

WRC

AP 1001

Three Mile Island Nuclear Station

SIDE 1

Figure 1001-8

Special Operating Procedure

SOP No. 2-66
(From SOP Log Index)

NOTE: Instructions and guidelines in AP 1001 must be followed when completing this form.

Unit No. 2

Date _____

1. Title Rad. Mon. Calib. - G-M Tube AREA Monitors

2. Purpose (Include purpose of SOP)
To calibrate and repair selected ~~liquid~~ gpo area radiation monitors

3. Attach procedure to this form written according to the following format.

A. Limitations and Precautions

- 1. Nuclear Safety
- 2. Environmental Safety
- 3. Personnel Safety
- 4. Equipment Protection

Attached

B. Prerequisites

C. Procedure

4. Generated by V.P. Island Date 4/6/79

5. Duration of SOP - Shall be no longer than 90 days from the effective date of the SOP or (a) or (b) below - whichever occurs first.

- (a) SOP will be cancelled by incorporation into existing or new permanent procedure submitted by _____
- (b) SOP is not valid after _____

(fill in circumstances which will result in SOP being cancelled)

6. (a) Is the procedure Nuclear Safety Related?
If "yes", complete Nuclear Safety Evaluation. (Side 2 of this Form) Yes No

(b) Does the procedure affect Environmental Protection?
If "yes", complete Environmental Evaluation. (Side 2 of this Form) Yes No

(c) Does the procedure affect radiation exposure to personnel? Yes No

NOTE: If all answers are "no", the change may be approved by the Shift Supervisor. If any questions are answered "yes", the change must be approved by the Unit Superintendent.

7. Review and Approval

Approved - Shift Supervisor [Signature] 4/6/79

Reviewed - List members of PORC contacted MC 16 4/6/79

NCC V.A. Sp... R. P... 4/6/79

ARR K. Nij... [Signature] 4/6/79

Approved - Unit Superintendent [Signature] 4/6/79

8. SOP is Cancelled 131 290

Shift Supervisor/Shift Foreman

Date

"EVALUATION"

AP-1001

Three Mile Island Nuclear Station

SIDE 2

Figure 1001-8

Nuclear Safety/Environmental Impact Evaluation

SOP No. _____

1. Title _____

2. Nuclear Safety Evaluation

Does this SOP:

- * (a) increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety? yes no
- * (b) create the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report? yes no
- * (c) reduce the margin of safety as defined in the basis for any technical specification? yes no

Details of Evaluation (Explain why answers to above questions are "no". Attach additional pages if required.)

Evaluation By _____ Date _____

3. Environmental Impact Evaluation

Does this SOP:

- (a) possibly involve a significant environmental impact? yes no
- * (b) have a significant adverse effect on the environment? yes no
- * (c) involve a significant environmental matter or question not previously reviewed and evaluated by the N.R.C. yes no

Details of Evaluation

Evaluation By _____ Date _____

* NOTE: If these questions are "yes", the change must receive N.R.C. approval.

4. Review (PORC review of evaluation is required only when requested by the Station Superintendent/Unit Superintendent. If this review is made, the PORC must consist of two off-site members.)

1. _____

2. _____

Off-Site Members

PORC Chairman Signature

Date

5. Approval

Station Superintendent/Unit Superintendent

131 291

Date

THREE MILE ISLAND NUCLEAR STATION
UNIT #2 SURVEILLANCE PROCEDURE 2612-R5
RADIATION MONITOR CALIBRATION G-M TUBE AREA MONITORS

Table of Effective Pages

<u>Page</u>	<u>Date</u>	<u>Revision</u>	<u>Page</u>	<u>Date</u>	<u>Revision</u>	<u>Page</u>	<u>Date</u>	<u>Revision</u>
1.0	07/19/78	0	26.0			51.0		
2.0	07/19/78	0	27.0			52.0		
3.0	07/19/78	0	28.0			53.0		
4.0	07/19/78	0	29.0			54.0		
5.0	07/19/78	0	30.0			55.0		
6.0	07/19/73	0	31.0			56.0		
7.0	07/19/78	0	32.0			57.0		
8.0	07/19/73	0	33.0			58.0		
9.0	07/19/78	0	34.0			59.0		
10.0	07/19/78	0	35.0			60.0		
11.0	07/19/78	0	36.0			61.0		
12.0	07/19/73	0	37.0			62.0		
13.0	07/19/78	0	38.0			63.0		
14.0	07/19/78	0	39.0			64.0		
15.0	07/19/78	0	40.0			65.0		
16.0			41.0			66.0		
17.0			42.0			67.0		
18.0			43.0			68.0		
19.0			44.0			69.0		
20.0			45.0			70.0		
21.0			46.0			71.0		
22.0			47.0			72.0		
23.0			48.0			73.0		
24.0			49.0			74.0		
25.0			50.0			75.0		

Unit 1 Staff Recommends Approval

Approval IA Date
Cognizant Dept. Head

Unit 2 Staff Recommends Approval

Approval Date
Cognizant Dept. Head

Unit 1 PORC Recommends Approval

 Date
Chairman of PORC

Unit 2 PORC Recommends Approval

 Date 7/19/78
Chairman of PORC

Unit 1 Superintendent Approval

 Date

Unit 2 Superintendent Approval

 Date 7/19/78

Manager Generation Quality Assurance Approval

 Date

131 292

UNIT #2 SURVEILLANCE PROCEDURE 2612-R5

RADIATION MONITOR CALIBRATION G-M TUBE AREA MONITORS

1.0 PURPOSE

1.1 To outline the steps necessary for uniform calibration of all G-M tube area radiation monitors, which are not covered in the Technical Specifications for the Unit.

2.0 APPLICABLE SURVEILLANCE MODE & FREQUENCY

2.1 Frequency: Once per 18 months (R)

2.2 Mode 1,2,3,4,5 & 6

3.0 LIMITS AND PRECAUTIONS

3.1 Source exposure may be minimized by becoming familiar with the operation of the FCK.

3.2 With the source in the open position, there is no beam shielding in the front hemisphere of the calibrator. Check the warning decal on top of the case for radiation levels. Whenever the FCK is not in the closed position, take all readings as quickly as possible to minimize personnel exposure in the area of the FCK.

3.3 Radiation given off by the FCK may cause increased indication and/or alarm on other nearby monitoring channels. This, as well as personnel exposure, should be kept in mind when performing this

procedure.

3.4 → attached
3.5 → attached
3.0 LOCATION OF ASSEMBLY

See Table 1

to be worked by this procedure:

HPR-202

209

210

211

212

213

231

233

3238

Of these, only HPR-202 has an accessible detector (cable speeding room). All others have detectors located in high radiation areas, and only the control room electronics of these are to be worked.

There are no interlocks associated with these monitors.

3.5 Notify the Shift Supervisor / Foreman prior to beginning work, and after work is complete. Readings will be erroneous while this work is in progress.

5.0 TEST EQUIPMENT

5.1 The following test equipment will be used for this calibration procedure and must be traceable to the National Bureau of Standards and be within its current calibration period.

5.1.1 0-30VDC Power Supply

5.1.2 Digital Voltmeter.

5.1.3 Oscilloscope (Textronic Model 466 or equivalent).

6.0 PROCEDURE

6.1 Calibration check of area G-M Tube Monitors.

NOTE:1. Perform the following steps making no adjustments unless specifically required by the procedure steps. Record data on "AS FOUND" Data Sheet 1.

2. Mark the individual channel recorder trace to indicate where the "ABNORMAL" levels were imposed during this calibration.

3. When taking background measurements, ensure the FCK is greater than 25 feet from the detector.

6.1.1 Background Radiation Readings

6.1.1.1 Obtain a copy of Data Sheet 1.

6.1.1.2 Record monitor number and check appropriate block either "AS FOUND" or "AS LEFT" in 6.1.1.2 on Data Sheet 1.

6.1.1.3 Read the background radiation level for the monitor being calibrated from the ratemeter module and the appropriate point on the recorder located on Panel 12 and record these values in all the appropriate blocks for FCK source knob Closed, Intermediate, and Open position on Data Sheet 1.

6.1.2 Field Calibration Kit (FCK) Readings.

131 295

NOTES: 1. Source Exposure may be minimized by becoming familiar with the operation of the FCK.

2. With the source in the open position, there is no beam shielding in the front hemisphere of the calibrator. Check the warning decal on top of the case for radiation levels. Whenever the FCK is not in the closed position, take all readings as quickly as possible to minimize personnel exposure in the area of the FCK.

3. Radiation given off by the FCK may cause increased indication and/or alarm on other nearby monitoring channels. This, as well as personnel exposure, should be kept in mind when performing this procedure.

6.1.2.1 Remove the area monitor (G-M Tube) from its mounting.

6.1.2.2 Insert the area monitor into the Victoreen FCK. G-M Tube adapter in the FCK.

NOTE: Since the FCK is designed for the larger area monitors, the G-M tube adapter must be inserted in the FCK first.

6.1.2.3 With the source knob in the closed position (Full clockwise direction and key withdrawn), record the radiation reading from the applicable ratemeter module and recorder point in step 6.1.2.3 on Data Sheet 1.

6.1.2.4 Insert the FCK key fully into the lock. Slowly rotate the source knob on the FCK in a counterclockwise direction until it stops. This is the intermediate position. Record the radiation readings on the applicable ratemeter readout and recorder point in step 6.1.2.4 on Data Sheet 1.

- 6.1.2.5 Rotate the FCK key fully clockwise and then rotate the source knob in the counter-clockwise direction to the final position. This is the open position. Record the radiation readings on the applicable ratemeter readout and recorder point in step 6.1.2.5 on Data Sheet 1.
- 6.1.2.6 Rotate the source knob on the FCK in the clockwise direction until the closed position is reached. Remove the key from the FCK at this time.
- 6.1.2.7 Remove the area monitor (G-M Tube) from the FCK and return to its mounting.
- 6.1.3 Background Correction of Radiation Source Readings.
 - 6.1.3.1 Subtract the background readings obtained in step 6.1.1.3 from appropriate FCK readings obtained in steps 6.1.2.3, 6.1.2.4 and 6.1.2.5. Enter these results as the "Actual Source Readings" in step 6.1.3.1 on Data Sheet 1.
- 6.1.4 Calculation of Expected Source Readings.
 - 6.1.4.1 Obtain the "Original Source Reading" for each position of the FCK Source Knob and record in the appropriate block in step 6.1.4.1 on Data Sheet 1.
 - 6.1.4.2 Obtain the date of the "Original Source Reading" and record in step 6.1.4.2 of Data Sheet 1.
 - 6.1.4.3 Calculate the expected source reading using Table 1 and record in step 6.1.4.3 on Data Sheet 1.
 - 6.1.4.4 Calculate the value of the expected source reading plus 15% of the expected source reading and record in step 6.1.4.4 on Data Sheet 1.

- 6.1.4.5 Calculate the value of the expected source reading minus 15% of the expected source reading and record in step 6.1.4.5 on Data Sheet 1.
- 6.1.5 Comparison of Actual and Expected Source Readings.
- 6.1.5.1 Compare the "ACTUAL" ratemeter module and recorder source readings recorded in step 6.1.3.1 of Data Sheet 1 with the +15% of expected source reading and -15% of expected source reading recorded in steps 6.1.4.4 and 6.1.4.5 respectively on Data Sheet 1. The "ACTUAL" source reading should be within $\pm 15\%$ of the expected reading, record in step 6.1.5.1.
- 6.1.5.2 If the readings do not compare within the tolerance allowed, document this as a deficiency on the "E/D" sheet.
- 6.1.6 Verification of "Alert" and "High" Alarm Setpoints.
- 6.1.6.1 Enter the required "Alert" and "High" alarm setpoints for the applicable monitor from 2105-1.12 in step 6.1.6.1 on Data Sheet 1.
- 6.1.6.2 Ensure that the function selector switch on the readout module is in the "OPER" position.
- 6.1.6.3 Depress the "Alert Alarm Pushbutton" and record the "AS FOUND" ratemeter module reading in step 6.1.6.3 on Data Sheet 1.
- 6.1.6.4 Depress the "High Alarm Pushbutton" and record the "AS FOUND" ratemeter module reading in step 6.1.6.4 on Data Sheet 1.
- 6.1.6.5 Open the signal input links at the rear of Panel 12 for the monitor being calibrated.
- 6.1.6.6 Connect the external power supply (section 5, adjustable 0-30 Volts) across C12 (10

131 298

- 6.1.6.7 Slowly increase the DC voltage (negative) until the "Alert" alarm light energizes. Record the ratemeter module reading at which the "Alert" alarm was tripped in step 6.1.6.7 on Data Sheet 1. Acknowledge the local alarm and the "RMS Trouble" alarm from Panel 12.
- 6.1.6.8 Continue to slowly increase the DC voltage (negative) until the "High" alarm light energizes. Record the ratemeter module reading at which the "High" alarm was tripped in step 6.1.6.8 on Data Sheet 1. Reset the local alarm and the "RMS Trouble" alarm from Panel 12.
- 6.1.6.9 Compare the tripped "Alert" and "High" alarm setpoints recorded in steps 6.1.6.7 and 6.1.6.8 with the required setpoints recorded in step 6.1.6.1 on Data Sheet 1. The tripped setpoint should equal the required setpoint within + one minor division of the ratemeter scale. Record in step 6.1.6.9 on Data Sheet 1.
- 6.1.6.10 If the setpoints do not compare within the tolerance allowed, document this as a deficiency on the "E/D" sheet.
- 6.1.6.11 Disconnect and remove the DC power supply and close the signal links on the back of Panel 12.
- 6.1.7 Determination of Check Source Reading.
- 6.1.7.1 Depress the C.S. pushbutton for the appropriate monitor. After the ratemeter reading has stabilized, determine the MR/hr that the reading increased above background. Record the MR/hr increase above background in step 6.1.7.1 on Data Sheet 1.

6.1.7.2 Mark Recorded Trace as Finish of 2612-R5.

6.1.8 Deficiency Corrections.

6.1.8.1 Correct any deficiencies using the calibration procedure of Appendix A. If any adjustments are made repeat steps 6.1.1.1 through 6.1.7.2 and record results on "AS LEFT" marked Data Sheet 1.

7.0 ACCEPTANCE CRITERIA

7.1 The acceptance criteria is as stated on Data Sheet 1.

SHEET 1
RADIATION MONITORING SYSTEM

261
Rev. 0
07/19/78

Procedure Step	MONITOR	HP-R- _____	AS FOUND	AS LEFT	RECORDER TRACE MARKED YES/NO
FCK SOURCE KNOB POSITION					
CLOSED					
DESCRIPTION		RATEMETER	INT RECORDER	INTERMEDIATE	OPEN
		RATEMETER	INT RECORDER	RATEMETER	INT RECORDER
6.1.2.3					
6.1.2.4					
6.1.2.5	Source	MR/hr	MR/hr	MR/hr	MR/hr
6.1.1.3	Background	-	-	-	-
6.1.3.1	Actual Source Readings	MR/hr	MR/hr	MR/hr	MR/hr
6.1.4.1	Original Reading		MR/hr		MR/hr
6.1.4.2	Original Reading Date				
6.1.4.3	Expected Reading		MR/hr		MR/hr
6.1.4.4	+15% of Expected Reading		MR/hr		MR/hr
6.1.4.5	-15% of Expected Reading		MR/hr		MR/hr
6.1.5.1	Actual Source Reading within 15% of Expected? Yes/No	*	*	*	*
	Setpoint Data		ALERT	INT	HIGH
6.1.6.1	Required Setpoint				
AL 6.1.6.3	Indicated "As Found"				
H1 6.1.6.4	Setpoint		MR/hr		MR/hr
AL 6.1.6.7	"Tripped" Observed				
H1 6.1.6.8	Setpoint		MR/hr		MR/hr
6.1.6.9	Observed Setpoint within One Minor Division of Required Yes/No	*		*	
	Check Source, Recorder, Acceptance Criteria, Sign-Off				
6.1.7	Observed Increase in Reading Due to Check Source			MR/hr	INT
6.1.7.2	Recorder Trace Marked Yes/No		*		INT.
	* Acceptance Criteria: All Yes/No Blanks Indicate "Yes".				
	** Record "Pegged" if Meter Pegs High Due to Background.				
	New Calibration Sticker Attached Yes/No				

131-301

PERFORMED BY: _____
AND DATE: _____

APPROVED BY: _____
AND DATE: _____

Place Old Cal.
Sticker Here

APPENDIX A

G-M AREA MONITOR CALIBRATION

A.1 READOUT MODULE CALIBRATION.

A.1.1 Power Supply.

A.1.1.1 Obtain and warmup equipment. Oscilloscope (section 4.1.3), digital voltmeter (section 5) and power supply (section 1.1.2).

A.1.1.2 Turn the function switch to the "OPER" position.

A.1.1.3 Place the digital voltmeter across the +10V and ground terminals on the back of the appropriate monitor or place the positive lead between R13 and R17 and the negative lead to ground. Adjust R14 (2K Ω potentiometer) until voltmeter reads +10.0 \pm 0.1 volts.

A.1.1.4 Place the digital voltmeter across the +22V and ground terminals on the back of the appropriate monitor or place the positive lead between R1 and R4 and the negative lead to ground. The voltmeter should read +22VDC \pm 5VDC.

A.1.1.5 Place the digital voltmeter across the -6.8V test point and ground. The voltmeter should read -6.8 VDC \pm 0.5 DC.

A.1.1.6 Place the digital voltmeter across the +600 VDC and ground terminals on the back of the appropriate monitor or place the positive lead at the junction of R24 and C21 and the negative lead to ground. The voltmeter should read +600VDC \pm 16VDC.

A.1.2 Log Count Rate Calibration.

A.1.2.1 Turn the function switch to the "OFF" position.

A.1.2.2 Adjust the mechanical zero adjustment for the first graduation on the meter.

131 302

- A.1.2.3 Turn the function switch to the "OPERATE" position.
- A.1.2.4 Obtain ORIGINAL SOURCE readings of field calibration kit found in Table 2.
- A.1.2.5 Correct these original source readings for time using Table 1 and record as "Expected Readings".

NOTES: 1. Source exposure may be minimized by becoming familiar with the operation of the FCK.

2. With the source in the open position, there is no beam shielding in the front hemisphere of the calibrator. Check the warning decal on the top of the case for radiation levels. Whenever the FCK is not in the closed position, take all readings as quickly as possible to minimize personnel exposure in the area of the FCK. Radiation given off by the FCK may cause an indication or alarm on other nearby monitoring channels. This, as well as possible personnel exposure, should be kept in mind when performing this procedure.

- A.1.2.6 With the ratemeter and detector energized, take a background reading from the ratemeter and record.

NOTE: When taking background measurements, ensure the FCK is greater than 25 feet from the detector.

- A.1.2.7 Remove the area monitor (G-M Tube) from its mounting.
- A.1.2.8 Insert the area monitor into the Victoreen FCK GM Tube Adapter in the FCK.

NOTE: Since the FCK is designed for the larger area monitors (ION-Chambers), the G-M tube adapter must be inserted in the FCK first.

.131 303

- A.1.2.9 Insert the FCK key fully into the lock. Slowly rotate the source knob on the FCK in a counterclockwise direction until it stops. This is the INTERMEDIATE position. Record the radiation readings of the applicable ratemeter readout.
- A.1.2.10 Compare the readings taken in step A.1.2.9 with the expected source readings found in step A.1.2.5 and insure that the reading is within $\pm 10\%$ of the expected reading. If not, adjust (R21) output adjust (Hi End) to bring the meter reading into specification.
- A.1.2.11 Rotate the source knob on the FCK in the clockwise direction until the CLOSED position is reached. Record the radiation readings of the applicable ratemeter readout.
- A.1.2.12 Compare the readings taken in step A.1.2.11 with the expected source readings found in step A.1.2.5 and insure that the reading is within $\pm 10\%$ of the expected reading. If not adjust (R12) output adjust (Lo-end) to bring the meter reading into specification.
- A.1.2.13 Slowly rotate the source knob on the FCK in a counterclockwise direction until it stops. This is the INTERMEDIATE position. Record the radiation readings of the applicable ratemeter readout.
- A.1.2.14 Compare the readings taken in step A.1.2.13 with the expected source readings found in step A.1.2.5 and insure that the reading is within $\pm 10\%$ of the expected reading. If not, adjust (R21) output adjust (Hi end) to bring the meter reading into specification.

131 304

A.1.2.15 Slowly rotate the FCK key fully clockwise and then rotate the source knob in the counterclockwise direction to the final position. This is the OPEN position. Record the radiation readings of the applicable ratemeter readout.

A.1.2.16 Compare the readings taken in step A.1.2.15 with the expected source readings found in step A.1.2.5 and insure that the reading is within $\pm 10\%$ of the expected reading. If not, adjust (C23) to bring the meter reading into specification.

A.1.2.17 Repeat steps A.1.2.9 through A.1.2.16 until the readings fall in specification.

A.1.3 ALARM BOARD CALIBRATION

A.1.3.1 OPEN the 120V AC power sliding links in the back of Panel 12 for the appropriate monitor.

A.1.3.2 Remove one end of jumper "B" between R48 and the junction of CR24 and C25 on the side board.

NOTE: Removing this jumper will place the alarm in the automatic reset mode.

A.1.3.3 Disconnect the signal input from the detector.

NOTE: This may be done by opening the appropriate sliding links in the rear of Panel 12 or by removing the detector signal input from the rear panel of the readout module.

A.1.3.4 Adjust the readout module from panel meter mechanical zero to the first left hand graduation on the meter scale.

A.1.3.5 Connect the external power supply to the signal input and signal ground terminals at the rear of the readout module or at the open links for the signal output in the rear of Panel 12.

- A.1.3.6 CLOSE the 120V AC power sliding links in the back of Panel 12 for the appropriate monitor.
- A.1.3.7 Turn the function switch to the "OPER" position.
- A.1.3.8 Turn and hold the function switch to the "ALARM" position.
- A.1.3.9 Depress the "ALERT" alarm pushbutton and adjust (R37), on the side board, "ALERT" alarm setpoint potentiometer to the desired MR/hr reading on the meter scale.
- A.1.3.10 Depress the "HIGH" alarm pushbutton and adjust (R37), on the main board, "HIGH" alarm setpoint potentiometer to the desired MR/hr reading on the meter scale.
- A.1.3.11 Increase the external power supply voltage to insure that the "ALERT" and "HIGH" alarms energize properly.

TABLE 1

2612-R5
Revision 0
07/19/78

UNIT #2 AREA MONITORS

MONITOR NUMBER	MONITOR NAME	MONITOR LOCATION	LOCAL * READOUT	RADIATION DETECTED	TYPE OF DETECTED	TYPE OF CHECK SOURCE
HP-R-201	Control Room	Control Bldg. E1. 305'-0" (On Column c48/cA)	None	GAMMA	G-M	
HP-R-202	Cable Room	Control Bldg. E1. 305'-0" (On Column c47a/cC)	M,IL,H	GAMMA	G-M	
HP-R-204	R.B. Emergency Cooling Booster Pump Area	Auxiliary Bldg. E1. 280'-6" (On Column AB/A61)	M,IL,H	GAMMA	G-M	
HP-R-205	R.C. Evaporative Control Panel Area	Auxiliary Bldg. E1. 280'-6" (On Column AG/A63)	M,IL,H	GAMMA	G-M	
HP-R-206	Make-Up Tank Area	Auxiliary Bldg. E1. 305'-0" (Entrance to MU-T-1)	M,IL,H	GAMMA	G-M	
HP-R-207	Intermed. Cooling Pump Area	Auxiliary Bldg. E1. 305'-0" (South of IC-P-1B)	M,IL,H	GAMMA	G-M	
HP-R-209	Fuel Handling Bridge North	Reactor Bldg. E1. 347'-6" (Main Fuel Handling Bridge)	M,IL	GAMMA	G-M	
HP-R-210	Fuel Handling Bridge South	Reactor Bldg. E1. 347'-6" (Aux. Fuel Handling Bridge)	M,IL	GAMMA	G-M	
HP-R-211	Personnel Access Hatch	Reactor Bldg. E1. 305'-0" (On Elevator Wall)	M,IL,H	GAMMA	G-M	
HP-R-212	Equipment Hatch	Reactor Bldg. E1. 305'-0" (On Column R4)	M,IL,H	GAMMA	G-M	
HP-R-213	Incore Inst. Panel Area	Reactor Bldg. E1. 347'-6" (North Side of A D-Ring)	M,IL,H	GAMMA	G-M	
HP-R-214	Reactor Building Dome	Reactor Bldg. E1.	None	GAMMA	Ion-Chamber	

TABLE 1 (cont'd)

MONITOR NUMBER	MONITOR NAME	MONITOR LOCATION	LOCAL * READOUT	RADIATION DETECTED	TYPE OF DETECTED	TYPE OF CHECK SOURCE
HP-R-215	Fuel Handling Building	Fuel Handling Bldg EL 347'-6" (On Fuel Handling Bridge)	M,IL,H	GAMMA	G-M	
HP-R-218	Waste Disposal Storage Area		M,IL,H	GAMMA	G-M	
HP-R-231	Aux. Bldg. Sump Tank Filter Room	Auxiliary Bldg. E1 280'-6" (On Column AQ/A62b)	M,IL,H	GAMMA	G-M	
HP-R-232	Aux. Bldg. Access Corridor Col AN/A63 E1. 305'-0"	Auxiliary Bldg. E1 350'-0" (By Column AN/A63)	M,IL,H	GAMMA	G-M	
HP-R-234	Control & Serv. Bldg. Corridor Col CE/c50a E1. 280'-6"	Service Bldg. E1 280'-6" (On Column c50a/CE)	M,IL,H	GAMMA	G-M	
HP-R-3236	Reactor Bldg, Purge Unit Area	Auxiliary Bldg. E1 328'-0" (On Column AE/A64)	M,IL,H	GAMMA	G-M	
HP-R-3238	Aux. Bldg. Exhaust Unit Area	Auxiliary BLDG. E1 328'-0" (On Column AJ/A63)	M,IL,H	GAMMA	G-M	
HP-R-3240	Fuel Handling Bldg. Exhaust Handling Bldg	Auxiliary Bldg. E1 328'-0" (On Column AL/A63)	M,IL,H	GAMMA	G-M	

* M - METER
IL - INDICATION LIGHT
H - HORN

131 308