVISION 1
CALIBRATION OF THE PLANT VENT, FUEL BUILDING EXHAUST,
ECCS, PING AND STEAM LINE MONITORS

FUNCTIONAL TEST CERTIFICATE

Frequency	Monthly
Maximum Time Between Functional Test	38 Days
Tolerance	≤ 110% of Alarm Setpoint
Equipment Name	RAMSC-36-1
Equipment I.D. Number	4788
Date of Last Functional Test	NOTE
Date of This Functional Test	6-7-96

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.

FUNCTIONAL TEST

A. Original Data Base Values	
(1) Calibration Constant	5.80 E-08
(2) Standby On/Off	OFF
B. Verify all alarms activate and (if applicable) valves close.	
(1) Circuit failure	SAT LMA
(2) Downscale failure	SAT LMA
(3) Controls not set in operate mode	SAT LMA
C. Verify high alarm activates at less than or equal to 110% of actual setpoint. Record the following:	
(1) Required setpoint	2.31 E-03
(2) Required setpoint X 1.10	2.54 E-03
(3) As Found	2.42 E-03
(4) As left alarm point	2.42 E-03
D. Return Data Base to Original Values in Step A	Init. LMA

Performed by L.M. Albright Date 6/7/96

Approved by R. Jones Date 6/7/96
I & C Supervisor

CHANNEL NUMBER MIC_01_05

SOURCES USED IN THE LAST CAL

TYPE	SERIAL NUMBER	ASSAY DATE	ORIGINAL COUNTS
BA-133	WC-24 T=10.97	27-JUL-1988	10681
CS-137	WC-25 T=30.174	27-JUL-1988	40581

SOURCES USED IN PREVIOUS CALS

TYPE	SERIAL NUMBER	ASSAY DATE	ORIGINAL COUNTS	4 d
BA-133	SRM-4241-5	27-JUL-1988	24200.0	5 mont
CS-137	91-516	27-JUL-1988	14900.0	

$$A = \frac{A_0}{10.97} \times \frac{7.3421}{1}$$

$$A = 10681$$

$$A = 6697 \text{ c/m}$$

June 2

BA-133

$$A = \frac{693}{0.174} \times 7.3421$$

$$A = 40581$$

$$A = 34284 \text{ c/m}$$

CS-137

June 2

$$\text{Ratio} = \frac{9123}{6697} = 1.361$$

$$\text{Ratio} = \frac{47100}{34284} = 1.374$$

1093 6 yr
3955 5 mont
6 mont + 2 day

CHANNEL NUMBER MIC_01_07
 SOURCES USED IN THE LAST CAL

TYPE	SERIAL NUMBER	ASSAY DATE	ORIGINAL COUNTS
CS-137	TR-43	24-APR-1985	1680
CO-60	TR-44	24-APR-1985	1690

SOURCES USED IN PREVIOUS CALS

TYPE	SERIAL NUMBER	ASSAY DATE	ORIGINAL COUNTS
BA-133	NES-9007	24-APR-1985	2020

CHANNEL NUMBER MIC 109

SOURCES USED IN THE LAST CAL

TYPE	SERIAL NUMBER	ASSAY DATE	ORIGINAL COUNTS
BA-133	BK-322 T: 3.1	3-MAY-1991	1289
CS-1327	BK-323 T: 3.17	3-MAY-1991	1559

SOURCES USED IN PREVIOUS CALS

TYPE	SERIAL NUMBER	ASSAY DATE	ORIGINAL COUNTS
BA-133	NES-9007	27-JUL-1988	1459.200
CS-137	TR-43	27-JUL-1988	2140.200

FOR INFORMATION ONLY

THIS DOCUMENT IS NOT CONTROLLED. BEFORE USE,
VERIFY INFORMATION WITH A CONTROLLED DOCUMENT.

FLORIDA POWER AND LIGHT CO.

ST. LUCIE PLANT

DATE 20 POST MAINTENANCE TEST SHEETS (A.O.15) WRGM FORM

QI 11-PR PSL-4

Revision 30

May, 1996

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APPENDIX A

Unit	01	NPWO	5623/63	Work Order	96013741	Task	
Component Tag Number	13SC-26			Associated Component	System # 20		
Equipment Name/Component Description PLANT VENT GAS MONITOR							
Brief Repair Description: Calibration and functional testing is now performed by ICM							
Testing Required							
<input checked="" type="checkbox"/> Notify Chemistry		Initial		Sat		Unsat	
<input checked="" type="checkbox"/> Channel Functional Test Chemistry	N/A	R/D		X			
Performed By:							Date: / /
<input checked="" type="checkbox"/> Calibration Chemistry	N/A	R/D					
Performed By:							Date: / /
<input checked="" type="checkbox"/> Channel Check		R/D		X			
<input checked="" type="checkbox"/> Verify Detector Voltage		R/D		X			
<input checked="" type="checkbox"/> Verify Conversion Factor		R/D		X			
<input checked="" type="checkbox"/> Channel Functional Test I&C		R/D		X			
<input checked="" type="checkbox"/> Calibration I&C		R/D		X			
<input type="checkbox"/> Verify proper operation of RM-23							
<input checked="" type="checkbox"/> Acquire Source Decay Information		R/D		X			
<input type="checkbox"/>							
<input type="checkbox"/>							
Testing Unsat Comments: ICM							
<input checked="" type="checkbox"/> PMT COMPLETE (NO DEFERRAL) MAINT. SUPV.: <u>C. Jones</u> DATE: <u>6/4/96</u>							
<input type="checkbox"/> PMT DEFERRED List tests DEFERRED:							
BLANKET NPWO #: _____ BLANKET WO #: _____							
MAINT. SUPV.: _____ DATE: / /							
DEFERRED TEST RESULTS ACCEPTED BY PMT COOR.: _____ DATE: / /							
IF ANY TEST IS UNSAT, NPWO #: _____ WO #: _____ FOR REWORK							
EQUIPMENT RETURNED TO SERVICE							
NPS/ANPS/NWE: _____ DATE: <u>6/4/96</u>							
COMMENTS: _____							

CONTROLLED BY THE
5:41
CONTROLLER SYNCHRONIZED
5:28

FLUSH ON
CONTROLLER SYNCHRONIZED
5:28
CLOCK AND RESET
7:44
CONTROLLER SYNCHRONIZED
7:31
CONTROLLER SYNCHRONIZED

UNIT 001-07	+1.71E-04	NO	NORMAL
UNIT 001-05	+5.40E-07	NO	NORMAL
UNIT 001-03	+3.07E+02	OK	NORMAL
UNIT 001-01	+5.22E+01	OK	NORMAL

5:57 7 JUN 88
CONTROLLER SYNCHRONIZED
5:31 7 JUN 88

UNIT 004-07 NORMAL
5:19 7 JUN 88

F UNIT 004-07 LO FAIL

UNIT 001-07 NORMAL
5:09 7 JUN 88

A UNIT 001-07 TREND
+1.05E-02

4:59 7 JUN 88
CONTROLLER SYNCHRONIZED
4:54 7 JUN 88
CONTROLLER SYNCHRONIZED
4:51 7 JUN 88
CONTROLLER SYNCHRONIZED
4:45 7 JUN 88
CONTROLLER SYNCHRONIZED
4:43 7 JUN 88

FLUSH ON UNIT 005-03

FLUSH OFF UNIT 005-00
CONTROLLER SYNCHRONIZED

FLUSH ON UNIT 005-03

FLUSH OFF UNIT 005-03

CONTROLLER SYNCHRONIZED

4:00 7 JUN 88

CONTROLLER SYNCHRONIZED

4:00 7 JUN 88

UNIT 001-07 +7.24E-01 uCi/cc NORMAL

UNIT 001-07 +7.71E-04 uCi/cc NORMAL

UNIT 001-05 +5.28E-07 uCi/cc NORMAL

UNIT 001-03 +2.07E+03 cpm NORMAL

UNIT 001-01 +5.01E+01 cpm NORMAL

3:50 7 JUN 88

UNIT 001-05 NORMAL

+5.28E-07 uCi/cc

CLOCK SYNC REQUESTED

FELEARS ID: 000-00

R.FLO FAC: +0.00E+00

SAMPLE ID: 000-00

S.FLO FAC: +0.00E+00

TREND[3]: +1.00E+02

HI ALARM: +2.31E-03

ALERT SET: +1.71E-03

FI: SUB: +1.00E+00

BKG CH.2: 00

FACTOR 2: +0.00E+00

BKG CH.1: 00

FACTOR 1: +0.00E+00

CALIB.CON: +5.00E-08

LOGGED: DISABLED

UNIT 001-05

b GAS in uCi/cc

0 *** PARAMETER FILE CHANGE ***

3:42 7 JUN 88

A UNIT 001-05 ALARMED

+9.31E+00 uCi/cc

3:40 7 JUN 88

CONTROLLER SYNCHRONIZED

3:31 7 JUN 88

A UNIT 001-05 ALARMED

+8.51E+00 uCi/cc

3:29 7 JUN 88

A UNIT 001-05 ALARMED

3:19 7 JUN 88

UNIT 001-03 NORMAL

UNIT 001-01 NORMAL

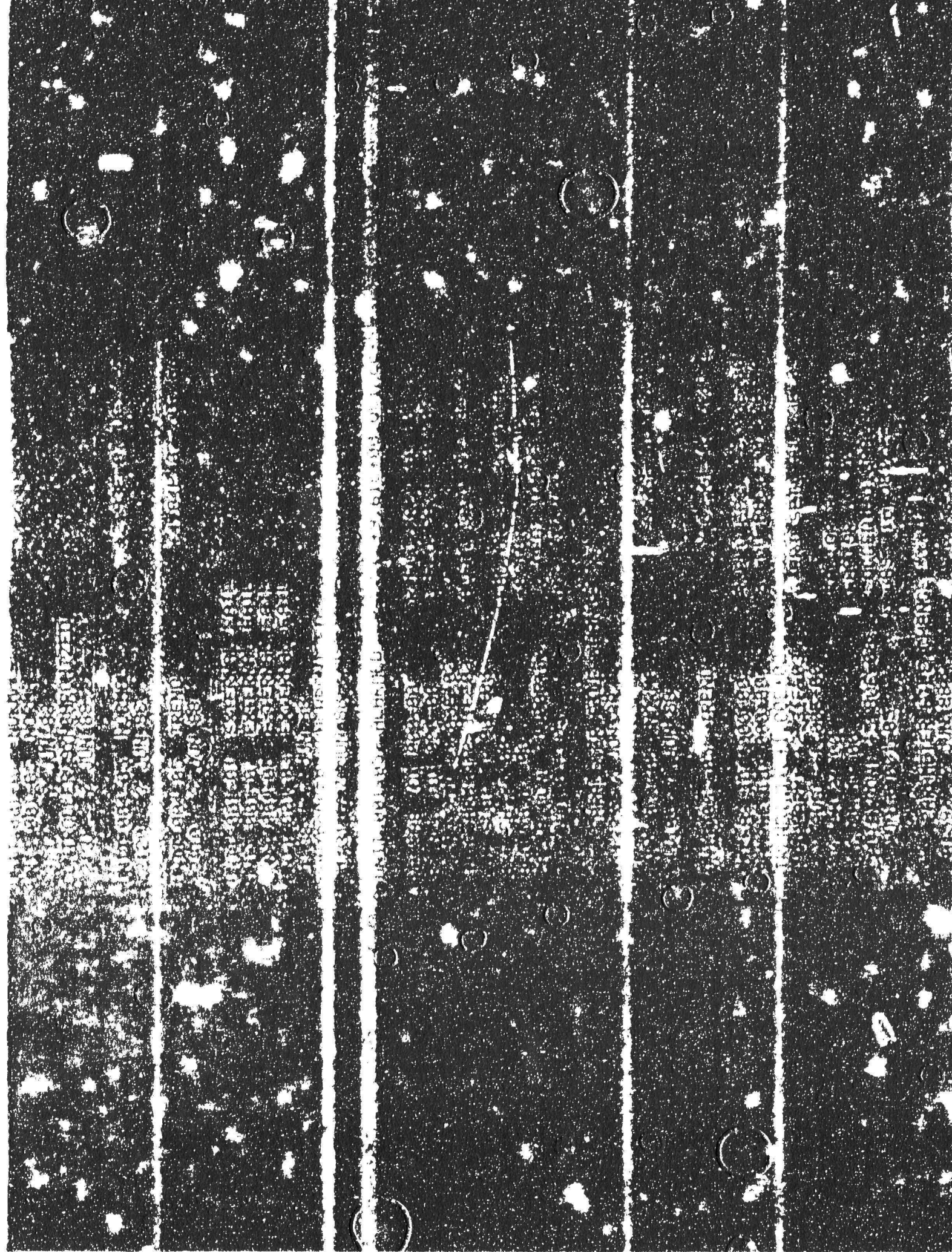
UNIT 001-07 NORMAL

UNIT 001-05 NORMAL

3:14 7 JUN 88

CONTROLLER SYNCHRONIZED

3:01 7 JUN 88



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RELEASE ID: 000-00 R.FLO.FACT: +0.00E+00
SAMPLE ID: 000-00 S.FLO.FACT: +0.00E+00
TREND (Z): +5.00E+01
HIALARM: +3.24E+01 ALERT SET: +1.62E+01
FIX SUB: +0.00E+00
BKG CH: 2: 00 FACTOR 2: +0.00E+00
BKG CH: 1: 00 FACTOR 1: +0.00E+00
CALIB. CONT: +2.68E-01 LOGGED: DISABLED
UNIT: 001-09 GAS: In 001cc

013:04 2 JUN 96

RELEASE ID: 000-00 R.FLO.FACT: +0.00E+00
SAMPLE ID: 000-00 S.FLO.FACT: +0.00E+00
TREND (Z): +5.00E+01
HIALARM: +5.06E+01 ALERT SET: +1.62E+01
FIX SUB: +0.00E+00
BKG CH: 2: 00 FACTOR 2: +0.00E+00
BKG CH: 1: 00 FACTOR 1: +0.00E+00
CALIB. CONT: +1.54E-03 LOGGED: DISABLED
UNIT: 001-07 GAS: In 001cc

RELEASE ID: 000-00 R.FLO.FACT: +0.00E+00
SAMPLE ID: 000-00 S.FLO.FACT: +0.00E+00
TREND (Z): +1.00E+02
HIALARM: +2.31E+03 ALERT SET: +1.62E+01
FIX SUB: +1.20E+01
BKG CH: 2: 00 FACTOR 2: +0.00E+00
BKG CH: 1: 00 FACTOR 1: +0.00E+00
CALIB. CONT: +5.80E-08 LOGGED: ARG 83 INTV
UNIT: 001-05 GAS: In 001cc

0103 2 JUN 96

UNIT 1

Page 13 of 16

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 15
 TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
 FUEL BUILDING EXHAUST, ECCS, AND STEAM LINE MONITORS

COPY
 JECOT

Procedure Title and Number	Technical Specification Calibration of the Plant Vent Monitor, FHB, ECCS and Steam Line Monitors 1-C-66	/R15
Frequency	Refueling	
Maximum Time Between Calibrations	18 months	
Equipment I.D. Number	Channels	/R15
Date of last Calibration	2/10/87	
Date of this Calibration	7/27/88	
File Number		
Special Instructions: New original source data for 01-05 due to new primary cal and 01-09 due to new method for calibration being devised		
Calibration Data:		

1.0 Channel functional checks performed.

/R15

Channel	Initial
01-05	DW
01-07	DW
01-09	DW

/R15

2.0 When all calibrations have been completed, return all channels and system lineups to a normal operating condition.

Performed by

Date

7/27/88

KK/19

S	1	OPS
DATE		
DOCT	Procedure	
DOCN	1-C-66	
SYS		
COMP	COMPLETED	
ITM	15	

P&L COUNTY DEPT.	
PLANT VENT MONITOR	
DATE VERIFIED 7/27/88	
INITIAL	DW
DATE VERIFIED	
INITIAL	

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 15
 TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
 FUEL BUILDING EXHAUST, ECCS, AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

MONITOR Plant Vent CHANNEL 01-05 CHANNEL TYPE LOW 995

/R1

Source #1

Source Type mixed gasSerial # N/A

Assay decay calculation:

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

$$A = 2.81 E^{-4} \text{ } \mu\text{Ci/ml}$$

see Attached printout

Tolerance ($\pm 10\%$) = N/ABackground levels 19 cpm

Ratemeter levels

Local (Skid) 4.65 E3Remote (CT) 4.65 E3

Corrected Activity (ratemeter levels minus background)

4.63 E3

Source #2

Source Type mixed gasSerial # N/A

Assay decay calculation:

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

$$A = 1.56 E^{-6} \text{ } \mu\text{Ci/ml}$$

see attached printout

Tolerance ($\pm 10\%$) = N/ABackground levels 19 cpm

Ratemeter levels

Local (Skid) 48 cpm

/R15

Remote (CT) 48 cpm

/R15

Corrected Activity (ratemeter levels minus background)

29 cpmChannel 01-05 returned to normal serviceVerified by D. WoodbridgeDate 7/27/88Approved by R. H. Smith
Chemistry SupervisorDate 8/19/88

/R15

ST. LUCIE UNIT 1
CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 15
TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
FUEL BUILDING EXHAUST, ECCS, AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

MONITOR Plant vent CHANNEL 01-05 CHANNEL TYPE Low gas

/R15

Source # 3Source Type mixed gasSerial # N/A

Assay decay calculation:

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

$$A = 2.55 E^{-5} \text{ uci/ml}$$

See Attached Printout

Tolerance ($\pm 10\%$) = N/ABackground levels 19 cpm

Ratemeter levels

Local (Skid) 4.07 E2Remote (CT) 4.07 E2

Corrected Activity (ratemeter levels minus background)

3.88 E2Source # 4Source Type mixed gasSerial # N/A

Assay decay calculation:

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

$$A = 3.00 E^{-3} \text{ uci/ml}$$

See Attached printout

Tolerance ($\pm 10\%$) = N/ABackground levels 19 cpm

Ratemeter levels

Local (Skid) 5.17 E4Remote (CT) 5.17 E4

Corrected Activity (ratemeter levels minus background)

5.17 E4

/R15

/R15

Channel 01-05 returned to normal serviceVerified by D. WoodburyDate 7/27/88Approved by A. K. LittleDate 7/19/88

Chemistry Supervisor

/R15

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 15
 TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
 FUEL BUILDING EXHAUST, ECCS, AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

MONITOR Plant Vent CHANNEL 01-Q5 CHANNEL TYPE Low gas

Source #1

Source Type CS 137Serial # WC 2.5

Assay decay calculation:

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

Original

Tolerance ($\pm 10\%$) =Background levels 19 cpm

Ratemeter levels

Local (Skid) 4.10 E4Remote (CT) 4.06 E4

Corrected Activity (ratemeter levels minus background)

4.06 E4

Source #2

Source Type Ba 133Serial # WC 24

Assay decay calculation:

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

Original

Tolerance ($\pm 10\%$) =Background levels 19 cpm

Ratemeter levels

Local (Skid) 1.07 E4Remote (CT) 1.07 E4

Corrected Activity (ratemeter levels minus background)

1.07 E4

Channel 01-Q5 returned to normal service

Verified by D. WoolbridgeDate 7/27/88Approved by [Signature]Date 8/9/88

Chemistry Supervisor

/R15

/R15

/R15

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 15
 TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
 FUEL BUILDING EXHAUST, ECCS, AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

MONITOR Plant vent CHANNEL C1-C5 CHANNEL TYPE Low g95

/R1

Source # 3Source Type C5 L37Serial # 81-516

Assay decay calculation:

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

Original

Tolerance ($\pm 10\%$) =Background levels 19 cpm

Ratemeter levels

Local (Skid) 1.49 E⁴Remote (CT) 1.49 E⁴

Corrected Activity (ratemeter levels minus background)

1.49 E⁴

Source # 4Source Type C5 L37Serial # 194

Assay decay calculation:

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

Original

Tolerance ($\pm 10\%$) =Background levels 19 cpm

Ratemeter levels

Local (Skid) 4.26 E⁻³Remote (CT) 4.26 E⁻³

Corrected Activity (ratemeter levels minus background)

4.24 E⁻³

/R15

/R15

Channel C1-C5 returned to normal serviceVerified by D. W. [Signature]Date 7/27/88Approved by [Signature]Date 7/28/88

Chemistry Supervisor

/R15

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 15
 TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
 FUEL BUILDING EXHAUST, ECCS, AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

MONITOR Plant Vent CHANNEL 01-05 CHANNEL TYPE LOW 995

/R1

Source # 5Source Type Bq 133Serial # 8348-7

Assay decay calculation:

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

Original

Tolerance ($\pm 10\%$) =Background levels 19 cpm

Ratemeter levels

Local (Skid) 2.48 E²Remote (CT) 2.48 E²

Corrected Activity (ratemeter levels minus background)

229

Source # 6Source Type Bq 133Serial # 4241-5

Assay decay calculation:

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

Original

Tolerance ($\pm 10\%$) =Background levels 19 cpm

Ratemeter levels

Local (Skid) 2.42 E⁴Remote (CT) 2.42 E⁴

Corrected Activity (ratemeter levels minus background)

2.42 E⁴

/R15

/R15

Channel 01-05 returned to normal service

Verified by

D. Workman

Date

7/27/88

Approved by

P. J. Little

Date

8/19/88

Chemistry Supervisor

/R15

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

PRELIMINARY ACTIVITY REPORT

REACTOR UNIT#: 1 FILE RELEAS.OTHER1 SAMPLE#: 25
SAMPLE I.D. : #1 PV CAL #1 SAMPLE TYPE : GAS
SAMPLE TIME : 7-25-1988 @ 13:19 SAMPLE VOLUME : 3.020E 01 MLS.
ACQUIRE TIME : 7-25-1988 @ 13:41 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	2.805E-04	1.632E-05	81.00	391.	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.

E

PRELIMINARY ACTIVITY REPORT

REACTOR UNIT#: 1 FILE RELEAS.OTHER1 SAMPLE#: 28
SAMPLE I.D. : #1 PV CAL #2 SAMPLE TYPE : GAS
SAMPLE TIME : 7-25-1988 @ 15:19 SAMPLE VOLUME : 4.600E 03 MLS.
ACQUIRE TIME : 7-25-1988 @ 15:52 LIVE TIME : 1.000E 03 SEC.
EFF.FILE NAME: EFF .GT47 ACT MULT FACTOR: 1.000E 00

NUCLIDE	SAMPLE	1 SIGMA	KEYLINE	NET PEAK	NUCLIDE
SYMBOL	UCI/ML	ERROR	ENERGY	AREA	SYMBOL
XE-133	1.563E-06	6.165E-08	81.00	786.	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.

En

PRELIMINARY ACTIVITY REPORT

REACTOR UNIT#: 1 FILE RELEAS.OTHER1 SAMPLE#: 29
SAMPLE I.D. : #1 PV CAL #3 SAMPLE TYPE : GAS
SAMPLE TIME : 7-25-1988 @ 17:15 SAMPLE VOLUME : 4.600E 03 MLS.
ACQUIRE TIME : 7-25-1988 @ 17:37 LIVE TIME : 1.000E 03 SEC.
EFF.FILE NAME: EFF .GT47 ACT MULT FACTOR: 1.000E 00

NUCLIDE SYMBOL	SAMPLE UCI/ML	1 SIGMA ERROR	KEYLINE ENERGY	NET PEAK AREA	NUCLIDE SYMBOL
XE-131M	5.051E-07	3.146E-07	163.93	20.	XE-131M
XE-133	2.450E-05	2.255E-07	81.00	12363.	XE-133
XE-133M	4.498E-07	5.557E-08	233.18	72.	XE-133M

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#: 31
SAMPLE I.D. : #1 PV CAL #4 SAMPLE TYPE : GAS
SAMPLE TIME : 7-25-1988 @ 17:54 SAMPLE VOLUME : 3.020E 01 MLS.
ACQUIRE TIME : 7-25-1988 @ 18:58 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	2.996E-03	4.899E-05	81.00	4169.	XE-133

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

P.V. L.R.G.

01-05

07-25-88

Ch. Meyer

$\frac{1}{5} = 5.80 \times 10^{-8}$

ST. LUCIE UNIT 1
CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 15
TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
FUEL BUILDING EXHAUST, ECCS, AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

MONITOR Plant Vent CHANNEL 01-07 CHANNEL TYPE mid gas

/R15

Source #1

Source Type Ba 133Serial # NES 9007 #62

Assay decay calculation:

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

$$A_0 = 2020 \text{ cpm on } 4/24/85$$

see Attached printout

$$\text{Tolerance } (\pm 10\%) = \frac{1472 - 1800}{1800}$$

Background levels .2 cpm

Ratemeter levels

Local (Skid) 1620Remote (CT) 1620

Corrected Activity (ratemeter levels minus background)

1620

Source #2

Source Type Cs 137Serial # TR 43 #17

Assay decay calculation:

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

$$A_0 = 1680 \text{ cpm on } 4/24/85$$

SEE Attached printout

$$\text{Tolerance } (\pm 10\%) = \frac{1403 - 1715}{1715}$$

Background levels .2 cpm

Ratemeter levels

Local (Skid) 1490Remote (CT) 1493 cpm

Corrected Activity (ratemeter levels minus background)

1493

/R15

/R15

Channel 01-07 returned to normal serviceVerified by D. WoodbridgeDate 7/27/88Approved by [Signature]Date 8/9/88

Chemistry Supervisor

/R15

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 15
 TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
 FUEL BUILDING EXHAUST, ECCS, AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

MONITOR Plant Vent CHANNEL 01-07 CHANNEL TYPE gas

/R1:

Source # 3Source Type CO 60Serial # TR 44 #16

Assay decay calculation:

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

$$A_0 = 1690 \text{ cpm on } 4/24/85$$

see Attached printout

$$\text{Tolerance } (\pm 10\%) = \frac{992 - 1212}{1212}$$

Background levels .2 cpm

Ratemeter levels

Local (Skid) 1030Remote (CT) 1033

Corrected Activity (ratemeter levels minus background)

1033

Source #2

Source Type _____

Serial # _____

Assay decay calculation:

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

$$\text{Tolerance } (\pm 10\%) =$$

Background levels _____

Ratemeter levels

Local (Skid) _____

Remote (CT) _____

Corrected Activity (ratemeter levels minus background)

/R15

/R15

Channel 01-07 returned to normal serviceVerified by D. WoodbridgeDate 7/27/88Approved by R. H. TuttleDate 8/9/88

Chemistry Supervisor

/R15

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

SOURCE DECAY

SOURCE TYPE - BA 133
SERIAL NUMBER - NES 9007 #62
ORG. ASSAY DATE - 1985- 4-24-12
HALF-LIFE (YRS)- 10.70
ASSAY VALUE - 2020.00
DATE DECAYED TO - 1988- 7-26- 8
DECAYED ACTIVITY - 1638.104
10% TOLERANCES - 1472.44 TO 1729.65

DW
01-07

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

SOURCE DECAY

SOURCE TYPE - CS 137
SERIAL NUMBER - TR 43 #17
ORG. ASSAY DATE - 1985- 4-24-12
HALF-LIFE (YRS) 32.17
ASSAY VALUE - 1680.00
DATE DECAYED TO - 1988- 7-26- 8
DECAYED ACTIVITY - 1550.27
10% TOLERANCES - 1403.07 TO 1714.87

DW
01-07

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

SOURCE DECAY

SOURCE TYPE - CO-60
SERIAL NUMBER - TR 44 #16
ORG. ASSAY DATE - 1985-4-24-12
HALF-LIFE (YRS)- 5.27
ASSAY VALUE - 1696.00
DATE DECAYED TO - 1988-7-1-12
DECAYED ACTIVITY - 1101.60
10% TOLERANCES - 991.5 TO 1211.80

DW

01-07

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 15
 TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
 FUEL BUILDING EXHAUST, ECCS, AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

MONITOR Plant vent CHANNEL 01-09 CHANNEL TYPE high gas

Source #1

Source Type Ba 133Serial # NES 9007 #62

Assay decay calculation:

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

$A_0 = 742 \text{ cpm on } 4/24/88^5$
 see printout.

Tolerance ($\pm 10\%$) = 541 -
661

Background levels .8 cpm

Ratemeter levels

Local (Skid) 604Remote (CT) 604

Corrected Activity (ratemeter levels minus background)

603

Source #2

Source Type CS 137Serial # TR 43 #17

Assay decay calculation:

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

$A_0 = \overset{w}{3} + 351 \text{ cpm on } 4/24/85$
 see printout

Tolerance ($\pm 10\%$) = 293 -
358

Background levels .8 cpm

Ratemeter levels

Local (Skid) 314Remote (CT) 313

Corrected Activity (ratemeter levels minus background)

312Channel 01-09 returned to normal serviceVerified by D. W. [Signature]Date 7/27/88Approved by S. [Signature]Date 8/19/88

Chemistry Supervisor

/R15

/R15

/R15

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 15
 TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
 FUEL BUILDING EXHAUST, ECCS, AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

MONITOR Plant Vent CHANNEL 01-09 CHANNEL TYPE high gas

/R15

Source #1

Source Type Ba 133Serial # ves 9007

Assay decay calculation:

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

Original

Tolerance ($\pm 10\%$) =Background levels 0.8 cpm

Ratemeter levels

Local (Skid) 1.46 E⁻³Remote (CT) 1.46 E⁻³

Corrected Activity (ratemeter levels minus background)

1.46 E⁻³

Source #2

Source Type Cs 137Serial # TR 43 #17

Assay decay calculation:

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

Original

Tolerance ($\pm 10\%$) =Background levels 0.8 cpm

Ratemeter levels

Local (Skid) 2.14 E⁻³Remote (CT) 2.15 E⁻³

Corrected Activity (ratemeter levels minus background)

2.15 E⁻³

/R15

/R15

Channel 01-09 returned to normal serviceVerified by D. J. [Signature]Date 7/27/78Approved by [Signature]Date 8/17/78

Chemistry Supervisor

/R15

New method 01-09

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

SOURCE DECAY

SOURCE TYPE - CS 137
SERIAL NUMBER - 1R 43 #17
ORG. ASSAY DATE - 1985- 4-24-12
HALF-LIFE (YRS)- 30.17
ASSAY VALUE - 351.00
DATE DECAYED TO - 1988- 7-26- 8
DECAYED ACTIVITY - 325.71
10% TOLERANCES - 293.14 TO 358.29

DW

01-09

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

SOURCE DECAY

SOURCE TYPE - BA 133
SERIAL NUMBER - NES 9007 #62
ORG. ASSAY DATE - 1985- 4-24-12
HALF-LIFE (YRS)- 10.70
ASSAY VALUE - 742.00
DATE DECAYED TO - 1988- 7-26- 8
DECAYED ACTIVITY - 600.78
10% TOLERANCES - 540.37 TO 801.00

DW

01-09

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 10
 TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
 FUEL BUILDING EXHAUST, ECCS, AND STEAM LINE MONITORS

Procedure Title and Number	Technical Specification Calibration of the Plant Vent Monitor 1-C-66
Frequency	Refueling
Maximum Time Between Calibrations	18 months
Equipment I.D. Number	Channels 01-01 , 01-03 , 01-05, 01-07, 01-09
Date of last Calibration	11/1/83
Date of this Calibration	5/2/85
File Number	
Special Instructions:	
Calibration Data:	

1.0 Perform channel functional checks as per 1-C-62.

<u>Channel</u>	<u>Initial</u>
<u>01-01</u>	<u>W/A</u>
<u>01-03</u>	<u>W/A</u>
<u>01-05</u>	<u>W/A</u>
<u>01-07</u>	<u>W/A</u>
<u>01-09</u>	<u>W/A</u>

After Completion of the Calibration:

2.0 Calibration constants for channels 01-05, 01-07 and 01-09 have been entered in channel parameters.

W/A
Initial

3.0 When all calibrations have been completed, return all channels and system lineups to a normal operating condition.

Performed by W/A Date 5/2/85

ST. LUCIE UNIT 1
CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 10
TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
FUEL BUILDING EXHAUST, ECCS, AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

PLANT VENT CHANNEL 01-07 MID RANGE GAS

Source #1

Source Type Waste GasSerial # Sample I.D. P.O. 1

Assay decay calculation:

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

Assay Results = $1.530 \text{ E-}3 \text{ ucl/cc}$ Conversion Const. = $\frac{1.530 \text{ E-}3}{9.46 \text{ E-}2} =$

$$1.62 \text{ E-}3 \frac{\text{ucl/cc}}{\text{cpm}}$$

Tolerance (+10%) = WIABackground levels 1 cpm

Ratemeter levels

Local 9.47 E2Remote 9.47 E2

Corrected Activity (ratemeter levels minus background)

7.46 E2

Source #2

Source Type Waste GasSerial # Sample I.D. P.O. 2

Assay decay calculation:

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

Assay Results = $9.433 \text{ E-}1 \text{ ucl/cc}$ Conversion Const. = $\frac{9.433 \text{ E-}1}{6.29 \text{ E-}2} =$

$$1.50 \text{ E-}3 \frac{\text{ucl/cc}}{\text{cpm}}$$

Tolerance (+10%) =

Background levels 1 cpm

Ratemeter levels

Local 6.30 E2Remote 6.30 E2

Corrected Activity (ratemeter levels minus background)

6.29 E2Channel 01-07 returned to normal serviceVerified by N. K. [Signature] Date 5/2/85

Average Conversion Constant Taken from Graph =
 $1.54 \text{ E-}3 \frac{\text{ucl/cc}}{\text{cpm}}$

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 10
 TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
 FUEL BUILDING EXHAUST, ECCS, AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

PLANT VENT CHANNEL 01-07 MID RANGE GAS

Source #3

Source Type Waste GasSerial # Sample I.D. PU. 3

Assay decay calculation:

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

Assay Results = $4.612 E-1 \text{ u/cc}$

Conversion Const. = $\frac{4.612 E-1}{3.09 E2} =$
 $1.49 E-3 \frac{\text{u/cc}}{\text{cpm}}$

Tolerance (+10%) = N/ABackground levels 1 cpm

Ratemeter levels

Local $3.10 E2$ Remote $3.10 E2$

Corrected Activity (ratemeter levels minus background)

 $3.09 E2 \text{ cpm}$

Source #4

Source Type Waste GasSerial # Sample I.D. PU. 4

Assay decay calculation:

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

Assay Results = $2.546 E-1 \text{ u/cc}$

Conversion Const. = $\frac{2.546 E-1}{1.59 E2} =$
 $1.60 E-3 \frac{\text{u/cc}}{\text{cpm}}$

Tolerance (+10%) = N/ABackground levels 1 cpm

Ratemeter levels

Local $1.60 E2$ Remote $1.60 E2$

Corrected Activity (ratemeter levels minus background)

 $1.59 E2$ Channel 01-07 returned to normal serviceVerified by NH [signature] Date 5/2/85

Average Conversion Constant Taken from Graph

$1.54 E-3 \frac{\text{u/cc}}{\text{cpm}}$

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 10
 TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
 FUEL BUILDING EXHAUST, ECCS, AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

PLANT VENT CHANNEL 01-07 MID RANGE GAS

Source #1

Source Type Ba 133Serial # 62 wand

Assay decay calculation:

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

Original Calibration
with this source

Tolerance (+10%) = N/ABackground levels 0 cpm

Ratemeter levels

Local 2.02E3Remote 2.02E3Corrected Activity (ratemeter
levels minus background)2.02E3
cpm

Source #2

Source Type Cs 137Serial # 17 wand

Assay decay calculation:

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

Original Calibration
with this source

Tolerance (+10%) = N/ABackground levels 0 cpm

Ratemeter levels

Local 1.68E3Remote 1.68E3Corrected Activity (ratemeter
levels minus background)1.68E3
cpmChannel 01-07 returned to normal serviceified by N/H [signature] Date 4/24/85

Note: using brass wand source holder
for Eberline mid range gas detectors

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 10
 TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
 FUEL BUILDING EXHAUST, ECCS, AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

PLANT VENT CHANNEL 01-09 HIGH RANGE GAS

Source #1

Source Type Waste GasSerial # Sample I.D. P.V. 1

Assay decay calculation:

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

Assay Results = 1.530 E0 ucl/cc

$$\text{Conversion Const.} = \frac{1.530 \text{ E0}}{5.7 \text{ E0}} = 2.68 \text{ E-1 } \frac{\text{ucl/cc}}{\text{cpm}}$$

Tolerance (+10%) = N/ABackground levels 2.2 E0

Ratemeter levels

Local 7.9 E0Remote 7.9 E0

Corrected Activity (ratemeter levels minus background)

5.7 E0 cpm

Source #2

Source Type Waste GasSerial # Sample I.D. P.V. 2

Assay decay calculation:

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

Assay Results = 9.433 E-1 ucl/cc

$$\text{Conversion Const.} = \frac{9.433 \text{ E-1}}{3.9 \text{ E0}} = 2.42 \text{ E-1 } \frac{\text{ucl/cc}}{\text{cpm}}$$

Tolerance (+10%) = N/ABackground levels 2.2 E0

Ratemeter levels

Local 6.1 E0Remote 6.1 E0

Corrected Activity (ratemeter levels minus background)

3.9 E0 cpmChannel 01-09 returned to normal serviceVerified by N. B. [Signature] Date 5/2/85

Average Conversion Constant Taken From Graph =

$$2.68 \text{ E-1 } \frac{\text{ucl/cc}}{\text{cpm}}$$

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 10
 TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
 FUEL BUILDING EXHAUST, ECCS, AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

PLANT VENT CHANNEL 01-07 MID RANGE GAS

Source # 3

Source Type Co 60Serial # #16 Wand

Assay decay calculation:

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

Original calibration
with this source

Tolerance (+10%) = N/ABackground levels 0 cpm

Ratemeter levels

Local 1.69E3Remote 1.69E3Corrected Activity (ratemeter
levels minus background)1.69E3cpm

Source # 4

Source Type _____

Serial # _____

Assay decay calculation:

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

Tolerance (+10%) = _____

Background levels _____

Ratemeter levels

Local _____

Remote _____

Corrected Activity (ratemeter
levels minus background)

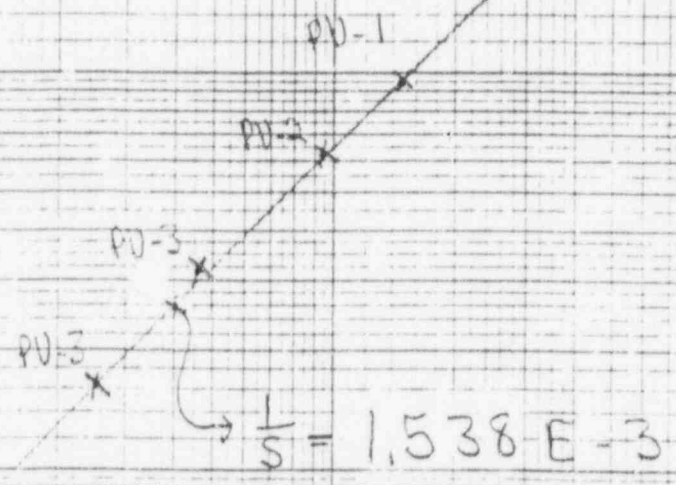
Channel 01-07 returned to normal serviceVerified by N. K. [Signature]Date 4/24/85

Note: Using brass wand source holder
for Eberline Mid Range detectors

#1 Plant Vant Mid Range Gas

01-07

5/2/85



ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 10
 TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
 FUEL BUILDING EXHAUST, EGCS, AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

PLANT VENT CHANNEL 01-09 HIGH RANGE GAS

Source #3

Source Type Waste GasSerial # Sample I.D. PD 3

Assay decay calculation:

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

Assay Results = $4.612 \text{ E-1 } \mu\text{C}/\text{cc}$ Conversion Const. = $\frac{4.612 \text{ E-1}}{2.0 \text{ E0}} =$ $2.31 \text{ E-1 } \frac{\mu\text{C}/\text{cc}}{\text{cpm}}$ Tolerance (+10%) = N/ABackground levels 2.2 E0 cpm

Ratemeter levels

Local 4.2 E0Remote 4.2 E0

Corrected Activity (ratemeter levels minus background)

2.0 E0 cpm

Source #4

Source Type Waste GasSerial # Sample I.D. PD. 4

Assay decay calculation:

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

Assay Results = $2.546 \text{ E-1 } \mu\text{C}/\text{cc}$ Conversion Const. = $\frac{2.546 \text{ E-1}}{7.0 \text{ E-1}} =$ $3.64 \text{ E-1 } \frac{\mu\text{C}/\text{cc}}{\text{cpm}}$ Tolerance (+10%) = N/ABackground levels 2.2 E0 cpm

Ratemeter levels

Local 2.9 E0Remote 2.9 E0

Corrected Activity (ratemeter levels minus background)

7.0 E-1 cpmChannel 01-09 returned to normal serviceVerified by N. B. [Signature] Date 5/2/85

Average Conversion Constant Taken from Graph =

$2.68 \text{ E-1 } \frac{\mu\text{C}/\text{cc}}{\text{cpm}}$

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 10
 TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
 FUEL BUILDING EXHAUST, ECCS, AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

PLANT VENT CHANNEL 01-09 HIGH RANGE GAS

Source #1

Source Type Ba 133Serial # 62 wood

Assay decay calculation:

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

Original calibration
with this source

Tolerance (+10%) = N/ABackground levels 3 cpm

Ratemeter levels

Local 7.45E2Remote 7.45E2

Corrected Activity (ratemeter levels minus background)

742 cpm

Source #2

Source Type Co 137Serial # 17 wood

Assay decay calculation:

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

Original calibration
with this source

Tolerance (+10%) =

Background levels 3 cpm

Ratemeter levels

Local 3.54E2Remote 3.54E2

Corrected Activity (ratemeter levels minus background)

351 cpmChannel 01-09 returned to normal serviceVerified by N. K. [Signature] Date 4/24/85

* Note: Using brass wood source holder for
 Everline High Range Gas Detectors.

ST. LUCIE UNIT 1
 CHEMISTRY PROCEDURE NO. 1-C-66, REVISION 10
 TECHNICAL SPECIFICATION CALIBRATION OF THE PLANT VENT,
 FUEL BUILDING EXHAUST, ECCS, AND STEAM LINE MONITORS

CALIBRATION CERTIFICATE

PLANT VENT CHANNEL 01-09 HIGH RANGE GAS

Source #3

Source Type Co 60

Serial # #16 Wmnd

Assay decay calculation:

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

Original Calibration
with this source

Tolerance (+10%) = N/A

Background levels 3 cpm

Ratemeter levels

Local 295 E2

Remote 295 E2

Corrected Activity (ratemeter
levels minus background)

292 cpm

Source #4

Source Type _____

Serial # _____

Assay decay calculation:

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

Tolerance (+10%) = _____

Background levels _____

Ratemeter levels

Local _____

Remote _____

Corrected Activity (ratemeter
levels minus background)

Channel 01-09 returned to normal service

Verified by NHWR Date 4/24/85

Note: Using brass wand source holder for
Eberline High Range Gas detectors.

#1 Plant Vent High Range Gas

AI-09

5/2/85

PV-3

PV-2

PV-1

PV-4

$$\frac{1}{S} = 2.607 E - 1$$

SAMPLE RESULTS REPORT

1

ID NUMERIC: 82691

SAMPLE STATUS: A

ID TEXT: MIC_01_05-96-06-07-01:10-0001

TODAY'S DATE: 6-NOV-1996 14:25

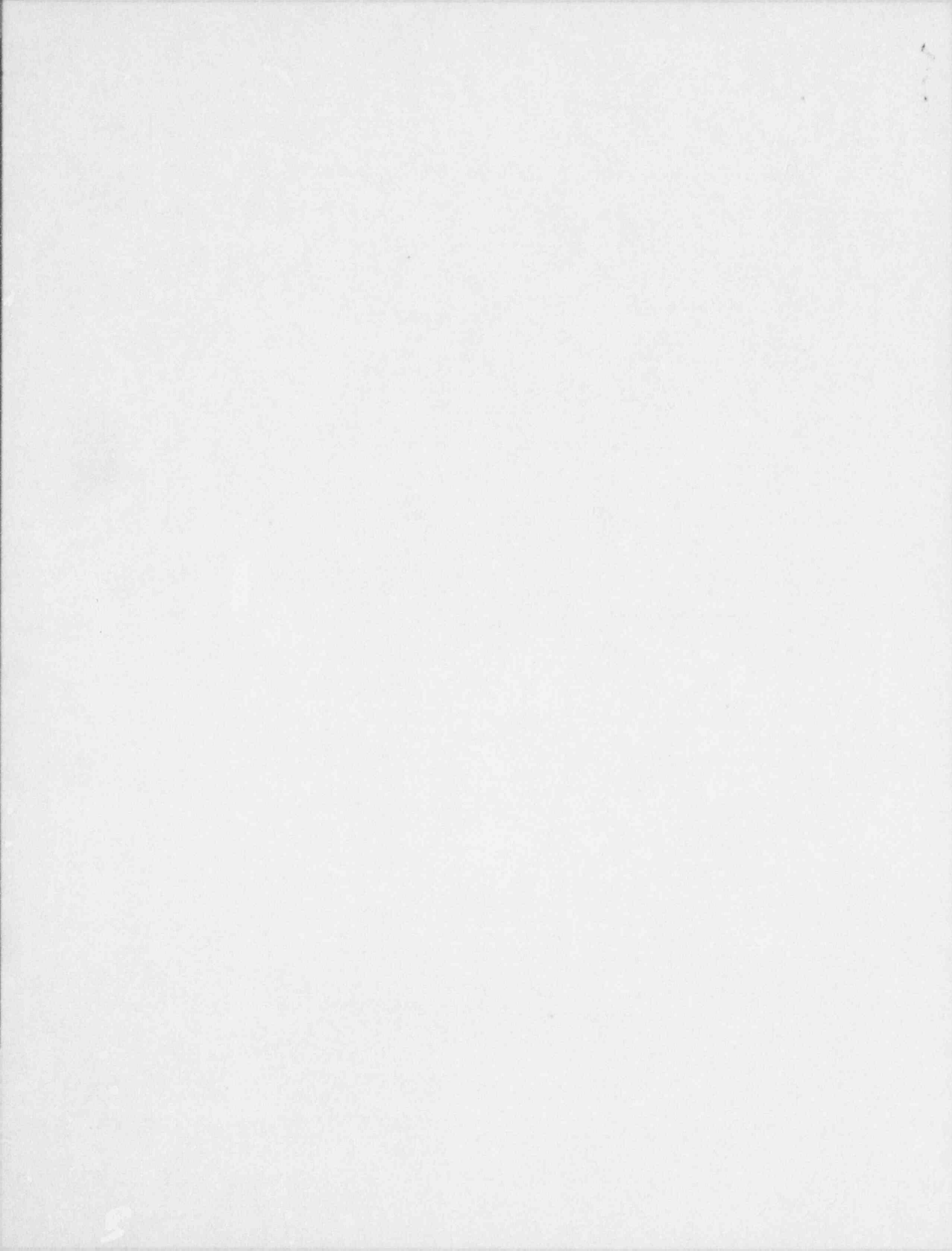
SAMPLE DATE: 7-JUN-1996 01:10

SAMPLE LOGGED IN BY: BURGESS

SAMPLE POINT	COMPONENT	#	RESULT	UNITS	MP LEVEL	MINIMUM VALUE	MAXIMUM VALUE
MIC_01_05	Plant Vent	#1	Low Range Gas				
	Procedure Number		This Component Has No Result Entered				
	Frequency		18 Months				
	Date Of This Calibration		7-JUN-1996 01:10				
	Date Of Last Calibration		12-OCT-1994 08:32				
	# 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 CRM (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 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 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		This Component Has No Result Entered				
	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		This Component Has No Result Entered				
	Calibration Performed By		I&C				
	Was Primary Cal. Performed		This Component Has No Result Entered				
	If Yes, LDMS # Of Primary Cal		This Component Has No Result Entered				
	All Tests Completed (Y/N)		Yes				
	Remarks:		This Component Has No Result Entered				

Calib Date

10/20



SAMPLE RESULTS REPORT

1

ID NUMERIC: 42160

SAMPLE STATUS: A

ID TEXT: MIC_01_05-94-10-12-08:31-0005

TODAY'S DATE: 6-NOV-1996 14:25

SAMPLE DATE: 12-OCT-1994 08:31

SAMPLE LOGGED IN BY: LEBLANC

SAMPLE POINT	COMPONENT	RESULT	UNITS	MLP LEVEL	MINIMUM VALUE	MAXIMUM VALUE
MIC_01_05 →	Plant Cont #1 Low Range Gas					
	Procedure Number	1c66				
	Frequency	18 Months				
	Date Of This Calibration	12-OCT-1994 08:32				
	Date Of Last Calibration	9-DEC-1992 00:00				
	# 1 Source Type	BA-133				
	# 1 Source Serial Number	WC-24				
	# 1 Original Assay Date	27-JUL-1988 00:00				
	# 1 Original Counts Per Minute	10681	cpm			
	# 1 Decay Corrected Counts/Min	7142	cpm			
	# 1 Upper Limit (+ 10 %)	7856	cpm			
	# 1 Lower Limit (- 10 %)	6428	cpm			
	If Original, Enter Assay Date	This Component Has No Result Entered				
	Background Count Rate	7.0	cpm			
	# 1 Source Result (Official)	6590.0	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)	6583.0	ccpm			
	# 2 Source Type	CS-137				
	# 2 Source Serial Number	WC-25				
	# 2 Original Assay Date	27-JUL-1988 00:00				
	# 2 Original Counts Per Minute	40581	cpm			
	# 2 Decay Corrected Counts/Min	35183	cpm			
	# 2 Upper Limit (+ 10 %)	38702	cpm			
	# 2 Lower Limit (- 10 %)	31665	cpm			
	# 2 Source Result (Official)	37000.0	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)	36993.0	ccpm			
	# 3 Supplemental Source Type	This Component Has No Result Entered				
	# 3 Supplemental Source Ser #	This Component Has No Result Entered				
	# 3 Supplemental Source CCPM	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 CCPM	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	IML,JG,JHE				
	Was Primary Cal. Performed	No				
	If Yes, LIMS # Of Primary Cal	This Component Has No Result Entered				
	All Tests Completed (Y/N)	Yes				
	Remarks:	functional performed 13 oct 1994				

KX/21

SAMPLE RESULTS REPORT

1

ID NUMERIC: 82692

SAMPLE STATUS: A

ID TEXT: MIC_01_07-96-06-07-01:11-0001

TODAY'S DATE: 6-NOV-1996 14:25

SAMPLE DATE: 7-JUN-1996 01:11

SAMPLE LOGGED IN BY: BURGESS

SAMPLE POINT	COMPONENT	RESULT	UNITS	MLP LEVEL	MINIMUM VALUE	MAXIMUM VALUE
MIC_01_07 →	Plant Vent #1	Mid Range Gas				
	Procedure Number	This Component Has No Result Entered				
	Frequency	18 Months				
	Date Of This Calibration	7-JUN-1996 01:12 ← Calibration Date				
	Date Of Last Calibration	12-OCT-1994 08:42				
	# 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	This Component Has No Result Entered				
	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	This Component Has No Result Entered				
	Calibration Performed By	I&C				
	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				

KK/22

SAMPLE RESULTS REPORT

1

ID NUMERIC: 42161

SAMPLE STATUS: A

ID TEXT: MIC_01_07-94-10-12-08:41-0008

TODAY'S DATE: 6-NOV-1996 14:26

SAMPLE DATE: 12-OCT-1994 08:41

SAMPLE LOGGED IN BY: LEBLANC

SAMPLE POINT	COMPONENT	RESULT	UNITS	MLP LEVEL	MINIMUM VALUE	MAXIMUM VALUE
MIC_01_07	→ Plant Vent #	Mid Range				
	Procedure Number	1066				
	Frequency	18 Months				
	Date Of This Calibration	12-OCT-1994 08:42				
	Date Of Last Calibration	28-JAN-1994 12:26				
	# 1 Source Type	CS-137				
	# 1 Source Serial Number	TR-43				
	# 1 Original Assay Date	24-APR-1985 00:00				
	# 1 Original Counts Per Minute	1680	cpm			
	# 1 Decay Corrected Counts/Min	1351	cpm			
	# 1 Upper Limit (+ 10 %)	1487	cpm			
	# 1 Lower Limit (- 10 %)	1216	cpm			
	If Original, Enter Assay Date	This Component Has No Result Entered				
	Background Count Rate	0.4	cpm			
	# 1 Source Result (Official)	1320.0	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)	1319.6	cpm			
	# 2 Source Type	CO-60				
	# 2 Source Serial Number	TR-44				
	# 2 Original Assay Date	24-APR-1985 00:00				
	# 2 Original Counts Per Minute	1690	cpm			
	# 2 Decay Corrected Counts/Min	486	cpm			
	# 2 Upper Limit (+ 10 %)	535	cpm			
	# 2 Lower Limit (- 10 %)	438	cpm			
	# 2 Source Result (Official)	465.0	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)	464.6	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	IML,JG,JHB				
	Was Primary Cal. Performed	No				
	If Yes, LIMS # Of Primary Cal	This Component Has No Result Entered				
	All Tests Completed (Y/N)	Yes				
	Remarks:	functional performed 13 oct 1994				

KK/23

SAMPLE RESULTS REPORT

1

ID NUMERIC: 25548

SAMPLE STATUS: A

ID TEXT: MIC_01_07-94-01-28-09:00-0007

TODAY'S DATE: 6-NOV-1996 14:26

SAMPLE DATE: 28-JAN-1994 09:00

SAMPLE LOGGED IN BY: SYSTEM

SAMPLE POINT	COMPONENT	RESULT	UNITS	M.P. LEVEL	MINIMUM VALUE	MAXIMUM VALUE
MIC_01_07	Plant Vent #1	Mid Range Gas				
	Procedure Number	1_C_66				
	Frequency	18 Months				
	Date Of This Calibration	28-JAN-1994 12:26		Calibration Date		
	Date Of Last Calibration	30-NOV-1993 10:06				
	# 1 Source Type	CS-137				
	# 1 Source Serial Number	TR-43				
	# 1 Original Assay Date	24-APR-1985 00:00				
	# 1 Original Counts Per Minute	1680	cpm			
	# 1 Decay Corrected Counts/Min	1373	cpm			
	# 1 Upper Limit (+ 10 %)	1511	cpm			
	# 1 Lower Limit (- 10 %)	1236	cpm			
	If Original, Enter Assay Date	This Component Has No Result Entered				
	Background Count Rate	20.0	cpm			
	# 1 Source Result (Official)	1340.0	cpm			
	# 1 Ratemeter Reading (If App)	This Component Has No Result Entered				
	# 1 Remote Reading (If App)	1340.0	cpm			
	# 1 Recorder Reading (If App)	This Component Has No Result Entered				
	# 1 Corrected CPM (Official)	1320.0	cpm			
	# 2 Source Type	CO-60				
	# 2 Source Serial Number	TR-44				
	# 2 Original Assay Date	24-APR-1985 00:00				
	# 2 Original Counts Per Minute	1690	cpm			
	# 2 Decay Corrected Counts/Min	533	cpm			
	# 2 Upper Limit (+ 10 %)	587	cpm			
	# 2 Lower Limit (- 10 %)	480	cpm			
	# 2 Source Result (Official)	512.0	cpm			
	# 2 Ratemeter Reading (If App)	This Component Has No Result Entered				
	# 2 Remote Reading (If App)	512.0	cpm			
	# 2 Recorder Reading (If App)	This Component Has No Result Entered				
	# 2 Corrected CPM (Official)	492.0	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	LL & EB				
	Was Primary Cal. Performed	No				
	If Yes, LIMS # Of Primary Cal	This Component Has No Result Entered				
	All Tests Completed (Y/N)	Yes				
	Remarks:	Declared back in service 1415 1/28/94.				

KK/24

SAMPLE RESULTS REPORT

ID NUMERIC: 82693

SAMPLE STATUS: A

ID TEXT: MIC_01_09-96-06-07-01:1

TODAY'S DATE: 6-NOV-1996 14:26

SAMPLE DATE: 7-JUN-1996 01:12

SAMPLE LOGGED IN BY: MURGESS

SAMPLE POINT	COMPONENT	RESULT	UNITS	MLP LEVEL	MINIMUM VALUE	MAXIMUM
MIC_01_09 →	Plant Vent #1	High Range Gas				
	Procedure Number	This Component Has No Result Entered				
	Frequency	18 Months				
	Date Of This Calibration	7-JUN-1996 01:13				
	Date Of Last Calibration	13-OCT-1994 15:48				
	# 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 CRM (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 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 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	This Component Has No Result Entered				
	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	This Component Has No Result Entered				
	Calibration Performed By	I&C				
	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				

Calibration Date

KH25

SAMPLE RESULTS REPORT

1

ID NUMERIC: 42264

SAMPLE STATUS: A

ID TEXT: MIC_01_09-94-10-13-15:47-0007

TODAY'S DATE: 6-NOV-1996 14:26

SAMPLE DATE: 13-OCT-1994 15:47

SAMPLE LOGGED IN BY: GEORGE

SAMPLE POINT	COMPONENT	RESULT	UNITS	M/P LEVEL	MINIMUM VALUE	MAXIMUM VALUE
MIC_01_09 → Plant Vent #1	High Range Gas					
	Procedure Number	1066				
	Frequency	18 Months				
	Date Of This Calibration	13-OCT-1994 15:48				
	Date Of Last Calibration	12-OCT-1994 08:56				
	# 1 Source Type	EA-133				
	# 1 Source Serial Number	EK-322				
	# 1 Original Assay Date	3-MAY-1991 00:00				
	# 1 Original Counts Per Minute	1289	cpm			
	# 1 Decay Corrected Counts/Min	1031	cpm			
	# 1 Upper Limit (+ 10 %)	1134	cpm			
	# 1 Lower Limit (- 10 %)	928	cpm			
	If Original, Enter Assay Date	This Component Has No Result Entered				
	Background Count Rate	6.0	cpm			
	# 1 Source Result (Official)	996.0	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)	990.0	cpm			
	# 2 Source Type	CS-133				
	# 2 Source Serial Number	EK-323				
	# 2 Original Assay Date	3-MAY-1991 00:00				
	# 2 Original Counts Per Minute	1559	cpm			
	# 2 Decay Corrected Counts/Min	1440	cpm			
	# 2 Upper Limit (+ 10 %)	1584	cpm			
	# 2 Lower Limit (- 10 %)	1296	cpm			
	# 2 Source Result (Official)	1320.0	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)	1314.0	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	JG,LL				
	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:	AFTER DETECTOR FIXED				

KK/26

SAMPLE RESULTS REPORT

1

ID NUMERIC: 42162

SAMPLE STATUS: A

ID TEXT: MIC_01_09-94-10-12-08:55-0006

TODAY'S DATE: 6-NOV-1996 14:27

SAMPLE DATE: 12-OCT-1994 08:55

SAMPLE LOGGED IN BY: LEBLANC

SAMPLE POINT	COMPONENT	RESULT	UNITS	M.P. LEVEL	MINIMUM VALUE	MAXIMUM VALUE
MIC_01_09 →	Plant Vent #1	High Range	Gai			
	Procedure Number	1066				
	Frequency	18 Months				
	Date Of This Calibration	12-OCT-1994 08:56				
	Date Of Last Calibration	10-DEC-1992 00:00				
	# 1 Source Type	BA-133				
	# 1 Source Serial Number	EK-322				
	# 1 Original Assay Date	3-MAY-1991 00:00				
	# 1 Original Counts Per Minute	1289	cpm			
	# 1 Decay Corrected Counts/Min	1031	cpm			
	# 1 Upper Limit (+ 10 %)	1134	cpm			
	# 1 Lower Limit (- 10 %)	928	cpm			
	If Original, Enter Assay Date	This Component Has No Result Entered				
	Background Count Rate	3.0	cpm			
	# 1 Source Result (Official)	1031.0	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)	1028.0	cpm			
	# 2 Source Type	CS-133				
	# 2 Source Serial Number	EK-323				
	# 2 Original Assay Date	3-MAY-1991 00:00				
	# 2 Original Counts Per Minute	1559	cpm			
	# 2 Decay Corrected Counts/Min	1440	cpm			
	# 2 Upper Limit (+ 10 %)	1584	cpm			
	# 2 Lower Limit (- 10 %)	1296	cpm			
	# 2 Source Result (Official)	1550.0	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)	1547.0	cpm			
	# 3 Supplemental Source Type	This Component Has No Result Entered				
	# 3 Supplemental Source Ser #	This Component Has No Result Entered				
	# 3 Supplemental Source 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	No				
	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	No				
	Calibration Performed By	IML, JG, JHE				
	Was Primary Cal. Performed	No				
	If Yes, LIMS # Of Primary Cal	This Component Has No Result Entered				
	All Tests Completed (Y/N)	Yes				
	Remarks:	SPIKING INTO HIGH ALARM, FWD WRITTEN				

Calibration
13 Oct 94

KK127

STAGE

PSL #1

Component: _____ Sys: _____ Train: _____
 Associate: _____ Assign Priority: E2
 Name: ARMS / CIS / RECORDER CALS Work Typ: 6

Fac: PSL Unit: 01
 MASTER
 WORK ORDER TASK

Location: CONTROL RM. 62' / 30' EL. W/O LMD: 2
 Tsk LMD: 2
 Defect/Request: 012FYP8084 IC 1-1220055 CIS RAD MO
 NIT.

93006899 01
 ER/PWO 63 / 8084
 LOCATION: 915
 PAGE 1 of 3

Detailed Explanation:

PM ID: FYP0541
 DUE BY DT: 04/15/93 EARLY DT: 11/30/92 LATE DT: 08/28/93

Work Request: _____ Def. Tag No: _____ Loc: _____ More: _____
 Trbl/Brkdn: _____ LCO: _____ Unit Condition Required: _____
 NPRDS: N Failure Date: _____ Time: _____ Detection: _____ Status: _____ Sympt: _____
 Originator: _____ Date: _____ Dept: _____
 Appr. By: _____ Date: _____

Task Determination Data:

10 CFR 50.49: N	EQ Doc Pkg: NA	Safety Class: _____
Reg Guide 1.97: N	Fire Prot Req'd: N	Q Group: C
ASME XI (ISI) Req'd: N	NCR: NA	MCL List: _____
IST Required: N	PCM: NA	Assigned To: _____
PMT Required: N	Seismic Cat: N	Est M/H: 400.00
RWP Required: N	RWP No: _____	Crew Qty: 2
Sec Clearance: _____	Scaffold Req: _____	Insul Rem: _____
Clearance Req'd: N	Clearance No: _____	

QC Requirements: _____ QC Required: Y
 QL-C TS-10.4

More: _____

Work Order Task Description:

** COMPLY WITH SENSITIVE SYSTEMS & LIFTED LEADS/JUMPER PROCEDURES
 AP 0010142 & 0010124 AS APPLICABLE.

** PERFORM CALIBRATION OF SURVEILLANCE ARMS PROC IC 1-1220055.

GUSMANO

More: _____

Planned by: RFJ0X07 JACKSON R F Date: 03/18/93
 Pkg Apprd by: RFJ0X07 JACKSON R F Date: 03/18/93 Time: 14:17
 QC Approval: DSM00FK MELODY D S Date: 03/18/93

***** OPERATIONS APPROVAL TO START *****

* NPS Start Permission: [Signature] LCO (Y/N): Y
 * Start Date/Time: 4/11/93 2148
 *

NPS Completion Notif: [Signature] Major Failure: _____
 Compl. Date/Time: 5-17-93 1430 Major Action: _____
 Deficiency Tag Removed (Y/N): _____

1442P

Component: _____ Sys: _____ Train: _____
Associate: _____ Assign Priority: E2
Name: ARMS / CIS / RECORDER CALS Work Typ: 6

Location: CONTROL RM. 62' / 30' EL. W/O LMD: 2
Tsk LMD: 2
Defect/Request: 012FYP8084 IC 1-1220055 CIS RAD MO
NIT.

Fac: PSL Unit: 01
MASTER
WORK ORDER TASK

93006899 01

ER/PWO 63 / 8084
LOCATION: 915
PAGE 2 of 3

JOURNEYMANS WORK REPORT

Actual Start Date:	Time:	Actual Completion Date:	Time:
4/1/93	1:30 PM	5/17/93	12:00 PM

Note: Journeyman shall sign and date text after their entires.

Trouble Found:

_____ This section is Not Applicable for PMs or other planned jobs _____

N/A

TEST EQUIP.

PSL None

PSL

PSL

PSL

PSL

Work/Repairs Performed:

Performed ARMS Cal IAW IC1-1220055
Channel 24 to be repaired under
PWO # 0476/63.

5/17/93

Continued on Additional Sheets: Y ☒ N
Suggestions For Future Planning/Variance Reason: _____

Supv/Foreman/Chief	Date	Supervisor	Date	QC Inspector	Date
--------------------	------	------------	------	--------------	------

Frank Gorman 5-18-93