VIRGINIA POWER
SURRY POWER STATION
EMERGENCY PLAN IMPLEMENTING PROCEDURE

NUMBER	PROCEDURE TITLE	REVISION
EPIP-4.29	TSC/LEOF RADIATION MONITORING SYSTEM (With 3 Attachments)	00 PAGE 1 of 16

PURPOSE

Activate and operate TSC/LEOF Radiation Monitoring System.

USER

Dose Assessment Team or TSC/LEOF Monitoring Team

ENTRY CONDITIONS

1. Activation by Radiological Assessment Director

   OR

2. Activation by Dose Assessment Team

   OR

3. Activation by Radiological Assessment Coordinator.

REVISION RECORD

REV. 00	PAGE(S): Entire Procedure		DATE: SEP 2 9 1986
REV.	PAGE(S):		DATE:
REV.	PAGE(S):		DATE:
REV.	PAGE(S):	8610230110 861017	DATE:
REV.	PAGE(S):	PDR ADOCK 05000280	DATE:
REV.	PAGE(S):	F PDR	DATE:
REV.	PAGE(S):		DATE:
REV.	PAGE(S):		DATE:

APPROVAL RECOMMENDED	SNSOC REVIEW	DATE
John D. Costello	H L Miller	9/29/86
QC REVIEW	**STATION MANAGER APPROVAL**	**DATE**
E. Kopenaski	RF Saunders	9-29-86

NUMBER	PROCEDURE TITLE	REVISION
EPIP-4.29	TSC/LEOF RADIATION MONITORING SYSTEM	00
		PAGE 2 of 16

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1.	INITIATE PROCEDURE: a) BY: _____ DATE: _____ TIME: _____	
2.	SYSTEM START-UP a) Ensure particulate and iodine sample - LOADED 1) Refer to Attachment 1 for location of sample holders 2) Remove hold down bar 3) Use lever to remove sample plugs and ensure particulate and iodine sample in place 4) Replace hold down bar b) Push calibrate toggle switch on bottom front panel DOWN (off) c) Rotate two black knobs on the drawer assembly to the left and pull drawer out d) Turn orange printer switch ON (top rear of printer) e) Insert EDIT and KEYBOARD key and turn EDIT key ON (clockwise)	3) Unscrew cap on plug and replace with sample

[Step 2 continued on next page]

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

2. [continued]

f) Ensure system operability:

1) Wait one minute for print fail light to clear

2) Ensure LED lights indicate as follows:

2) Call Instrument Department and GO TO Step 18

LED LIGHT	LOCATION	INDICATION
RUN	Keyboard and front drawer	ON
KB	Keyboard	ON
EDIT	Keyboard	ON
PRINT FAIL	Keyboard and front drawer	OFF

NOTE: Each keypad input should be repeated on the 8-segment LED display.

3. UPDATE SYSTEM DATE/TIME

a) Perform the following keypad input:

"FILE" (Upper Pad)

"0"

"ENTER"

[Step 3 continued on next page]

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3.	[continued]	
	b) Verify printer responds as follows: 'PROGRAM - PNGVEP VERSION 0.3' 'ENTRY DAY TIME'	b) Notify Instrument Shop and GO TO Step 18
	c) Enter Julian Date (x day of 365), hour and minute: "x" "x" Julian Date "x" "x" Hour of Day "x" "x" Minutes "x" "ENTER"	
	1) Verify that the printer duplicates input	1) Turn EDIT key off (vertical) and then ON (clockwise) AND RETURN to Step 3.0
	d) System will request time of day when the 24 hour report should be printed by printing: '24 HOUR LOG TIME'	

[Step 3 continued on next page]

NUMBER	PROCEDURE TITLE	REVISION
EPIP-4.29	TSC/LEOF RADIATION MONITORING SYSTEM	00
		PAGE 5 of 16

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3.	[continued]	
	1) Disable automatic report-in by entering: "2" "4" "0" "1" "ENTER"	1) Enter time of day when the 24-hourly averages are to be printed: "x" Hour "x" "x" Minute "x" "ENTER"
	e) Turn EDIT key OFF (vertical) to disable the FILE 0 program	
	f) Push the "pump" button on the Display III panel (Refer to Attachment 1)	
	1) Verify pump running	1) Notify Instrument Department and GO TO Step 18
4.	VERIFY SETPOINTS	
	a) Turn KEYBOARD key ON (clockwise)	
	b) Print setpoint data for Channel 1 as follows: "FILE" (Upper Pad) "1" "ENTER"	
	c) REPEAT Step 4.b for Channels 3, 5, 6, 7 and 9	
	d) Verify alert alarm and high alarm setpoints are the same as listed on Attachment 2	d) Notify Instrument Department and continue with this procedure

NOTE: During monitor start-up the monitor data will be flagged "MAINT" until a statistically significant count (256 counts) or 10 minutes has elapsed. If the filter or charcoal cartridge has been changed, data will indicate "MAINT" for a period of up to 20 minutes on Channels 1 and 3.

5. VERIFY MONITOR STATUS

a) Print status of Channels 1 through 15 as follows:

"DATA"
"0"
"ENTER"

b) Compare printed data/ status with digital data LED status on the Display III Panel:

1) Use thumbwheel on the Display III Panel to select proper channel

2) LED lights on Display III Panel indicate the following:

LED	STATUS
N	NORMAL
M	MAINTENANCE/ CALIBRATE/ CHECKSOURCE
F	FAIL EXTENAL HI/LOW
T	TREND ALARM
A	ALERT ALARM
H	HI ALARM

[Step 5 continued on next page]

NUMBER	PROCEDURE TITLE	REVISION
EPIP-4.29	TSC/LEOF RADIATION MONITORING SYSTEM	00
		PAGE 7 of 16

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5.	[continued]	
	3) Verify data/status match printout AND All conditions are in normal mode as indicated by Attachment 3	3) Refer to Attachment 3 to determine appropriate response AND RETURN to Step 5.b when status - NORMAL OR Notify Instrument Department and GO TO Step 18
6.	INITIALIZE TOTAL SAMPLE FLOW	
	a) If initial start-up OR If particulate and iodine sample to be changed, continue with this step	a) GO TO Step 7.
	b) Ensure keyboard is turned ON (clockwise)	
	c) Enter the following keypad input: "FILE" "1" "6" "ENTER"	

[Step 6 continued on next page]

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	[continued]	
	d) Verify that printer outputs sample start time, total flow (mls) and elapsed time in fail status.	
	1) Initialize the flow by entering the following keypad inputs: "+/ON" "ENTER"	1) If no change of particulate/iodine sample, enter: "-/OFF" "ENTER"
	2) REPEAT Step 6.d for the iodine channel	
	e) Disregard fail histories printed after initialization	
	f) Turn keyboard key OFF (counterclockwise)	
7.	SAMPLE CHANGE OUT	
	a) Periodically (approximately 4 hours) OR If particulate (Channel 1) or iodine (Channel 3) is in alarm:	a) GO TO Step 8
	1) Turn calibrate toggle switch on bottom front panel ON (up)	

[Step 7 continued on next page]

NUMBER	PROCEDURE TITLE	REVISION
EPIP-4.29	TSC/LEOF RADIATION MONITORING SYSTEM	00
		PAGE 9 of 16

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7.	[continued]	
	2) Using the Display III pushbutton, turn sample pump OFF.	
	3) Refer to Attachment 1 for sample location and remove sample hold down bar.	
	4) Use lever to remove sample plugs and replace particulate and iodine samples.	
	5) Replace sample plugs and hold down bar.	
	6) Push calibrate toggle switch OFF (down).	
	7) Turn sample pump ON.	
	b) GO TO Step 6 to initialize sample flow and use flow data for sample analysis.	
8.	OPERATION MODE	
	a) If emergency NOT terminated, frequently monitor visual indicators (blue and red beacons) on the remote indicator and on the EC-4s AND RETURN to note prior to Step 5 to verify status.	a) GO TO Step 17.

NUMBER	PROCEDURE TITLE	REVISION
EPIP-4.29	TSC/LEOF RADIATION MONITORING SYSTEM	00
		PAGE 10 of 16

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9.	HIGH/ALERT ALARM STATUS	
	a) Review Ping-3B printer to determine channel in ALARM	
	b) Turn thumbwheel on Display III panel to ALARM channel	
	c) Verify reading above setpoint	
	1) Review display data	
	2) Review high/alert alarm setpoint on Attachment 2	
	d) If display LESS THAN alarm setpoint, clear ALARM:	d) Monitor will remain in ALARM until display is less than setpoint.
	1) Press the Alarm Acknowledge pushbutton on the Ping-3B Display III panel	1) Notify the Radiological Assessment Director or the Radiological Assessment Coordinator of conditions
	AND	
	2) Press Alarm Acknowledge pushbutton on the Remote Indicator (RIE)	2) Perform monitoring or grab sampling to verify alarm levels
		AND
	3) Press the High Alarm Reset on the EC-4 monitor	3) GO TO note prior to Step 5
	e) Hi Alarm should clear	e) Notify Instrument Department and GO TO Step 18
	1) GO TO note prior to Step 5	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10.	PRINT FAIL LED ON	
	a) Printer must be operable to operate pump and keyboard	
	b) Verify that printer paper supply roll full	b) IF paper empty: 1) Lift cover on printer 2) Replace paper roll.
	c) Turn keyboard key ON (clockwise)	
	d) Verify print LED OFF	d) Notify Instrument Department and GO TO Step 18
	e) Enter following keypad input: "PRINT" "ALSTAT" "ENTER"	
	f) Verify that the printer prints status of all channels	f) Notify Instrument Department and GO TO Step 18
	1) Turn keyboard key OFF (counterclockwise)	
	2) RETURN to note prior to Step 5.	

NUMBER	PROCEDURE TITLE	REVISION
EPIP-4.29	TSC/LEOF RADIATION MONITORING SYSTEM	00
		PAGE 12 of 16

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
11.	MAINTENANCE STATUS	
	a) Ensure all toggle switches on bottom front panel are OFF (down)	
	b) Verify maintenance clear	b) Continue with this step.
	1) RETURN to note prior to Step 5	
	c) Verify that Display III LED light normal:	
	1) Use thumbwheel to select channel	
	2) If normal (N) LED is ON, wait 20 minutes for channel to obtain significant number of counts	
	3) If channel status remains in "MAINT", notify Instrument Department and GO TO Step 18	3) RETURN to NOTE prior to Step 5
12.	CALIBRATE STATUS	
	a) Ensure calibrate on bottom front panel OFF (down)	
	b) Verify printer indicates that channels are out of calibrate status	b) Notify Instrument Department and GO TO Step 18

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13.	EXTERNAL FAIL STATUS	
	a) Ensure pump operational	
	b) IF pump NOT operational push Display III pushbutton to turn pump ON	b) IF pump does not start, notify Instrument Department and GO TO Step 18
	c) Turn keyboard key ON (clockwise) and enter the following keypad input to clear Channel 15 flow alarm: "ALM CLR" "ENTER"	
	d) Verify printer indicates Channel 1, 2, 3, 5, 7 and 15 are normal status	d) Notify Instrument Department and GO TO Step 18
	e) Turn keyboard key OFF (counterclockwise)	
14.	LOW FAIL STATUS	
	a) IF Channels 2 and 8 fail low: 1) Turn keyboard key ON 2) Enter the following keypad input: "HIST MIN" "x" "x" "ENTER" Where channel x are Channel 02 or 08	a) GO TO Step 14.b

[Step 14 continued on next page]

NUMBER	PROCEDURE TITLE	REVISION
EPIP-4.29	TSC/LEOF RADIATION MONITORING SYSTEM	00
		PAGE 14 of 16

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14.	[continued]	
	3) Verify that the 24 - 10 minute averages are LESS THAN or EQUAL TO 0.1 cpm.	3) IF data indicates GREATER THAN 0.1 cpm, call Instrument Department and GO TO Step 18
	4) Nominal response (0.1 cpm) due to low background	
	5) RETURN to note prior to Step 5.	
	b) IF Channels 1, 3, 4, 5, 6, 7 or 9 fail low:	b) GO TO Step 14.c
	1) GO TO Step 16 to conduct a checksource test and RETURN to this step	
	2) Verify that printer indicates a checksource value and channel returns to normal status	2) Notify Instrument Department and GO TO Step 18
	3) GO TO note prior to Step 5.	
	c) IF Channels 14 or 15 fail low, notify Instrument Department and GO TO Step 18	c) RETURN to NOTE prior to Step 5.
15.	HI FAIL STATUS	
	a) Notify Instrument Department and GO TO Step 18	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Only Channels 1, 3, 5, 6, 7 or 9 have a checksource.

16. CHANNEL CHECKSOURCE

a) Set thumbwheel switch on the Display III panel to the proper channel (1, 3, 5, 6, 7 or 9)

b) Push checksource button on Display III panel to activate source

1) Printer will inform user that the unit is in the checksource mode.

2) The "M" LED will turn ON for the desired channel.

3) Printer will indicate response after 768 counts.

4) The units should exit out of checksource mode and clear alarms.

4) Notify Instrument Department and GO TO Step 18

5) Turn keyboard key OFF (counterclockwise).

NUMBER	PROCEDURE TITLE	REVISION
EPIP-4.29	TSC/LEOF RADIATION MONITORING SYSTEM	00
		PAGE 16 of 16

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

17. SYSTEM POWER DOWN

a) Push calibrate toggle on bottom front panel ON (up)

b) Turn sampling pump OFF

c) Turn printer OFF

d) Replace charcoal and particulate filter IAW Step 7

e) Close front panel.

18. TERMINATE PROCEDURE EPIP-4.29:

a) Completed By: _____

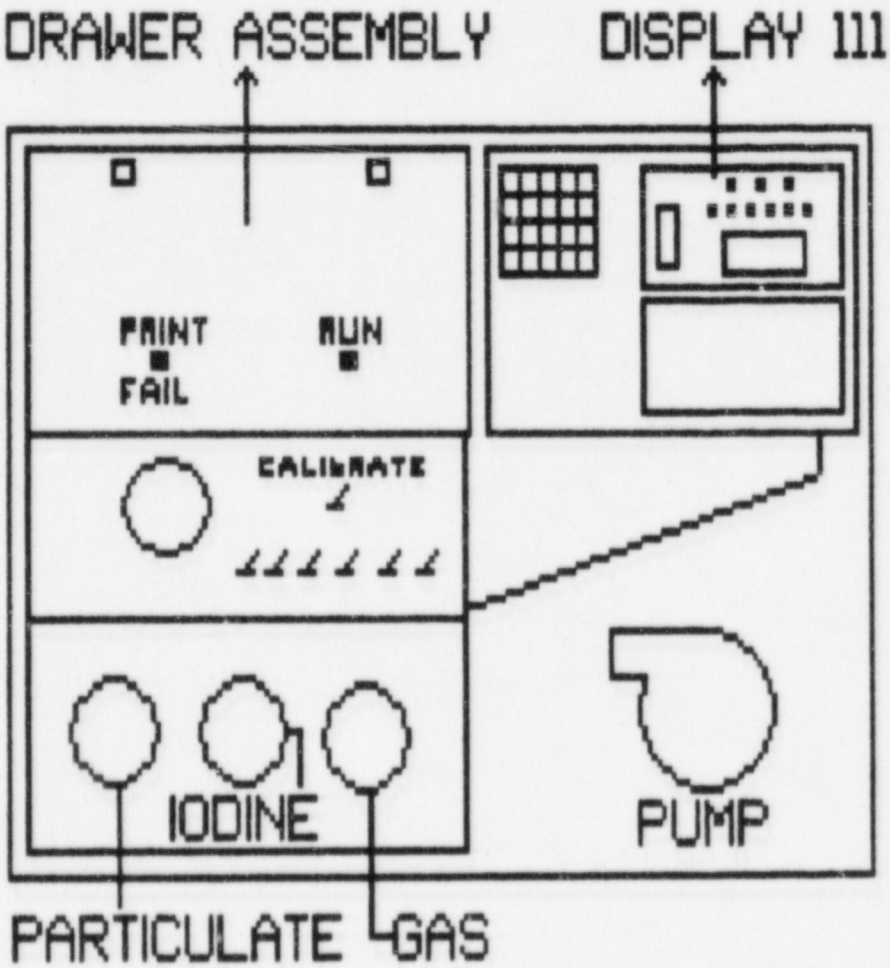
Date: _____

Time: _____

b) Forward completed EPIP-4.29 to Radiological Assessment Director.

- END -

NUMBER	ATTACHMENT TITLE	REVISION
EPIP-4.29	PING-3B RADIATION MONITORING SYSTEM	00
ATTACHMENT 1		PAGE 1 of 1



NUMBER	ATTACHMENT TITLE	REVISION
EPIP-4.29	SETPOINTS FOR TSC/LEOF RADIATION MONITORING SYSTEM	00
ATTACHMENT 2		PAGE 1 of 1

CHANNEL #	ALERT ALARM	HI ALARM
1. Particulate	6.0 E-9 µCi/cc	3.0 E-8 µCi/cc
2. Alpha	1.0 E+6 cpm	1.0 E+6 cpm
3. Iodine	2.0 E-8 µCi/cc	2.7 E-6 µCi/cc
4. Noble Gas (Low Range)	2.0 E-5 µCi/cc	2.4 E-2 µCi/cc
5. Area	1.0 E+2 mR/hr	1.0 E+3 mR/hr
6. Noble Gas (Mid Range)	2.4 E-1 µCi/cc	2.4 E+0 µCi/cc
7. Area	1.0 E+2 mR/hr	1.0 E+3 mR/hr

NUMBER	ATTACHMENT TITLE	REVISION
EPIP-4.29	ALARM/FAILURE MATRIX	00
ATTACHMENT 3		PAGE 1 of 1

GAMMA (EC-4)			AIRBORNE (PING-3B)			PRINTOUT	RESPONSE
PILOT LIGHTS			PING	RIE	EC-4	STATUS	GO TO STEP
GREEN	AMBER	RED	BEACON	BEACON	BEACON		
ON	OFF	OFF	OFF	OFF	OFF	NORMAL	5
ON	ON	ON	RED ON	RED ON	RED ON	HI ALARM	9
ON	ON	ON	RED ON	RED ON	RED ON	ALERT ALARM	9
N/A	N/A	N/A	N/A	N/A	N/A	PRINT FAIL	10
						LED-ON	
ON	OFF	OFF	OFF	OFF	OFF	MAINT	11
ON	OFF	OFF	OFF	OFF	OFF	CALIB	12
ON	OFF	OFF	BLUE-ON	OFF	BLUE-ON	FAIL EX	13
OFF	OFF	OFF	BLUE-ON	OFF	BLUE-ON	FAIL LO	14
ON	OFF	OFF	BLUE-ON	OFF	BLUE-ON	FAIL HI	15
ON	OFF	OFF	OFF	OFF	OFF	CHECKSOURCE	16