



# HLC-19A

## JPMs

Final 12/21/2009





REGION II  
ST. LUCIE NUCLEAR PLANT  
INITIAL LICENSE EXAMINATION  
ADMINISTRATIVE JPM  
A-1

**Determine Shutdown Margin Criteria  
(RO/SRO)**

This JPM is NOT TIME CRITICAL

This is a FAULTED JPM



**REGION II  
ST LUCIE NUCLEAR PLANT  
INITIAL LICENSE EXAMINATION  
ADMINISTRATIVE JPM**

**Determine Shutdown Margin Criteria**

**KA Statement:** 2.1.43 - Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant system temperature, secondary plant, fuel depletion, etc.

**KA IR:** RO = 4.1, SRO = 4.3

**References:**

- Unit 2 Plant Physics Curves
- 2-NOP-100.04, "Surveillance Requirements for Shutdown Margin; Modes 2, 3, 4, and 5 (Subcritical)"
- PSL Unit 2 Tech Spec 3.1.1.1

**Candidate:** \_\_\_\_\_  
Name

**Validation Time:** 15 minutes

**Start Time:** \_\_\_\_\_ **Finish Time:** \_\_\_\_\_

**Performance Rating:** Sat \_\_\_\_\_ Unsat \_\_\_\_\_

**Examiner:** \_\_\_\_\_ **Signature:** \_\_\_\_\_

**Comments**



NRC ADM JPM A-1  
**REGION II**  
**ST LUCIE NUCLEAR PLANT**  
**INITIAL LICENSE EXAMINATION**  
**ADMINISTRATIVE JPM**

## Determine Shutdown Margin Criteria

### **Directions to the candidate for Administrative JPMS:**

I will explain the initial conditions and state the task to be performed. You will be allowed to use any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided to you.

### **Initial Conditions**

Unit 2 was at 100% power for 120 days, 3143 EFPH. An automatic reactor / turbine trip just occurred.

- CEA 8 did not drop and is at 132" withdrawn.
- Current RCS temperature is 532°F.
- RCS C<sub>b</sub> is 962 ppm (at 0400).
- Current time is 0500.
- Reactor Engineering has provided a "Reactivity Deviation" value of 0 pcm.

Prerequisites/Precautions/Limitations of 2-NOP-100.04, "Surveillance Requirements for Shutdown Margin; Modes 2, 3, 4, and 5 (Subcritical) are complete

### **Initiating Cue**

You are directed to verify shutdown margin for the current plant conditions and to determine corrective actions if any apply.

**EXAMINERS NOTE:** This SDM calculation was conducted using 3143 EFPH. Figures A.4, B.4, B.5, B.6, & B.7 from the PSL Unit 2 Cycle 18 Plant Curve Book (PSL-ENG-SEFJ-09-008 Rev. 0), dated 05/18/09, were used to perform this calculation. Ensure the same revisions are given to the applicants for performance of this JPM. Reactor Engineering has provided a "Reactivity Deviation" value of 0 pcm (Data sheet 2 step 5B).



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START TIME: \_\_\_\_\_

DATA SHEET 2	
<p><u>STEP 1 (1&amp;2):</u> Prerequisites &amp; Precautions/Limitations complete</p> <p><u>STANDARD:</u> All complete</p> <p><b>EXAMINER'S CUE: NONE</b></p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 2 (3):</u> Record current plant conditions on data sheet 2</p> <p><u>STANDARD:</u></p> <p>3. Current Plant Conditions:</p> <p>Date <u>TODAY</u> Time <u>05:00</u> Mode <u>3</u></p> <p>Temperature <u>532</u> °F Core Burnup <u>3143</u> EFPH (DCS)</p> <p><b>EXAMINER'S CUE: NONE</b></p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 3 (4):</u> Record target plant conditions on data sheet 2</p> <p><u>STANDARD:</u></p> <p>4. Target Plant Conditions</p> <p>A. Surveillance time interval (Enter "0" if calculating for current conditions) _____ Hours</p> <p>B. Minimum expected RCS Temperature during the surveillance interval <u>532</u> °F</p> <p><b>EXAMINER'S CUE: NONE</b></p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>



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<p><u>STEP 4 (5A):</u> Determine Xenon worth from Figure A.4 and record on Data sheet 2.</p> <p><u>STANDARD:</u> 2525 pcm - 2600 pcm</p> <p><b>EXAMINER'S CUE: NONE</b></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 5 (5B):</u> Record Reactivity Deviation on data sheet 2</p> <p><u>STANDARD:</u> 0 pcm</p> <p><b>EXAMINER'S CUE: Reactor Engineering has provided a "Reactivity Deviation" value of 0 pcm.</b></p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 6 (5C):</u> Determine stuck rod worth using Figure B.4 and record on data sheet 2</p> <p><u>STANDARD:</u> 1654 pcm <math>\pm</math> 0 pcm</p> <p><b>EXAMINER'S CUE: NONE</b></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 7 (5D &amp; 6A):</u> Add lines 5A, 5B, &amp; 5C and record on data sheet 2</p> <p><u>STANDARD:</u> 871 pcm - 946 pcm</p> <p><b>EXAMINER'S CUE: NONE</b></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>



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<p><u>STEP 8 (6B):</u> Determine boron worth using Figure B.5 and record on data sheet 2</p> <p><u>STANDARD:</u> 8.01 pcm/ppm – 8.04 pcm/ppm</p> <p><b>EXAMINER'S CUE: NONE</b></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 9 (6C):</u> Divide line 6A by 6B</p> <p><u>STANDARD:</u> 108 ppm – 118 ppm</p> <p><b>EXAMINER'S CUE: NONE</b></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 10 (6D):</u> Determine Shutdown Boron Concentration using figures B.6 or B.7 (preferably B.7) and record on data sheet 2.</p> <p><u>STANDARD:</u> 1130 ppm - 1150 ppm</p> <p><b>EXAMINER'S CUE: NONE</b></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>



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<p><u>STEP 11 (6E):</u> Add lines 6C &amp; 6D and record on data sheet 2</p> <p><u>STANDARD:</u> 1020 ppm -1032 ppm</p> <p><b>EXAMINER'S CUE:</b> NONE</p> <p>COMMENTS:</p>	<p><b>CRITICAL STEP</b></p> <p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 12 (7A):</u> Enter present RCS boron concentration.</p> <p><u>STANDARD:</u> Given as 962 ppm</p> <p><b>EXAMINER'S CUE:</b> NONE</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 13 (7B):</u> Determine if Shutdown Margin is adequate</p> <p><u>STANDARD:</u> <b>Determines SDM not met for current plant conditions and that immediate Emergency Boration is required per Technical Specifications.</b></p> <p>COMMENTS:</p>	<p><b>CRITICAL STEP</b></p> <p>____ SAT</p> <p>____ UNSAT</p>
<p><b>END OF TASK</b></p>	

STOP TIME: \_\_\_\_\_



**CANDIDATE COPY**  
**(TO BE RETURNED TO THE EXAMINER UPON COMPLETION)**

**Directions to the candidate for Administrative JPMS:**

I will explain the initial conditions and state the task to be performed. You will be allowed to use any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided to you.

**Initial Conditions**

Unit 2 was at 100% power for 120 days, 3143 EFPH. An automatic reactor / turbine trip just occurred.

- CEA 8 did not drop and is at 132" withdrawn.
- Current RCS temperature is 532°F.
- RCS C<sub>b</sub> is 962 ppm (at 0400)
- Current time is 0500.
- Reactor Engineering has provided a "Reactivity Deviation" value of 0 pcm.

Prerequisites/Precautions/Limitations of 2-NOP-100.04, "Surveillance Requirements for Shutdown Margin; Modes 2, 3, 4, and 5 (Subcritical) are complete

**Initiating Cue**

You are directed to verify shutdown margin for the current plant conditions and to determine corrective actions if any apply.







# A-1 Key

REVISION NO.: <div style="text-align: center; margin-top: 5px;">1</div>	PROCEDURE TITLE: <div style="text-align: center; margin-top: 5px;">             SURVEILLANCE REQUIREMENTS FOR SHUTDOWN              MARGIN; MODES 2, 3, 4 AND 5 (SUBCRITICAL)              ST. LUCIE UNIT 2           </div>	PAGE: <div style="text-align: center; margin-top: 5px;">11 of 13</div>
PROCEDURE NO.: <div style="text-align: center; margin-top: 5px;">2-NOP-100.04</div>		

**DATA SHEET 2**  
**SHUTDOWN MARGIN VERIFICATION FOR MODES 3, 4, 5 (SUBCRITICAL)**  
 (Page 1 of 3)

1. Prerequisites, Section 3 completed. B  
RCO
  
2. Precautions/Limitations Section 4.0 reviewed. B  
RCO
  
3. Current Plant Conditions:  
 Date Today /      Time 05:00 Mode 3  
 Temperature 532 °F Core Burnup 3143 EFPH (DCS)
  
4. Target Plant Conditions
  - A. Surveillance time interval (Enter "0" if calculating for current conditions) 0 Hours
  
  - B. Minimum expected RCS Temperature during the surveillance interval 532 °F
  
5. Reactivity Components:
  - A. Xenon Worth corresponding to Current Plant Conditions or the Target Plant Conditions surveillance time interval (Plant Physics Curves, Figure A.4 or the RCS screen on DCS). 2525 - 2600  
(-) 2550 PCM
  
  - B. Reactivity Deviation (Plant Physics Curves, Figure B.3, Col. 2, observe sign) ( ) 0 PCM
  
  - C. Stuck CEA
    1. If there are no actual stuck CEAs, Then ENTER 0.
  
    2. If there is an actual stuck CEA, Then ENTER the stuck CEA difference between worst and second worst stuck CEA worth (Figure B.4) (+) 1654 PCM
  
  - D. Total (Lines 5A + 5B + 5C, observe sign) (-) 896 PCM  
871 - 946



# A-1 Key

REVISION NO.: <div style="text-align: center; border: 1px solid black; width: 20px; margin: 0 auto;">1</div>	PROCEDURE TITLE: <div style="text-align: center;"> <b>SURVEILLANCE REQUIREMENTS FOR SHUTDOWN MARGIN; MODES 2, 3, 4 AND 5 (SUBCRITICAL) ST. LUCIE UNIT 2</b> </div>	PAGE: <div style="text-align: center;">12 of 13</div>
PROCEDURE NO.: <div style="text-align: center;">2-NOP-100.04</div>		

**DATA SHEET 2**  
**SHUTDOWN MARGIN VERIFICATION FOR MODES 3, 4, 5 (SUBCRITICAL)**  
 (Page 2 of 3)

6. Reactivity Balance:

- |    |   |   |
|----|---|---|
| A. | Reactivity Component Total ( From line 5D, observe <b>sign</b> )  | <u>871 - 146</u><br>(-) <u>896</u> PCM        |
| B. | Boron Worth corresponding to Current Plant Conditions or the Target Plant Conditions expected RCS minimum temperature, (ARI-1) (Plant Physics Curves, Figure B.5) | <u>8.01 - 8.04</u><br>(+) <u>8.02</u> PCM/PPM |
| C. | Reactivity Component Total: Equivalent Boron Worth in PPM (Line 6A + 6B, observe <b>sign</b> )  | <u>108 - 118</u><br>(-) <u>112</u> PPM        |
| D. | Shutdown Boron Concentration (Plant Physics Curves, Figure B.6, B.7** or B.8)   | <u>1130 - 1150</u><br>(+) <u>1139</u> PPM     |
| E. | Required Boron Concentration (Line 6C+6D, observe <b>sign</b> )   | <u>1020 - 1032</u><br>(+) <u>1027</u> PPM     |

\*\* Figure B.7 may only be used when calculating the shutdown boron requirements for Modes 2 to 3 with Tavg greater than or equal to 515°F.

EFPH	Boron
3100	1143
3200	- 1135
	8 x .43 = 4 ppm
	1143 - 4 ----- 1139



A-1 Key

REVISION NO.: 1	PROCEDURE TITLE: SURVEILLANCE REQUIREMENTS FOR SHUTDOWN MARGIN; MODES 2, 3, 4 AND 5 (SUBCRITICAL) ST. LUCIE UNIT 2	PAGE: 13 of 13
PROCEDURE NO.: 2-NOP-100.04		

**DATA SHEET 2**  
**SHUTDOWN MARGIN VERIFICATION FOR MODES 3, 4, 5 (SUBCRITICAL)**  
(Page 3 of 3)

**CAUTION**

§1 If the measured RCS boron concentration is lower than the required boron concentration for current plant conditions, Then immediate boration is required per Technical Specifications.

7. Shutdown Margin Verification

A. Present RCS Boron Concentration (+) 962 PPM

(Chemical Analysis) Sample Time 04:00 Date Today, / /

\* B. Present Boron Concentration is greater than or equal to the required Boron Concentration (Line 7A greater than or equal to Line 6E).

Verified by RCO \_\_\_\_\_

Performance of the above asterisked (\*) steps assures compliance with the applicable Technical Specification.

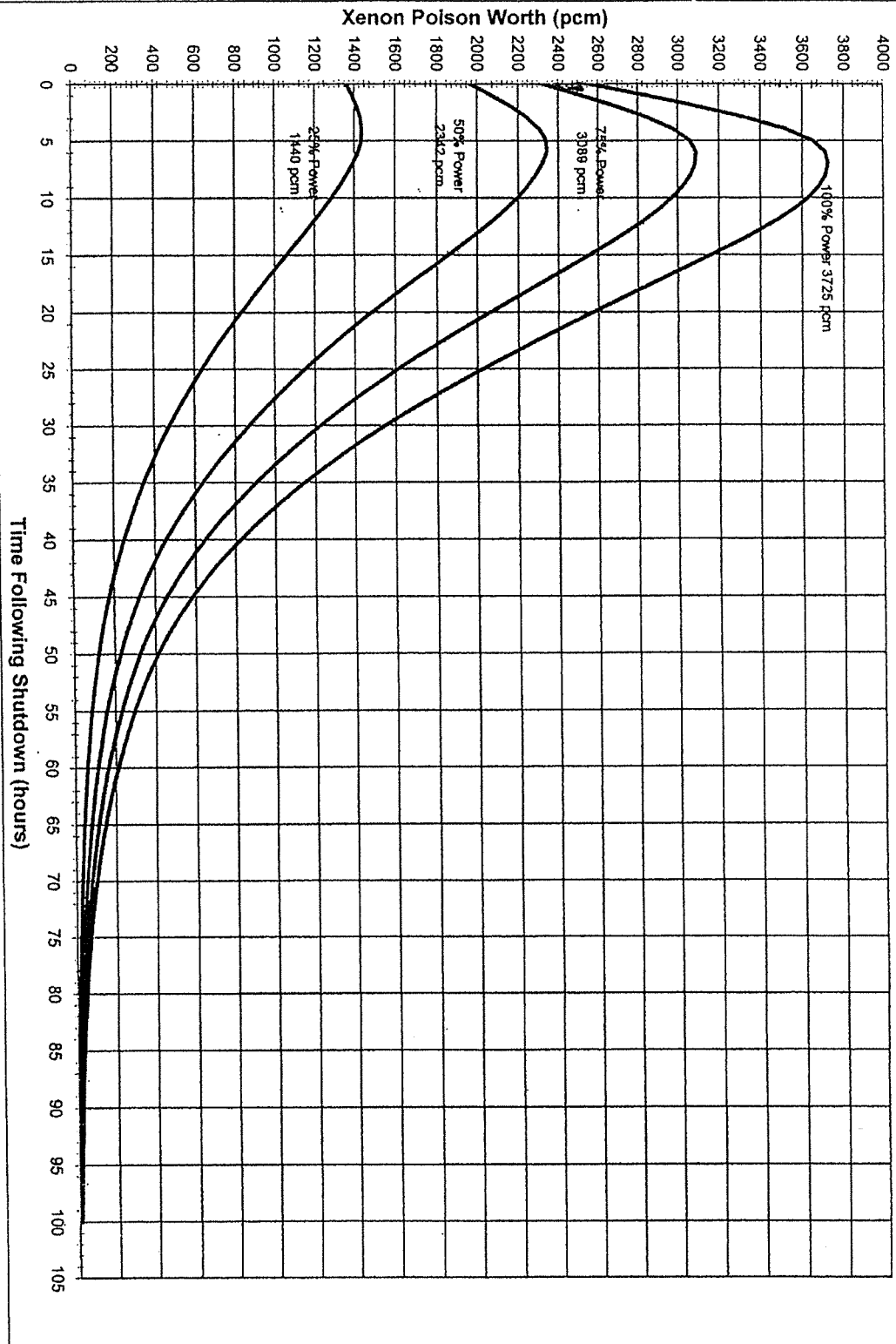
I have reviewed the requirements of this procedure including other surveillances performed during this procedure, if any [i.e., datasheet(s), PMT sheet(s), etc.]. Any deviation(s), abnormal results, equipment problems, failures, or human performance issues must be documented via a Condition Report.

C.R. # \_\_\_\_\_ Verified by SM / US \_\_\_\_\_

**END OF DATA SHEET 2**



Figure A.4 3000 EFPH Rev. 3  
 St. Lucie Unit 2 Cycle 18  
 Xenon Worth Following Shutdown



Date Of Update  
 / /



**Figure A.4 Rev. 3**

Page 1 of 3

**St. Lucie Unit 2 Cycle 18****Xenon Worth Following Shutdown  
(3000 EFPH)**

HOURS	100% (pcm)	75% (pcm)	50% (pcm)	25% (pcm)
0	2550	2317	1965	1361
1	2830	2510	2068	1388
2	3095	2691	2165	1413
3	3330	2850	2247	1431
4	3520	2976	2308	1440
5	3650	3058	2341	1436
6	3712	3089	2342	1418
7	3725	3085	2321	1391
8	3713	3062	2289	1359
9	3680	3023	2247	1323
10	3628	2970	2197	1284
11	3558	2904	2138	1242
12	3474	2828	2074	1198
13	3378	2743	2005	1152
14	3273	2652	1932	1105
15	3162	2556	1857	1058
16	3047	2458	1781	1011
17	2929	2359	1706	965
18	2811	2259	1630	919
19	2692	2160	1556	874
20	2575	2063	1483	831
21	2460	1968	1412	789
22	2348	1875	1344	749
23	2238	1785	1277	710
24	2131	1698	1212	672
25	2027	1613	1150	636
26	1926	1530	1090	601
27	1828	1450	1031	568
28	1732	1373	975	536
29	1639	1298	921	505
30	1549	1226	868	476
31	1463	1156	818	447
32	1379	1089	770	421
33	1298	1024	724	395

References: PSL-2FJF-09-073 Rev. 0, Attachment 1 Page 66

PSL-ENG-SEFJ-09-008 Rev. 0, Attachment 1 Page 72



## Figure B.4

### St. Lucie Unit 2 Cycle 18

#### CEA Total Worth (3000 EFPH, Rev. 3)

##### CEA TOTAL WORTH

- HZP All Rods In to All Rods Out = 8580 pcm

##### STUCK CEA INFORMATION

- Single Worst Stuck CEA Worth = 826 pcm  
[Location: R3]<sup>(2)</sup>
- Combined First and Second Worst Stuck CEA Worth = 2373 pcm  
[Locations: N2, R3]<sup>(2)</sup>
- Maximum Difference Between Worst and Second Worst Stuck CEA Worth<sup>(1)</sup> = 1654 pcm

##### HFP DROPPED CEA INFORMATION

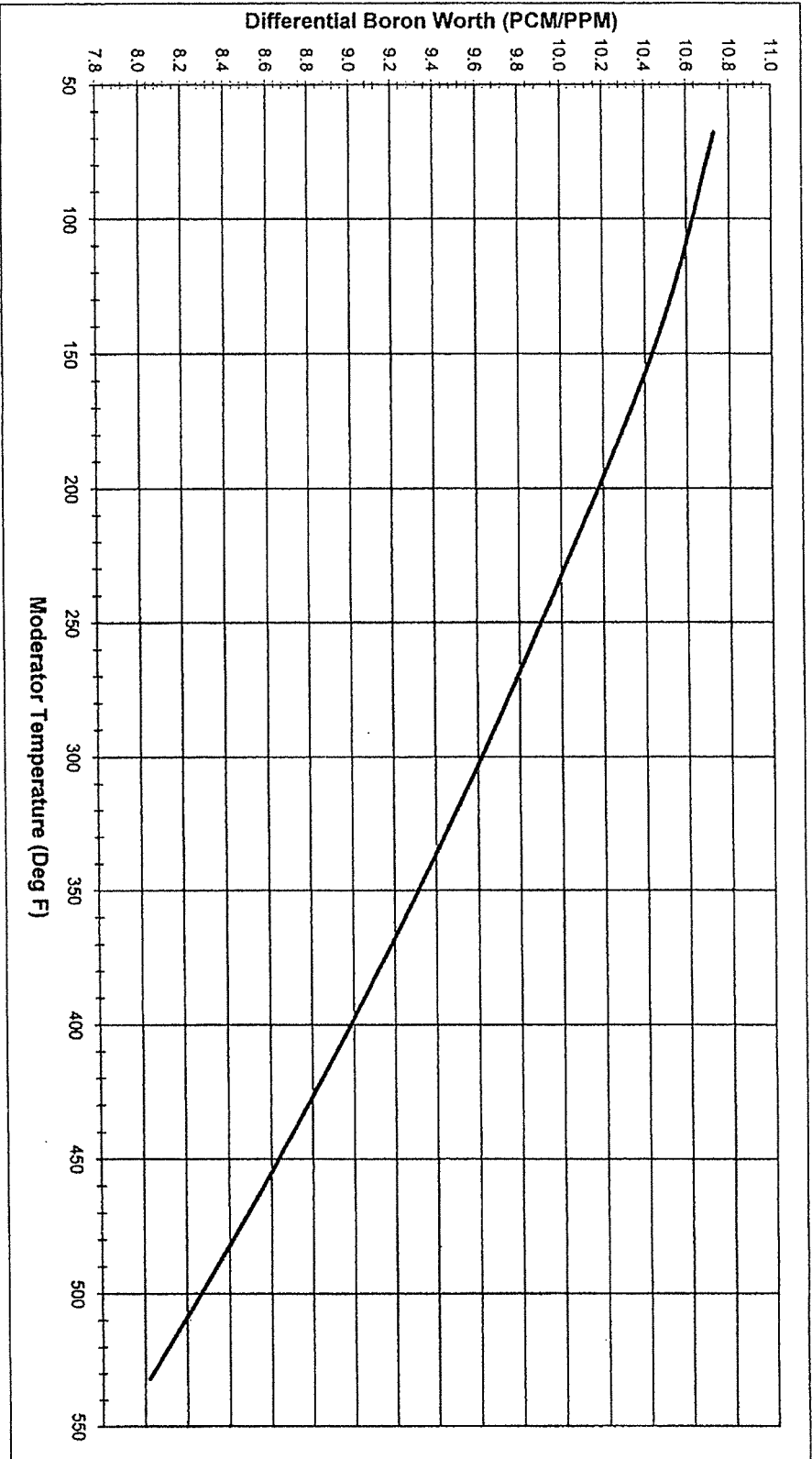
- Highest Single Dropped CEA Worth = 96 pcm  
[Location: S6]<sup>(2)</sup>

(1) This is the maximum difference over all temperature conditions and may not be equivalent to the delta between the single and combined worths listed on this sheet.

(2) Symmetric locations are also applicable.



Figure B.5 Rev. 3  
 St Lucie Unit 2 Cycle 18  
 Differential Boron Worth vs RCS Temp.  
 (3000 EFPH, No Xenon, ARI Minus Worst Stuck CEA)



Date of Update  
 / /



**Figure B.5 Rev. 3**

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**St. Lucie Unit 2 Cycle 18**

(3000 EFPH)

**Differential Boron Worth vs Moderator Temperature**

(No Xenon, ARI Minus Worst Stuck CEA)

RCS Temp. (°F)	Boron Worth (pcm/ppm)	RCS Temp. (°F)	Boron Worth (pcm/ppm)	RCS Temp. (°F)	Boron Worth (pcm/ppm)	RCS Temp. (°F)	Boron Worth (pcm/ppm)
68	10.73	188	10.24	308	9.57	428	8.79
72	10.72	192	10.22	312	9.55	432	8.76
76	10.71	196	10.20	316	9.52	436	8.73
80	10.69	200	10.18	320	9.50	440	8.71
84	10.68	204	10.15	324	9.47	444	8.68
88	10.67	208	10.13	328	9.45	448	8.65
92	10.66	212	10.11	332	9.43	452	8.62
96	10.64	216	10.09	336	9.40	456	8.59
100	10.63	220	10.07	340	9.38	460	8.56
104	10.62	224	10.05	344	9.35	464	8.53
108	10.60	228	10.02	348	9.33	468	8.50
112	10.59	232	10.00	352	9.30	472	8.47
116	10.57	236	9.98	356	9.27	476	8.45
120	10.56	240	9.96	360	9.25	480	8.42
124	10.55	244	9.94	364	9.22	484	8.39
128	10.53	248	9.91	368	9.20	488	8.36
132	10.51	252	9.89	372	9.17	492	8.33
136	10.50	256	9.87	376	9.14	496	8.30
140	10.48	260	9.85	380	9.12	500	8.27
144	10.46	264	9.82	384	9.09	504	8.24
148	10.44	268	9.80	388	9.06	508	8.21
152	10.43	272	9.78	392	9.04	512	8.17
156	10.41	276	9.76	396	9.01	516	8.14
160	10.39	280	9.73	400	8.98	520	8.11
164	10.37	284	9.71	404	8.96	524	8.08
168	10.35	288	9.69	408	8.93	528	8.05
172	10.33	292	9.66	412	8.90	532	8.02
176	10.31	296	9.64	416	8.87		
180	10.28	300	9.62	420	8.85		
184	10.26	304	9.59	424	8.82		

Date Of Update

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References: PSL-2FJF-09-061 Rev. 0 Attach. 1 Page 6

PSL-ENG-SEFJ-09-008 Rev. 0 Attach. 1 Page 176



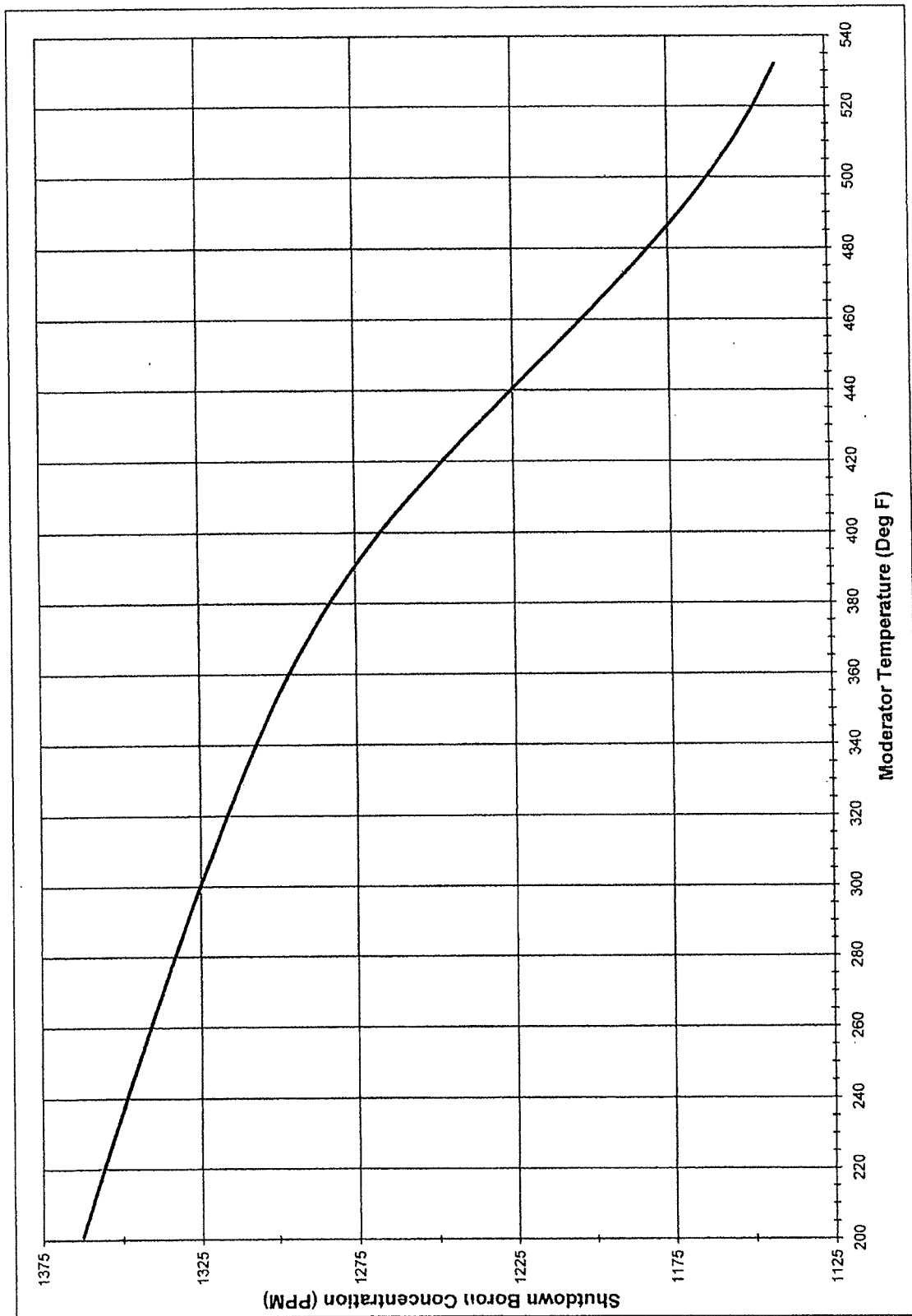
Figure B.6 Rev. 3

St. Lucie Unit 2 Cycle 18

Shutdown Boron Concentration vs RCS Temp.

(Modes 1-4, 3000 EFP, No Xe, ARI Minus Worst Stuck CEA)

ARI-1 3600 pcm S/D Margin





**Figure B.6 Rev. 3**

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**St. Lucie Unit 2 Cycle 18**

(3000 EFPH)

**Shutdown Boron Concentration**

(Modes 1-4, No Xenon, ARI Minus Worst Stuck CEA)

RCS Temp. (°F)	Boron (ppm)	RCS Temp. (°F)	Boron (ppm)	RCS Temp. (°F)	Boron (ppm)
201	1363	312	1320	424	1243
204	1362	316	1318	428	1239
208	1360	320	1316	432	1234
212	1359	324	1314	436	1230
216	1357	328	1313	440	1225
220	1356	332	1311	444	1221
224	1354	336	1309	448	1216
228	1353	340	1307	452	1212
232	1351	344	1305	456	1207
236	1350	348	1303	460	1203
240	1349	352	1301	464	1198
244	1347	356	1298	468	1194
248	1346	360	1296	472	1190
252	1344	364	1294	476	1186
256	1343	368	1291	480	1181
260	1341	372	1289	484	1177
264	1340	376	1286	488	1173
268	1338	380	1283	492	1170
272	1336	384	1280	496	1166
276	1335	388	1277	500	1162
280	1333	392	1274	504	1159
284	1332	396	1271	508	1156
288	1330	400	1267	512	1153
292	1328	404	1263	516	1150
296	1327	408	1260	520	1148
300	1325	412	1256	524	1145
304	1323	416	1252	528	1143
308	1322	420	1247	532	1141

Date Of Update

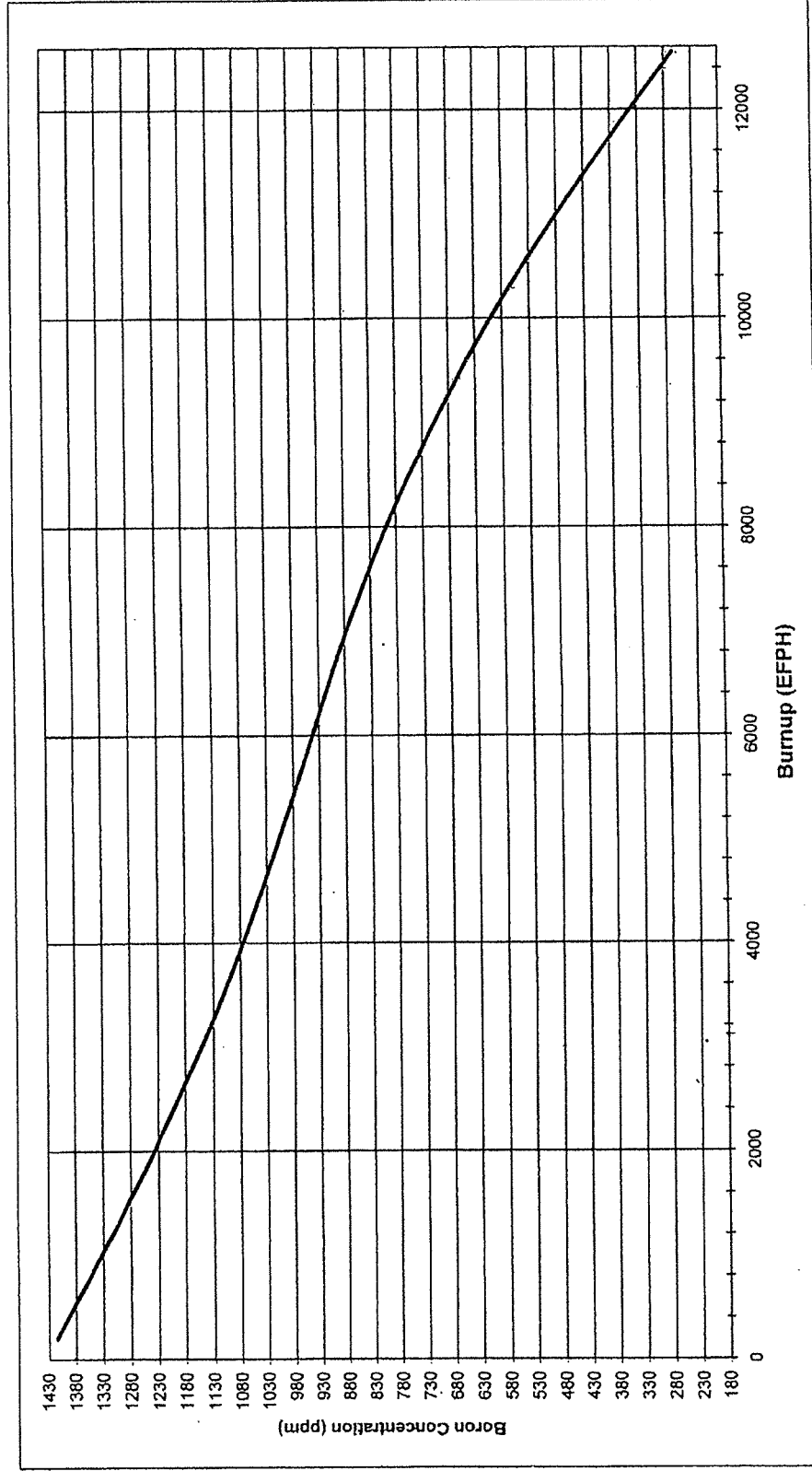
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References: PSL-2FJF-09-061 Rev. 0 Attach. 1 Page 22

PSL-ENG-SEFJ-09-008 Rev. 0 Attach. 1 Page 192



Figure B.7 Rev. 0  
 St. Lucie Unit 2 Cycle 18  
 Modes 1-3 Shutdown Boron Concentration vs Burnup  
 HZP, 515 °F



Date of Update  
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**Figure B.7 Rev. 0**

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**St. Lucie Unit 2 Cycle 18**

Modes 1-3

**Shutdown Boron Concentration vs Burnup**

HZP, 515 °F

Burnup (EFPH)	Boron (ppm)	Burnup (EFPH)	Boron (ppm)	Burnup (EFPH)	Boron (ppm)	Burnup (EFPH)	Boron (ppm)
200	1414	3200	1135	6200	930	9200	686
300	1404	3300	1127	6300	923	9300	676
400	1394	3400	1119	6400	917	9400	665
500	1383	3500	1111	6500	910	9500	655
600	1373	3600	1104	6600	904	9600	644
700	1363	3700	1096	6700	897	9700	633
800	1353	3800	1089	6800	890	9800	622
900	1343	3900	1082	6900	883	9900	611
1000	1333	4000	1074	7000	876	10000	600
1100	1323	4100	1067	7100	869	10100	588
1200	1313	4200	1060	7200	861	10200	577
1300	1304	4300	1053	7300	854	10300	565
1400	1294	4400	1046	7400	846	10400	553
1500	1284	4500	1039	7500	839	10500	541
1600	1275	4600	1032	7600	831	10600	529
1700	1265	4700	1026	7700	823	10700	516
1800	1256	4800	1019	7800	815	10800	504
1900	1247	4900	1013	7900	806	10900	491
2000	1238	5000	1006	8000	798	11000	478
2100	1228	5100	1000	8100	789	11100	465
2200	1219	5200	993	8200	781	11200	452
2300	1211	5300	987	8300	772	11300	438
2400	1202	5400	980	8400	763	11400	425
2500	1193	5500	974	8500	754	11500	411
2600	1184	5600	968	8600	744	11600	397
2700	1176	5700	962	8700	735	11700	383
2800	1168	5800	955	8800	725	11800	370
2900	1159	5900	949	8900	716	11900	355
3000	1151	6000	943	9000	706	12000	341
3100	1143	6100	936	9100	696	12100	327
						12200	313
						12300	299
						12400	284
						12500	270
						12550	263

Date Of Update

\_\_\_/\_\_\_/\_\_\_

References: PSL-2FJF-09-061 Rev. 0 Attach. 1 Page 34

PSL-ENG-SEFJ-09-008 Rev. 0 Attach. 1 Page 204



REGION II  
ST. LUCIE NUCLEAR PLANT  
INITIAL LICENSE EXAMINATION  
ADMINISTRATIVE JPM

DETERMINE TIME TO BOIL AND THE MAKEUP FOR BOIL OFF  
ON LOSS OF SHUTDOWN COOLING

A-2

This JPM is NOT TIME CRITICAL

This is a NON-FAULTED JPM



**REGION II  
ST LUCIE NUCLEAR PLANT  
INITIAL LICENSE EXAMINATION  
ADMINISTRATIVE JPM**

DETERMINE TIME TO BOIL AND THE MAKEUP FOR BOIL OFF ON LOSS OF  
SHUTDOWN COOLING

**KA Statement:** 2.1.25 Ability to interpret reference materials, such as graphs, curves, tables, etc.

**KA #:** 3.9 / 4.2

**References:** 1-0440030 Shutdown Cooling Off-Normal

**Candidate:** \_\_\_\_\_  
Name

**Validation Time:** 15 minutes

**Start Time:** \_\_\_\_\_ **Finish Time:** \_\_\_\_\_

**Performance Rating:** Sat \_\_\_\_\_ Unsat \_\_\_\_\_

**Examiner:** \_\_\_\_\_ **Signature:** \_\_\_\_\_

**Comments**



NRC ADM JPM A-2  
**REGION II**  
**ST LUCIE NUCLEAR PLANT**  
**INITIAL LICENSE EXAMINATION**  
**ADMINISTRATIVE JPM**

DETERMINE TIME TO BOIL AND THE MAKEUP FOR BOIL OFF ON LOSS OF  
SHUTDOWN COOLING

**Directions to the candidate for Administrative JPMS:**

I will explain the initial conditions and state the task to be performed. You will be allowed to use any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided to you.

**Initial Conditions**

Unit 1 is in a Refueling outage preparing to lift the Reactor Vessel head. You have just begun your shift.

A loss of shutdown cooling occurs.

**Initiating Cue**

The US has directed you to determine the following using 1-0440030, Shutdown Cooling Off-Normal:

1. Time boiling will occur
2. Flow to makeup for Boil-Off IAW 1-0440030, 'Shutdown Cooling Off-Normal'.

**Given:**

- RCS temperature is 95°F
- RCS level is 35 feet
- The Unit was tripped on Oct. 18, at 0000
- Loss of Shutdown Cooling occurred at: Oct 22, 0100
- Current date / time is Oct. 22, 0110



NRC ADM JPM A-2

START TIME: \_\_\_\_\_

<b>DATA SHEET 1</b>	
<p><b>STEP 1 (1A):</b> Record the following information</p> <p>RCS Temperature</p> <p><b>STANDARD:</b> Records 95°F</p> <p><b>EXAMINER'S CUE:</b> NONE</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><b>STEP 2 (1A):</b> Record the following information</p> <p>Vessel/Cavity Level</p> <p><b>STANDARD:</b> Records 35 ft.</p> <p><b>EXAMINER'S CUE:</b> NONE</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><b>STEP 3 (1A):</b> Record the following information</p> <p>Time since shutdown (hours)</p> <p><b>STANDARD:</b> Records 97 hours (97 - 97.17)</p> <p><b>EXAMINER'S CUE:</b> NONE</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>



NRC ADM JPM A-2

<p><u>STEP 4 (1A):</u> Record the following information</p> <p>Time Shutdown Cooling Lost</p> <p><u>STANDARD:</u> 0100</p> <p><b>EXAMINER'S CUE: NONE</b></p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 5 (1B):</u> Table 2 – Time to Boil at Mid-Loop</p> <div data-bbox="188 810 1282 909" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;"><b><u>EXAMINERS NOTE</u></b></p> <ul style="list-style-type: none"> <li>• Temperature between columns, select higher temperature</li> <li>• Time since shutdown between rows, select the lesser time</li> </ul> </div> <p><u>STANDARD:</u> 16.8 minutes</p> <p><b>EXAMINER'S CUE: NONE</b></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 6 (1C):</u> Table 3 – Additional Time to Boil / 100 ft<sup>3</sup></p> <div data-bbox="188 1335 1282 1434" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;"><b><u>EXAMINERS NOTE</u></b></p> <ul style="list-style-type: none"> <li>• Temperature between columns, select higher temperature</li> <li>• Time since shutdown between rows, select the lesser time</li> </ul> </div> <p><u>STANDARD:</u> 1.17 minutes</p> <p><b>EXAMINER'S CUE: NONE</b></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>____ SAT</p> <p>____ UNSAT</p>



NRC ADM JPM A-2

<p><b>STEP 7 (1D):</b> Table 4 – Additional volume of water above mid-loop</p> <p><b>STANDARD:</b> 4.44 (100 ft<sup>3</sup>)</p> <p style="text-align: center;"><b>EXAMINER'S CUE: NONE</b></p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>____ SAT</p> <p>____ UNSAT</p>
<p><b>STEP 8 (1E):</b> PERFORM the following equation to determine the Corrected Time to Boil as follows:</p> $\left( \frac{\text{Step 1B}}{\text{Step 1C}} \right) + \left[ \left( \frac{\text{Step 1C}}{\text{Step 1D}} \right) \times \left( \frac{\text{Time to Boil}}{\text{Time to Boil}} \right) \right] = \frac{\text{Time to Boil}}{\text{Time to Boil}}$ <p><b>STANDARD:</b> Step 1B 16.8 Step 1C 1.17 Step 1D 4.44 Time to Boil 21.99 minutes (21.99 - 22 minutes is acceptable)</p> <p style="text-align: center;"><b>EXAMINER'S CUE: NONE</b></p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>____ SAT</p> <p>____ UNSAT</p>
<p><b>STEP 9 (2):</b> If core shuffle or reload has NOT been completed, <u>Then</u> use the step 1.E. Time to Boil value in step 4.</p> <p><b>STANDARD:</b> Based on cue of Reactor Vessel head being removed, determines step 1.E is applicable.</p> <p style="text-align: center;"><b>EXAMINER'S CUE: NONE</b></p> <p><b>COMMENTS:</b></p>	<p>____ SAT</p> <p>____ UNSAT</p>



NRC ADM JPM A-2

<p><b>STEP 10 (3):</b>    If core shuffle or reload has been completed, Then PERFORM the following equation to adjust the time to boil and use this value in step 4.</p> <p><b>STANDARD:</b>    Determines core shuffle / reload has NOT been complete.</p> <p><b>EXAMINER'S CUE:</b>    <b>NONE</b></p> <p>COMMENTS:</p>	     <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><b>STEP 11 (4):</b>    Determine time boiling will occur</p> <p>_____ + _____ = _____</p> <p>Time SDC Lost    Time to Boil    Time Boiling Will Occur</p> <p><b>STANDARD:</b>    Time SDC Lost 0100                                 Time to Boil 21.99 (22 minutes is acceptable)                                 Time Boiling Will Occur 0122 (0121 – 0122)</p> <p><b>EXAMINER'S CUE:</b>    <b>NONE</b></p> <p>COMMENTS:</p>	<p><b>CRITICAL STEP</b></p>     <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><b>STEP 12:</b>        Determine Flow To Makeup For Boil-Off</p> <p><b>STANDARD:</b>    Using Figure 1 determines 65 gpm (64-66) makeup for boil-off.</p> <p><b>EXAMINER'S CUE:</b>    <b>NONE</b></p> <p><b>EXAMINERS NOTE:</b>    This step may be performed at any time</p> <p>COMMENTS:</p>     <p style="text-align: center;"><b>END OF TASK</b></p>	<p><b>CRITICAL STEP</b></p>     <p>_____ SAT</p> <p>_____ UNSAT</p>

STOP TIME: \_\_\_\_\_



**CANDIDATE COPY**  
**(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF ANSWER)**

**Directions to the candidate for Administrative JPMS:**

I will explain the initial conditions and state the task to be performed. You will be allowed to use any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided to you.

**Initial Conditions**

Unit 1 is in a Refueling outage preparing to lift the Reactor Vessel head. You have just begun your shift.

A loss of shutdown cooling occurs.

**Initiating Cue**

The US has directed you to determine the following using 1-0440030, Shutdown Cooling Off-Normal:

1. Time boiling will occur
2. Flow to makeup for Boil-Off IAW 1-0440030, 'Shutdown Cooling Off-Normal'.

**Given:**

- RCS temperature is 95°F
- RCS level is 35 feet
- The Unit was tripped on Oct. 18, at 0000
- Loss of Shutdown Cooling occurred at: Oct 22, 0100
- Current date / time is Oct. 22, 0110







**A-2 Key**

REVISION NO.: <div style="text-align: center;">38B</div>	PROCEDURE TITLE: <div style="text-align: center;">SHUTDOWN COOLING OFF-NORMAL</div>	PAGE: <div style="text-align: center;">35 of 36</div>
PROCEDURE NO.: <div style="text-align: center;">1-0440030</div>	<div style="text-align: center;">ST. LUCIE UNIT 1</div>	

**DATA SHEET 1**  
**ESTIMATED TIME TO CORE BOILING AND REQUIRED SHUTDOWN COOLING RESTORATION**  
 (Page 1 of 2)

1. §3 Determine the corrected Time to Core Boiling by performing the following:
  - A. Record the following information
 

RCS Temperature 95 °F

Vessel/Cavity Level 35 ft

Time since shutdown (hours) 97      97 - 97.17

Time Shutdown Cooling Lost 0160
  - B. Table 2 - Time to Boil at Mid-Loop 16.8 (minutes)
  - C. Table 3 - Additional Time to Boil /100 ft<sup>3</sup> 1.17 (minutes)
  - D. Table 4 - Additional volume of water above mid-loop. 4.44 (100 ft<sup>3</sup>)
  - E. PERFORM the following equation to determine the Corrected Time to Boil as follows:
 

21.99 - 22

$$\left( \frac{16.8}{\text{Step 1B}} \right) + \left[ \left( \frac{1.17}{\text{Step 1C}} \right) \times \left( \frac{4.44}{\text{Step 1D}} \right) \right] = \frac{22}{\text{Time to Boil}} \text{ minutes}$$
2. ~~2.1~~ If core shuffle or reload has NOT been completed, Then use the step 1.E. Time to Boil value in step 4.
3. ~~3.1~~ If core shuffle or reload has been completed, Then PERFORM the following equation to adjust the time to boil and use this value in step 4.
 

$$\frac{\text{Time to boil step 1.E}}{\text{Time to Boil}} \times 1.35 = \text{Time to Boil}$$



A-2 Key

REVISION NO.: 38B	PROCEDURE TITLE: SHUTDOWN COOLING OFF-NORMAL	PAGE: 36 of 36
PROCEDURE NO.: 1-0440030	ST. LUCIE UNIT 1	

**DATA SHEET 1**  
**ESTIMATED TIME TO CORE BOILING AND REQUIRED SHUTDOWN COOLING**  
**RESTORATION**  
(Page 2 of 2)

4. Determine time boiling will occur. \_\_\_\_\_

$$\begin{array}{rcl} \underline{0100} & + & \underline{22} & = & \underline{0122} \\ \text{Time SDC Lost +} & & \text{Time to Boil} & = & \text{Time Boiling Will Occur} \\ & & 21.99 - 22 & & 0121 - 0122 \end{array}$$

Performed by: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
RCO Date

Verified by: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
US Date

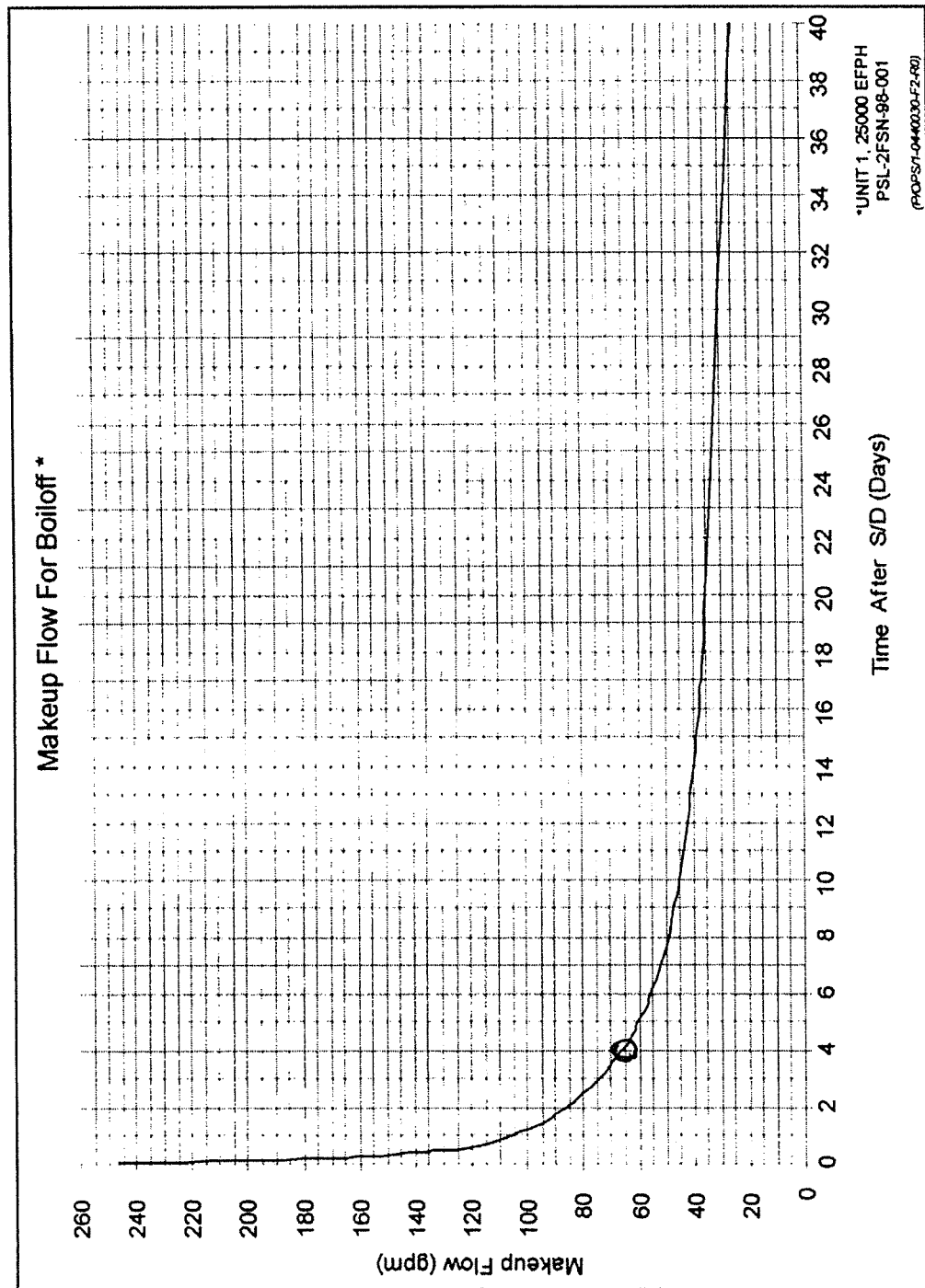
END OF DATA SHEET 1



A-2 Key

REVISION NO.: 38B	PROCEDURE TITLE: SHUTDOWN COOLING OFF-NORMAL  ST. LUCIE UNIT 1	PAGE: 30 of 36
PROCEDURE NO.: 1-0440030		

**FIGURE 1**  
**FLOW TO MAKEUP FOR BOIL-OFF**  
(Page 1 of 1)





REGION II  
ST. LUCIE NUCLEAR PLANT  
INITIAL LICENSE EXAMINATION  
ADMINISTRATIVE JPM  
A-3

**Monitoring Linear Heat Rate Using Incore Detectors (DCS)  
(RO/SRO)**

This JPM is NOT TIME CRITICAL

This is a FAULTED JPM



**REGION II  
ST LUCIE NUCLEAR PLANT  
INITIAL LICENSE EXAMINATION  
ADMINISTRATIVE JPM**

## **Monitoring Linear Heat Rate Using Incore Detectors (DCS)**

**KA Statement:**      2.2.44 - Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.

**KA IR:**              RO = 4.2, SRO = 4.4

**References:**

- NOP-100.03, "Monitoring Linear Heat Rate"
- 2-NOP-102.01, "Distributed Control System (DCS) Operations"
- PSL Unit 2 Tech Spec 3.2.1
- FSAR 13.8.1.2, "Incore Detectors"
- 2-ARP-01-L-16, Linear Heat Rate/Incores
- Equipment Out of Service Log
- 0-OSP-64.01, Reactor Engineering Periodic Tests, Checks, and Calibrations  
Operating Surveillance Procedure

**Candidate:** \_\_\_\_\_  
Name

**Validation Time:**      **25 minutes**

**Start Time:** \_\_\_\_\_      **Finish Time:** \_\_\_\_\_

**Performance Rating:**    **Sat** \_\_\_\_\_      **Unsat** \_\_\_\_\_

**Examiner:** \_\_\_\_\_      **Signature:** \_\_\_\_\_

**Comments**



NRC ADM JPM A-3  
REGION II  
ST LUCIE NUCLEAR PLANT  
INITIAL LICENSE EXAMINATION  
ADMINISTRATIVE JPM

## Monitoring Linear Heat Rate Using Incore Detectors (DCS)

### Directions to the candidate for Administrative JPMS:

I will explain the initial conditions and state the task to be performed. You will be allowed to use any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided to you.

### Initial Conditions

1. Unit 2 is at 100% power
2. Annunciator L-16 is in alarm. The ARP has been pulled with the following actions completed:
  - a. Reactor Engineering has been notified.
  - b. NOP-100.03, Monitoring Linear Heat Rate, has been referred to and the Prerequisites, Precautions, Limitations, and Initial Conditions of NOP-100.03, have been completed.

### Initiating Cue

The Unit Supervisor has directed you to perform NOP-100.03, Monitoring Linear Heat Rate, starting with step 6.2.1.



NRC ADM JPM A-3

START TIME: \_\_\_\_\_

<p><b>NOP-100.03 – Monitoring Linear Heat Rate</b></p> <p><u>STEP 1 (6.2.1):</u> Obtain a Flux Log from the DCS  A. From the Main Menu ACCESS the Process Reports  B. PRINT</p> <p><u>STANDARD:</u> Candidate touches "Print Demand Log" and log prints out</p> <p><b>EXAMINER'S CUE: NONE</b></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2 (6.2.2):</u> Determine which incore detectors are failed or abnormal</p> <p><u>STANDARD:</u> Notes failed detectors at location 43 (detectors #1 - #4)</p> <p><b>EXAMINER'S CUE: NONE</b></p> <p><b>EXAMINER'S NOTE: A Failed or Abnormal Detector will be indicated by one of 3 colors: Black, White or Red on the Incore Display. #43 (detectors #1, 2, 3, 4) is an additional/new failed detector and is RED on the DCS display. An abnormally high flux is indicated on the hard copy flux log is also indication of a failed detector.</b></p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>



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<p><b>STEP 3 (6.2.3):</b> Compare failed detectors to Equipment Out of Service Log (OOS), Figure D.6, "Incore Operating Status".</p> <p><b>STANDARD:</b> Determines there is four (4) additional failed detectors (location 43 detectors #1-#4)</p> <p><b>EXAMINER'S CUE:</b> Make available the hardcopy Equipment Out of Service Log.</p> <p><b>EXAMINER'S NOTE:</b> May compare to either Figure D.6 or to Data Sheet 1 of 0-OSP-64.01 (both are in OOS log book).</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><b>STEP 4 (6.2.4):</b> Add additional/new failed detectors to the total</p> <p><b>STANDARD:</b> Additional failed detector(s) added to the Equipment Out of Service Log (OOS).</p> <p><b>EXAMINER'S CUE:</b> NONE</p> <p><b>EXAMINER'S NOTE:</b> This may be accomplished by adding to Attachment 1, Data Sheet 1 of 0-OSP-64.01, <u>OR</u> by annotating (color in block 43) the appropriate block on Figure D.6 or both (both are in OOS log book).</p> <p><b>EXAMINER'S NOTE:</b> Critical step data for Data Sheet 1: Group #43, and Todays date.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><b>STEP 5 (6.2.5):</b> Evaluate the total number of failed detectors against criteria on Figure D.6.</p> <p><b>STANDARD:</b> Determines that there are 21 upper detectors and 22 lower detectors still operable in the affected quadrant and that this is greater than the minimums of 4 operable in the upper, 4 in the lower and a total of 10 for that quadrant</p> <p><b>EXAMINER'S CUE:</b> For RO Candidate: SRO is determining operability.</p> <p><b>EXAMINER'S NOTE:</b> SRO candidates only</p> <p><b>COMMENTS:</b></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>



NRC ADM JPM A-3

<p><b>STEP 6 (6.2.6):</b> If criteria on Figure D.6 is not met, the Incore detector system is NOT Operable</p> <p><b>STANDARD:</b> Determines Incore System is <b>Inoperable</b></p> <p><b>EXAMINER'S CUE:</b> After operability determination, the Unit Supervisor directs you to remove new failed detector(s) from SCAN in DCS using 2-NOP-102.01, Distributive Control System (DCS) Operations, step 6.3.</p> <p><b>EXAMINER'S CUE:</b> For RO candidates, the Unit Supervisor determines the system is inoperable. The Unit Supervisor directs you to remove new failed detector(s) from SCAN in DCS using 2-NOP-102.01, Distributive Control System (DCS) Operations, step 6.3.</p> <p><b>EXAMINER'S NOTE:</b> This is not a Tech Spec operability, but is an operability requirement of FSAR 13.8.1.2.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><b>2-NOP-102.01 – Distributed Control System (DCS) Operations</b></p> <p><b>STEP 7 (6.3.1):</b> Select INCORE from Main menu</p> <p><b>STANDARD:</b> INCORE selected</p> <p><b>EXAMINER'S CUE:</b> NONE</p> <p><b>COMMENTS:</b></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><b>STEP 8 (6.3.2):</b> Select the Incore Group with the failed detector</p> <p><b>STANDARD:</b> Correct Incore group (#43) selected</p> <p><b>EXAMINER'S CUE:</b> NONE</p> <p><b>COMMENTS:</b></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>



NRC ADM JPM A-3

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NRC ADM JPM A-3

<p><b>STEP 9 (6.3.3):</b> Select DEL FROM SCAN button for the failed detector</p> <p><b>STANDARD:</b> DEL SCAN button turns black for detector #1 of string 43</p> <p><b>EXAMINER'S CUE:</b> NONE</p> <p><b>EXAMINER'S NOTE:</b> This step will be repeated for detectors 2, 3, and 4.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><b>STEP 10 (6.3.4):</b> SELECT the Input Box on the pop-up screen.</p> <p><b>STANDARD:</b> Input Box Selected for detector #1 of string #43</p> <p><b>EXAMINER'S CUE:</b> NONE</p> <p><b>EXAMINER'S NOTE:</b> Input Box is above the DEL SCAN button.</p> <p><b>EXAMINER'S NOTE:</b> This step will be repeated for detectors 2, 3, and 4.</p> <p><b>COMMENTS:</b></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><b>STEP 11 (6.3.5):</b> Enter zero (0) in the Input Box and then PRESS Enter.</p> <p><b>STANDARD:</b> The Flux value will now be shown in pink on a black background and a small black box with a pink letter O will now appear next to the Flux value. Annunciator L-16 clears.</p> <p><b>EXAMINER'S CUE:</b> NONE</p> <p><b>EXAMINER'S NOTE:</b> When the DEL SCAN button is colored light blue, the Incore detector will have been deleted and the DCS will no longer evaluate the incore. When a zero (0) is manually entered, this will positively indicate that the Incore detector was taken out of service and that value will be stored in the log-term historian.</p> <p><b>EXAMINER'S NOTE:</b> This step will be repeated for detectors 2, 3, and 4.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>



NRC ADM JPM A-3

<p><b>STEP 12 (6.3.6):</b> Ensure the Flux value now indicates zero (0)</p> <p><b>STANDARD:</b> Flux value indicates zero (0) for detector #1 at string location #43</p> <p><b>EXAMINER'S CUE: NONE</b></p> <p><b>EXAMINER'S NOTE:</b> This step will be repeated for detectors 2, 3, and 4.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><b>STEP 13 (6.3.6):</b> SELECT CLOSE to return to the main Incore screen</p> <p><b>STANDARD:</b> Incore string #43 detector #1 will show a black box in the upper left quad.</p> <p><b>EXAMINER'S CUE: NONE</b></p> <p><b>EXAMINER'S NOTE:</b> Black box indicates the detector has been removed from scan.</p> <p><b>EXAMINER'S NOTE:</b> This step will be repeated for detectors 2, 3, and 4.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><b>STEP 14 (6.3.6):</b> Document change to Incore Detector status on Data Sheet 1</p> <p><b>STANDARD:</b> Failed detector recorded on Datasheet 1</p> <p><b>EXAMINER'S CUE:</b> The US directs tha another operator will provide Independent Verification (IV) on Data Sheet 1. Examiner may need to cue examinee that this is the END of the JPM.</p> <p><b>EXAMINER'S NOTE:</b> Since no specific direction is given, there may be a wide variety of wording that would meet the intent of recording this change on data sheet 1</p> <p>COMMENTS:</p> <p style="text-align: center;"><b>END OF TASK</b></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

STOP TIME: \_\_\_\_\_



**CANDIDATE COPY**  
**(TO BE RETURNED TO THE EXAMINER UPON COMPLETION)**

**Directions to the candidate for Administrative JPMS:**

I will explain the initial conditions and state the task to be performed. You will be allowed to use any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided to you.

**Initial Conditions**

1. Unit 2 is at 100% power
2. Annunciator L-16 is in alarm. The ARP has been pulled with the following actions completed:
  - a. Reactor Engineering has been notified.
  - b. NOP-100.03, Monitoring Linear Heat Rate, has been referred to and the Prerequisites, Precautions, Limitations, and Initial Conditions of NOP-100.03, have been completed.

**Initiating Cue**

The Unit Supervisor has directed you to perform NOP-100.03, Monitoring Linear Heat Rate, starting with step 6.2.1.







# A-3 Answer Key

FLORIDA POWER AND LIGHT

ST. LUCIE PLANT

UNIT NO. 2

FLUX LOG				
FLORIDA POWER AND LIGHT - ST. LUCIE PLANT - UNIT NO. 2				
	FLUX (RH1)	FLUX (RH2)	FLUX (RH3)	FLUX (RH4)
GROUP	NV*10 (12)	NV*10 (12)	NV*10 (12)	NV*10 (12)
1	0.000000	0.000000	0.000000	0.000000
2	45.224892	45.568596	45.090939	45.061691
3	0.000000	0.000000	0.000000	0.000000
4	45.215141	45.549103	45.066563	45.039757
5	42.040714	42.328339	41.878723	41.853142
6	43.071617	43.409214	42.955936	42.926693
7	48.763912	49.188087	48.676270	48.644592
8	0.000000	0.000000	0.000000	0.000000
9	51.701099	52.132626	51.584221	51.572033
10	0.000000	0.000000	0.000000	0.000000
11	48.739536	49.134464	48.610462	48.583656
12	0.000000	0.000000	0.000000	0.000000
13	47.545208	47.937691	47.430759	47.399075
14	51.713291	52.159439	51.615910	51.601288
15	0.000000	0.000000	0.000000	0.000000
16	0.000000	0.000000	0.000000	0.000000
17	51.732792	52.130192	51.584221	51.611038
18	0.000000	0.000000	0.000000	0.000000
19	47.515965	47.876755	0.000000	0.000000
20	41.731201	42.051723	41.605774	41.572872
21	0.000000	0.000000	0.000000	0.000000
22	0.000000	0.000000	0.000000	0.000000
23	51.723042	52.161877	51.613472	51.620785
24	51.740101	52.169193	51.632965	51.696358
25	51.771790	52.169189	51.637848	51.737793
26	0.000000	0.000000	0.000000	0.000000
27	51.701099	52.115562	51.562283	51.574471
28	0.000000	0.000000	0.000000	0.000000
29	50.077705	50.501900	49.955944	49.916946
30	0.000000	0.000000	0.000000	0.000000
31	51.764477	52.169189	51.630531	51.691483
32	51.771790	52.169189	51.632965	51.730480
33	0.000000	0.000000	0.000000	0.000000
34	0.000000	0.000000	0.000000	0.000000
35	0.000000	0.000000	0.000000	0.000000
36	0.000000	0.000000	0.000000	0.000000
37	0.000000	0.000000	0.000000	0.000000
38	47.550087	47.930378	47.408821	47.367393
39	51.720604	52.149689	51.584221	51.559849
40	0.000000	0.000000	0.000000	0.000000
41	51.727917	52.144814	51.593971	51.632969
42	51.713291	52.125313	51.572033	51.593975
43	103.375389	104.194557	103.070923	103.039253
44	0.000000	0.000000	0.000000	0.000000
45	0.000000	0.000000	0.000000	0.000000
46	48.771229	49.175900	48.634838	48.590965
47	51.708420	52.132622	51.562283	51.528156
48	0.000000	0.000000	0.000000	0.000000
49	51.693787	52.105816	51.537903	51.508659
50	48.744408	49.129589	48.593395	48.558388
51	0.000000	0.000000	0.000000	0.000000
52	42.066685	42.359276	41.893745	41.855988
53	0.000000	0.000000	0.000000	0.000000
54	46.328270	46.703720	46.191891	46.152893
55	0.000000	0.000000	0.000000	0.000000
56	42.030167	42.327625	41.865753	41.832897

I'd  
Problem  
→

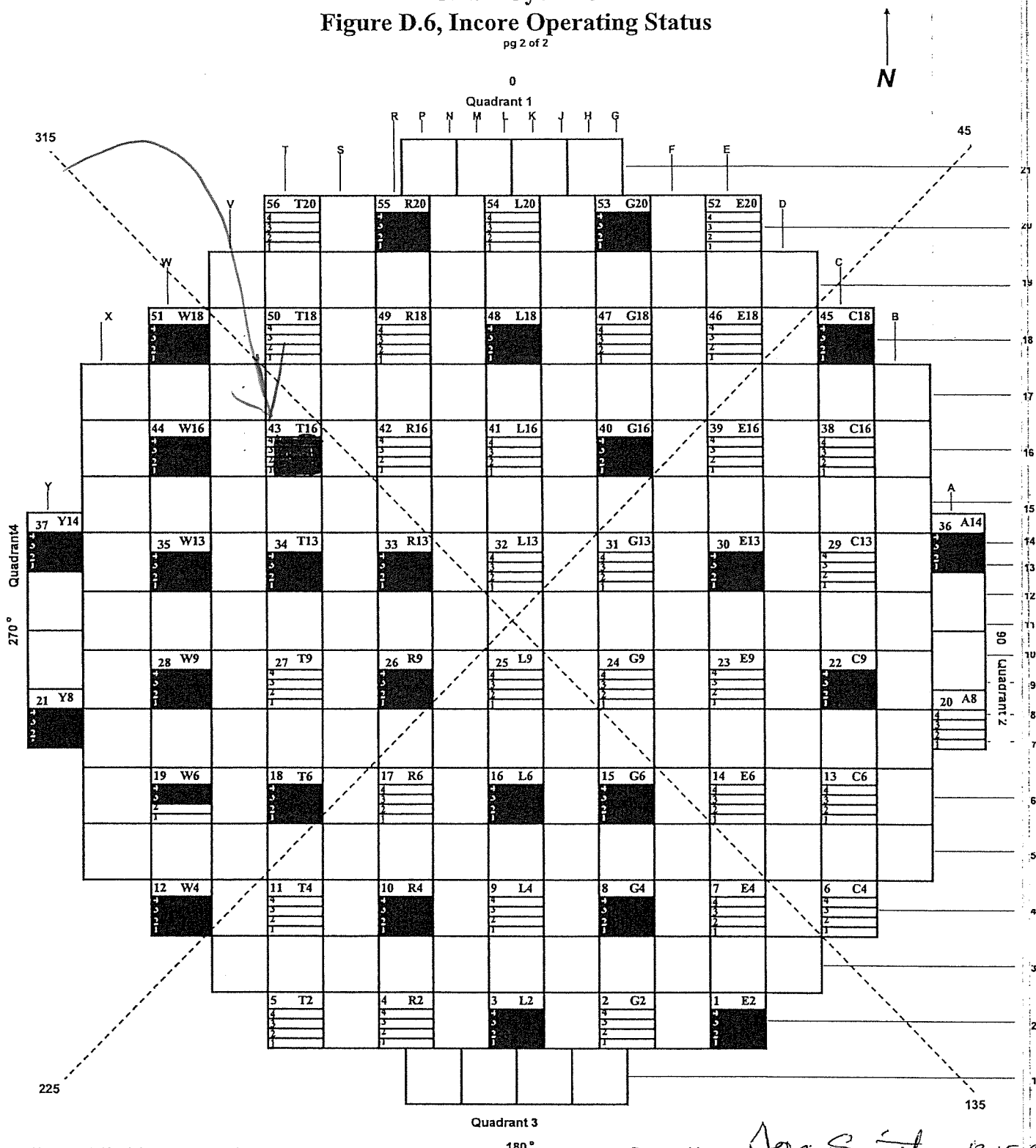






# A-3 ANSWER KEY

Unit 2 Cycle 18  
Figure D.6, Incore Operating Status  
pg 2 of 2





Unit 2  
Incore Operability Status  
Fig. D.6  
Pg. 1 of 2

Test	Current	Limit												
Number of operable detectors needed to satisfy NOP-100.03 (Monitoring Linear Heat Rate) Sect. 6.2	124 of 224 ( 55.36% )	112 of 224 (50%)												
Number of operable detectors per upper core quadrant (N/A NOP-100.03)	<table><tr><td colspan="4">Upper Quadrant</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>20</td><td>20</td><td>16</td><td>6</td></tr></table>	Upper Quadrant				1	2	3	4	20	20	16	6	4
Upper Quadrant														
1	2	3	4											
20	20	16	6											
Number of operable detectors per lower core quadrant (N/A NOP-100.03)	<table><tr><td colspan="4">Lower Quadrant</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>20</td><td>20</td><td>16</td><td>5</td></tr></table>	Lower Quadrant				1	2	3	4	20	20	16	5	4
Lower Quadrant														
1	2	3	4											
20	20	16	5											
Number of operable detectors per core quadrant (upper + lower, N/A NOP-100.03)	11 ( Quadrant 4 )	10												

Final Safety Analysis Report:

- (1) 50% of the detectors must be operable
- (2) Four detectors in each upper and lower half are operable per core quadrant.
- (3) Ten detectors must be operable per core quadrant.

Detector String Quadrant Locations

Quadrant (1): 32, 40, 41, 42, 46, 47, 48, 49, 50, 52, 53, 54, 55, 56  
 Quadrant (2): 6, 13, 14, 20, 22, 23, 24, 29, 30, 31, 36, 38, 39, 45  
 Quadrant (3): 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 15, 16, 17, 25  
 Quadrant (4): 12, 18, 19, 21, 26, 27, 28, 33, 34, 35, 37, 43, 44, 51

Status as of: 12/15/09

Prepared by: Jon Sincich

Verified by: May Planch



# A-3 Answer Key

REVISION NO.: 8A	PROCEDURE TITLE: DISTRIBUTED CONTROL SYSTEM (DCS) - OPERATIONS ST. LUCIE UNIT 2	PAGE: 81 of 81
PROCEDURE NO.: 2-NOP-102.01		

**DATA SHEET 1**  
**CHANGE OF DCS DATA**  
(Page 1 of 1)

Parameter	As Found	As Left	Initial	IV	Date	Time
DCS PID 169	IN SCAN	Removed				
ILC Detector		from SCAN				
String # 43						
Detector #1-4						

Reason Parameter was changed:

Reviewed By: \_\_\_\_\_  
US/SM

S 2 OPS	
DATE	_____
DOC	Procedure
DOCN	NOP-102.01
SYS	_____
COM	completed
ITM	_____

**END OF DATA SHEET 1**



REVISION: 1	PROCEDURE TITLE: ANNUNCIATOR RESPONSE PROCEDURE	PANEL: L
PROCEDURE NO: 2-ARP-01-L16	ST. LUCIE UNIT 2	WINDOW: 16

#### ANNUNCIATOR PANEL L

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48

<p><b>LINEAR HEAT RATE / INCORES</b></p> <p><b>L-16</b></p>
---

**DEVICE:**  
DCS Incore Monitor Device

**LOCATION:**  
Control Room

**SETPOINT:**  
Various

#### ALARM CONFIRMATION:

1. Process Alarm located on the DCS system bar is blinking red on the Operators or Engineering workstation.
2. DCS Incore Map

#### OPERATOR ACTIONS:

1. Print Process Report "Flux Data Log"
2. NOTIFY Reactor Engineering.
3. Refer to 0-NOP-100.03, Monitoring Linear Heat Rate.

**CAUSES:** Detector neutron volts exceeds the high alarm limit (HAL), for greater than 10 seconds.

- REFERENCES:**
1. PC/M 02042
  2. CWD 2998-B-327 Sheet 1550



REVISION NO.: 5A	PROCEDURE TITLE: MONITORING LINEAR HEAT RATE	PAGE: 7 of 10
PROCEDURE NO.: NOP-100.03	ST. LUCIE PLANT	

## 6.2 Monitoring Linear Heat Rate Using the Incore Detection System

1. OBTAIN a Flux Log from the DCS by performing the following:

- A. From the Main Menu ACCESS the Process Reports.
- B. PRINT.

### NOTE

A Failed or Abnormal Detector will be indicated by one of 3 colors: Black, White or Red on the Incore Display.

2. DETERMINE which incore detectors in the flux log are failed or abnormal.

3. COMPARE the number of failed detectors and their locations to the list of failed incore detectors maintained in the Equipment Out of Service (OOS) Log, Figure D.6, "Incore Operating Status."

4. If any detectors are discovered as failed in addition to those identified in Figure D.6, Then ADD the additional failed detector to the total.

5. EVALUATE the total number of failed detectors against the criteria listed in Figure D.6, Incore Operating Status Table.

6. If the criteria of Figure D.6, Incore Operating Status, is NOT met, Then the incore detector system is NOT operable.

A. PERFORM the following to monitor LHR using the Excore Detector System.

1. PROCEED to Section 6.3, Monitoring LHR Using the Excore Detection system.

2. REFER to Technical Specifications 3.2.1, and immediately ADVISE the Shift Manager and contact Reactor Engineering.

7. VERIFY fewer than 2 self-powered incore detectors are in alarm.

### NOTE

An asterisk next to the detector reading on the flux log indicates that detector has exceeded its alarm setpoint.

A. If two or more detectors are in alarm, Then NOTIFY Reactor Engineering and I&C Department.

B. If four or more detectors are in alarm, Then INITIATE corrective action within 15 minutes to reduce LHR to within limits (less than 4 detectors in alarm) within 1 hour in accordance with Technical Specification 3.2.1.



REVISION NO.: 8A	PROCEDURE TITLE: DISTRIBUTED CONTROL SYSTEM (DCS) - OPERATIONS ST. LUCIE UNIT 2	PAGE: 9 of 81
PROCEDURE NO.: 2-NOP-102.01		

### 6.3 Deleting an Incore Detector

1. From the Main Menu, SELECT the Incore button.
2. SELECT the Incore group that contains the detector you wish to delete.
3. SELECT the DEL FROM SCAN button located at the bottom of the pop-up screen for the selected detector.
4. The DEL FROM SCAN button will now turn black indicating that the detector has been deleted from scan.
5. SELECT the input box of the pop-up screen above the DEL FROM SCAN button.
6. ENTER a zero (0) in the Input Box and then PRESS the Enter key.

#### NOTE

When the DEL FROM SCAN button is colored light blue, the Incore detector will have been deleted and the DCS will no longer evaluate the incore. When a zero (0) is manually entered, this will positively indicate that the Incore detector was taken out of service and that value will be stored in the log-term historian.

7. The Flux value will now be shown in pink on a black background and a small black box with a pink letter O will now appear next to the Flux value. This indicates that a manual value has been entered.
8. ENSURE that the Flux Value now indicates zero (0).
9. SELECT Close to return to the main Incore screen
10. On the main Incore screen, the Incore string will now show a black box in the upper left quad indicating that at least one (1) of the detectors has been deleted from scan.
11. Use Datasheet 1 of this procedure to document the change to the Incore Detector.

**END OF SECTION 6.3**



FSAR

#### 13.8.1.1.2 Surveillance Requirements

Each of the above seismic monitoring instruments shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations at the frequencies shown on Table 13.8.1-2.

Each of the above seismic monitoring instruments actuated during a seismic event (greater than or equal to 0.01g) shall be restored to OPERABLE status within 24 hours and a CHANNEL CALIBRATION performed within 5 days. Data shall be retrieved from actuated instruments and analyzed to determine the magnitude of the vibratory ground motion.

#### 13.8.1.2 Incore Detectors

Plant operating restrictions associated with the Incore Detectors were removed from the facility Technical Specifications by License Amendment No. 136 and NRC Safety Evaluation Report issued June 6, 1995.

The operability of the incore detectors with the specified minimum complement of equipment ensures that the measurements obtained from use of this system accurately represent the spatial neutron flux distribution of the reactor core. The NRC Safety Evaluation Report issued June 6, 1995 with Technical Specification License Amendment #136 removing the incore detector operating restrictions from the Technical Specifications and placing them in the UFSAR recommends that any safety evaluation to reduce the minimum number of operable incore detectors address certain issues. These issues are specified below:

- 1) How an inadvertent loading of a fuel assembly into an improper location will be detected;
- 2) How the validity of the tilt estimates will be ensured;
- 3) How adequate core coverage will be maintained;
- 4) How the measurement uncertainties will be assured and why the added uncertainties are adequate to guarantee that measured peak linear heat rates, peak pin powers radial peaking factors, and azimuthal power tilts will meet Technical Specification limits; and
- 5) How the incore detector system will be restored to full (or nearly full) service before the beginning of each cycle.

#### 13.8.1.2.1 Limiting Conditions for Operation

1. The incore detection system shall be operable using the BEACON code with:
  - a. The minimum requirement for detector availability at the beginning of each cycle is 75% for startup testing misload verification. For the rest of the cycle 50% detector availability is needed, and



REGION II  
ST. LUCIE NUCLEAR PLANT  
INITIAL LICENSE EXAMINATION  
ADMINISTRATIVE JPM  
A-4

EVALUATE SURVEY MAP DATA  
(RO/SRO)

This is NOT a TIME CRITICAL JPM

This is a Non-Faulted JPM



**REGION II  
ST LUCIE NUCLEAR PLANT  
INITIAL LICENSE EXAMINATION  
ADMINISTRATIVE JPM**

**EVALUATE SURVEY MAP DATA**

**KA Statement:** 2.3.7 – Ability to comply with radiation work permit requirements during normal or abnormal conditions.

**KA IR:** RO = 3.5, SRO = 3.6

**References:** HPP-20, Area Radiation and Contamination Surveys  
RWP 09-0002 – Routine Maintenance ask

**Candidate:** \_\_\_\_\_  
Name

**Validation Time:** 20 minutes

**Start Time:** \_\_\_\_\_ **Finish Time:** \_\_\_\_\_

**Performance Rating:** Sat \_\_\_\_\_ Unsat \_\_\_\_\_

**Examiner:** \_\_\_\_\_ **Signature:** \_\_\_\_\_

**Comments**



**REGION II  
ST LUCIE NUCLEAR PLANT  
INITIAL LICENSE EXAMINATION  
ADMINISTRATIVE JPM**

**EVALUATE SURVEY MAP DATA**

**Directions to the candidate for Administrative JPMS:**

I will explain the initial conditions and state the task to be performed. You will be allowed to use any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task and the cue sheet that I provided to you.

**Initial Conditions**

You are an extra Unit 1 Reactor Operator. All three Charging Pumps have been identified as having a common issue. You have been assigned to perform an inspection tour of all three Charging Pumps.

**Initiating Cue**

**Evaluate:**

- a) the attached survey map for the areas you will be touring
- b) the ROUTINE MAINTENANCE RWP

**Determine:**

1. The expected required postings for charging pump rooms 1A, 1B & 1C in accordance with HPP-20, Area Radiation and Contamination Surveys.
2. Whether the Operations Routine Maintenance RWP may be used for this tour.



START TIME: \_\_\_\_\_

<p><b>STEP 1:</b> Determines the posting for Charging pump room 1A is expected to be a Locked High Radiation Area</p> <p><b>STANDARD:</b> LOCKED HIGH RADIATION AREA</p> <p><b>EXAMINER'S CUE:</b> NONE <b>EXAMINER'S NOTE:</b> A specific RWP is required for entry. <b>EXAMINER'S NOTE:</b> The candidate may state a HOT SPOT posting is necessary. This determination is not part of the CRITICAL step.</p> <p><b>COMMENTS:</b> NOT A Hot spot! 3x but not 3x 9A.</p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><b>STEP 2:</b> Determines the posting for Charging pump room 1B is expected to be Radiation Area and Contaminated Area</p> <p><b>STANDARD:</b> RADIATION AREA AND CONTAMINATED AREA</p> <p><b>EXAMINER'S CUE:</b> NONE</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><b>STEP 3:</b> Determines the posting for Charging pump room 1C is expected to be Radiation Area</p> <p><b>STANDARD:</b> HIGH RADIATION AREA</p> <p><b>EXAMINER'S CUE:</b> NONE <b>EXAMINER'S NOTE:</b> The candidate may state a HOT SPOT posting is necessary. This determination is not part of the CRITICAL step.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>



<u>STEP 4:</u>	Determines that Operations ROUTINE MAINTENANCE RWP is NOT sufficient for this tour.	<b>CRITICAL STEP</b>
<u>STANDARD:</u>	<b>OPERATIONS ROUTINE MAINTENANCE RWP IS NOT SUFFICIENT FOR THIS TASK</b>	____ SAT
<b>EXAMINER'S CUE:</b>	<b>NONE</b>	____ UNSAT
<b>EXAMINER'S NOTE:</b>	<b>RWP 09-0002 Task #2 allows entry into contaminated and HRA (after HP brief) as long as RWP dosimetry alarm limits are not exceeded. This RWP does NOT allow entry into a LOCKED HIGH RADIATION AREA for a tour of the 1A charging pump. This RWP does allow entry into the 1B and 1C charging pump rooms.</b>	
<u>COMMENTS:</u>		

STOP TIME: \_\_\_\_\_



**CANDIDATE COPY  
(TO BE RETURNED TO THE EXAMINER UPON COMPLETION)**

**Directions to the candidate for Administrative JPMS:**

I will explain the initial conditions and state the task to be performed. You will be allowed to use any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task and the cue sheet that I provided to you.

**Initial Conditions**

You are an extra Unit 1 Reactor Operator. All three Charging Pumps have been identified as having a common issue. You have been assigned to perform an inspection tour of all three Charging Pumps.

**Initiating Cue**

**Evaluate:**

- a) the attached survey map for the areas you will be touring
- b) the ROUTINE MAINTENANCE RWP

**Determine:**

1. The expected required postings for charging pump rooms 1A, 1B & 1C in accordance with HPP-20, Area Radiation and Contamination Surveys.
2. Whether the Operations Routine Maintenance RWP may be used for this tour.



# FLORIDA POWER & LIGHT - PSL

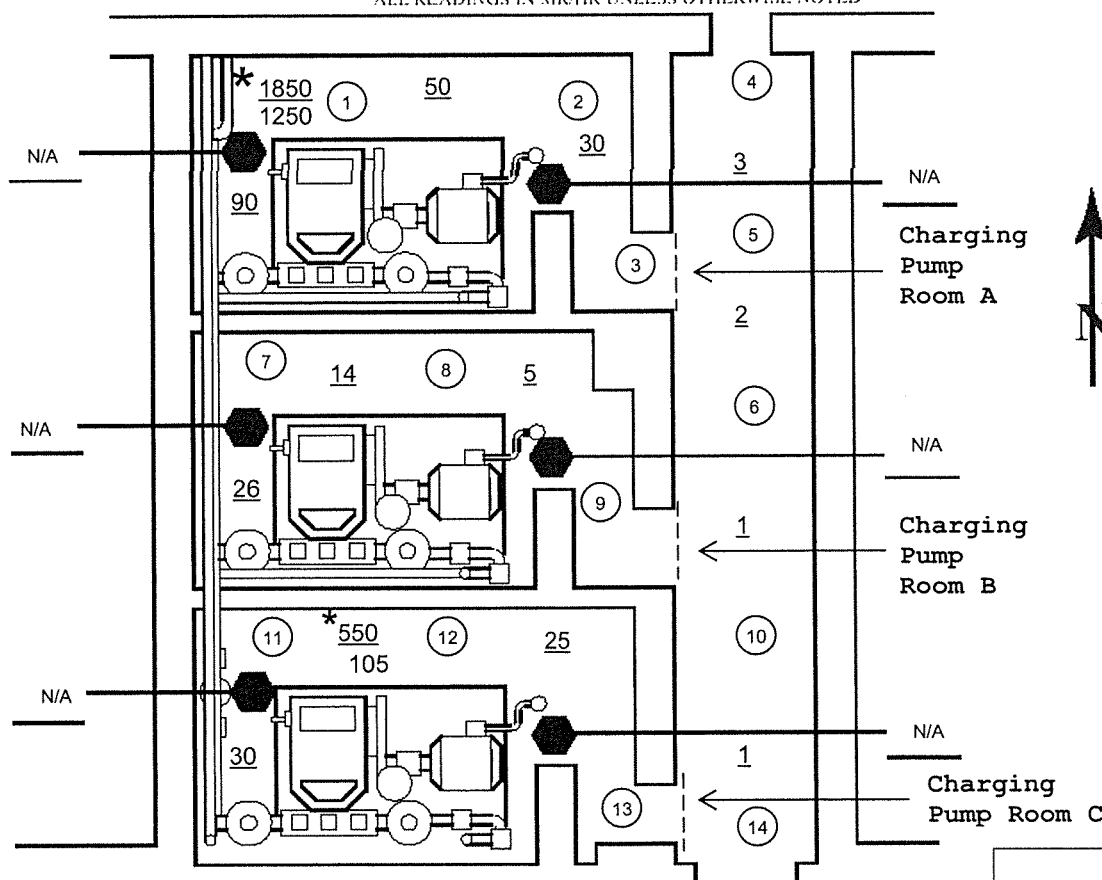
HPS - 7

LOCATION: CHARGING PUMPS - EL. -5 FT.		(G) GRAVE DANGER - VERY HIGH RAD AREA	(C) CONTAMINATED AREA
DATE: 8-15-09		(L) LOCKED HIGH RAD AREA	(P) HOT PARTICLE AREA
TIME: 0700		(H) HIGH RAD AREA	(S) SPECIFIC RWP REQUIRED
RPT (PRINT): J. Swift		(R) RADIATION AREA	(B) H.P. COVERAGE REQUIRED
RPT SIGNATURE: J. Swift		(M) RADIOACTIVE MATERIAL	
RWP #:		(A) AIRBORNE RADIOACTIVITY AREA	$\beta$ MDA = < 1000 dpm
		(D) HIGHLY CONTAMINATED AREA	$\alpha$ MDA = dpm
INSTRUMENT TYPE / # R020/3603	INSTRUMENT TYPE / #	Masslinn	
INSTRUMENT TYPE / # L-177/21829	INSTRUMENT TYPE / #	No.	dpm / probe area
			Hot Part Y / N
$\beta / \alpha$	SMEARS IN DPM / 100 CM <sup>2</sup>	A	N/A
1 <1K / 6 <1K / 11 <1K / 16 N/A / 21 N/A / 26 N/A /		B	N/A
2 <1K / 7 1.9K / 12 <1K / 17 N/A / 22 N/A / 27 N/A /		C	N/A
3 <1K / 8 1.5K / 13 <1K / 18 N/A / 23 N/A / 28 N/A /		D	N/A
4 <1K / 9 1.1K / 14 <1K / 19 N/A / 24 N/A / 29 N/A /		E	N/A
5 <1K / 10 <1K / 15 N/A / 20 N/A / 25 N/A / 30 N/A /		F	N/A
		G	N/A

LEGEND:	General Area Dose Rates	Reviewed By:	
*	Contact Dose Rate	B. Gold	8-15-09
○	Smear Location	Print Name	Date
△	Neutron Dose Rate (nrem/Hr DDE)	Signature	
□	Beta Radiation in mRad/Hr		
---	Radiation / Contaminated Boundary		

ALL READINGS IN MR/HR UNLESS OTHERWISE NOTED



REMARKS: Exposure Received Completing Survey: 15 mrem.

S I OPS	
DATE	SURVEY
DOCT	HPS-7
DOCN	HP
SYS	
COMP	
ITM	



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REVISION NO.: 28	PROCEDURE TITLE: AREA RADIATION AND CONTAMINATION SURVEYS ST. LUCIE PLANT	PAGE: 10 of 37
PROCEDURE NO.: HPP-20		

#### 6.1 General (continued)

3. Record information on survey maps and forms as soon as practical. Survey nomenclature on maps and forms should be as follows:

- A. Numbers representing mrem/hr general area dose rate are underlined for gamma, boxed for beta, within a triangle for neutron.
- B. Numbers representing mrem/hr contact dose rate are indicated by an asterisk or star next to numbers underlined, boxed or within a triangle, as appropriate.
- C. Levels of removable contamination in dpm/100cm<sup>2</sup> should be indicated by circled numbers for smear locations.
- D. Units of Rem/hr or additional pertinent nomenclature shall be clearly indicated on maps or forms.

4. Postings and updating should be noted on the survey maps and forms before the maps are approved. Outdoor postings should be checked for proper colors and fading due to sun.

5. Personnel performing surveys are responsible for:

- A. Initiating radiological controls as indicated by the survey results.
- B. Completing and signing the survey forms prior to the end of the shift, if time permits.
- C. Routing the *Entire procedure to be given but these are key pages* h Physics Shift Supervisor for review
- D. Placing the *Completed surveys box during non-* outage op
- E. Notifying the *Supervisor* when changes to postings were made.

6. A Health Physics Shift Supervisor is responsible for reviewing and approving the adequacy of completed survey forms.

- A. Copies of approved surveys shall be available for plant personnel to review prior to entering the RCA.

END OF SECTION 6.1



REVISION NO.: 28	PROCEDURE TITLE: AREA RADIATION AND CONTAMINATION SURVEYS ST. LUCIE PLANT	PAGE: 17 of 37
PROCEDURE NO.: HPP-20		

## 6.6 Requirements Based on Survey Results

### 1. Radiation Areas

- A. §1.3 Any area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 5 mrem in 1 hour at 12 inches (30 cm) from the radiation source or from any surface that the radiation penetrates shall be posted with a conspicuous sign bearing the radiation symbol and the words, **CAUTION, RADIATION AREA**.
  - B. §1.2.3 Any area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 100 mrem in 1 hour at 12 inches (30 cm) from the radiation source or from any surface that the radiation penetrates shall be posted with a conspicuous sign bearing the radiation symbol and the words, **CAUTION, HIGH RADIATION AREA, SPECIFIC RWP REQUIRED**. Additionally, the area shall have access control requirements established in accordance with the applicable Technical Specifications.
  - C. §2.3 Any area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 1,000 mrem in 1 hour at 12 inches (30 cm) from the radiation source or from any surface that the radiation penetrates shall be posted with a conspicuous sign bearing the radiation symbol and the words, **CAUTION, LOCKED HIGH RADIATION AREA, SPECIFIC RWP REQUIRED, HP COVERAGE REQUIRED**. Additionally, the area shall have access control requirements established in accordance with the applicable Technical Specifications.
  - D. §1.2.3 Any area, accessible to individuals, in which radiation levels could result in an individual receiving an absorbed dose in excess for 500 rads in 1 hour at 1 meter from the radiation source or from any surface that the radiation penetrates shall be posted with a conspicuous sign bearing the radiation symbol and the words, **GRAVE DANGER, VERY HIGH RADIATION AREA, SPECIFIC RWP REQUIRED, HP COVERAGE REQUIRED**. Additionally, the area shall have access control requirements established in accordance with 10 CFR 20.
2. Surveys, postings and placards are not required in overhead areas, unless made accessible by ladders or scaffolding.



REVISION NO.: 28	PROCEDURE TITLE: AREA RADIATION AND CONTAMINATION SURVEYS ST. LUCIE PLANT	PAGE: 18 of 37
PROCEDURE NO.: HPP-20		

## 6.6 Requirements Based on Survey Results (continued)

### NOTE

- ¶<sub>5.8</sub> Hot Spot stickers shall not be "stuck" directly on stainless steel components. Some adhesives contain halogens (i.e., chlorides) that may degrade the component. Alternate means of Hot Spot postings are to be utilized to identify Hot Spots. The recommended method is to affix the Hot Spot sticker to a yellow plastic CAUTION sign attached to the component with Rad rope or ribbon.
- Hot Spots need **not** be identified for areas **not** routinely accessed or for areas accessed only during outages, unless otherwise directed by RP Supervision.

3. §<sub>3</sub> A component or item having a contact reading greater than 100 mrem/hr and more than 5 times the general area radiation levels (i.e. 30 cm from contact) should be posted as a HOT SPOT. The Hot Spot Log should be updated monthly upon completion of the comprehensive surveys.

4. §<sub>1</sub> The boundary of the Radiation Controlled Area shall be maintained at less than 2 mrem/hr. If the radiation levels outside the RCA are found to be greater than 2 mrem/hr, barricade and post the area and take action to reduce the radiation levels to less than 2 mrem/hr.

### 5. Contamination Areas

A. §<sub>3</sub> Any area containing removable surface contamination in excess of 1000 dpm/100cm<sup>2</sup> beta/gamma or 20 dpm/100cm<sup>2</sup> alpha shall be posted as a Contaminated Area.

B. Any area containing removable surface contamination in excess of 100,000 dpm/100cm<sup>2</sup> beta / gamma should be posted as a Highly Contaminated Area.

C. Exits from contaminated areas require as a minimum, a single step-off pad placed on the CLEAN side of the access point for the area.

D. Areas in which contamination exists over a major portion of the area in excess of 100,000 dpm/100cm<sup>2</sup> may require a double step-off pad.

E. Replace step-off pads between areas of higher and lower contamination levels at a frequency determined by contamination surveys.

F. Restricted areas established in the controlled area shall be surveyed and posted in accordance with the requirements of 6.6.1 above.

END OF SECTION 6.6






St. Lucie Nuclear Power Plant  
FPL St. Lucie



RADIOLOGICAL WORK PERMIT

<b>RWP Title:</b> Radiation Protection, Nuclear Operations, Security, Chemistry: Entry Into The Radiation Controlled Area and Reactor Auxiliary Bldg.		<b>RWP No.:</b> 09-0002 Rev. 02	
<b>1.16 Task:</b> ROUTINE MAINTENANCE		 09-0002	
<b>Comments:</b> Unit 1 & 2 RAB / RCA			
<b>RWP Type:</b> JOB ROUTINE		<b>RWP Status:</b> ACTIVE	<b>Begin Date:</b> 3/4/2009
<b>Prepared By:</b>		<b>Close On Date:</b>	
<b>ALARA ID:</b>		<b>Job Supervisor:</b>	
<b>Stay Time Alarm(hh:mm):</b>			
<b>Estimated Dose:</b> 4,201 mrem	<b>Estimated Hours:</b> 246,556.00	<b>Chirp Rate:</b>	
<b>Actual Dose:</b> 2,630 mrem	<b>Actual Hours:</b> 140,822.08		
<b>Buildings</b>			
<b>Elevations</b>			
<b>Rooms</b>			
Unit 1 & 2 RAB / RCA		All Areas	
		ALL AREAS	
<b>General Area Contamination Levels</b>			
<b>Description</b>		<b>Value</b>	<b>Unit</b>
General Area Contamination Levels		<1K G/A	dpm / 100 cm2
General Area Gamma Level		<1 G/A	mREM/HR
<b>Task</b>			
<b>Description</b>		<b>Status</b>	
1	RP Dept: Job Coverage, Surveys, Inspections. Source Check / Calibrate Survey Instr.	Active	
2	Operations Dept: Clearances, Tags, Surveillances and Inspections.	Active	
3	Security: Walkdowns, Inspections, Patrols.	Active	
4	Chemistry Dept: Sampling and Analysis.	Active	
5	Operations Dept (Trainees): Clearances, Tags, Surveillances and Inspections.	Active	
6	RP Dept (Trainees)	Active	
7	Chemistry Dept (Trainees)	Active	
<b>Requirement Groups</b>			
<b>Requirement Groups</b>		<b>Requirement Descriptions</b>	
N/A			
<b>Instructions 1:</b>			
<b>Instructions 2:</b>			
<b>Instructions 3:</b>			
<b>Approver Title</b>			
<b>Name</b>		<b>Date</b>	
SUPERVISOR		SEXTON, ALAN B	
		03/06/2009	
N/A			






St. Lucie Nuclear Power Plant  
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RADIOLOGICAL WORK PERMIT

<b>RWP Title:</b> Radiation Protection, Nuclear Operations, Security, Chemistry: Entry Into The Radiation Controlled Area and Reactor Auxiliary Bldg.		<b>RWP No.:</b> 09-0002 Rev. 02	
<b>1.16 Task:</b> ROUTINE MAINTENANCE		 09-0002	
<b>Comments:</b> Unit 1 & 2 RAB / RCA			
<b>RWP Type:</b> JOB ROUTINE		<b>RWP Status:</b> ACTIVE	<b>Begin Date:</b> 3/4/2009
<b>Prepared By:</b>		<b>Close On Date:</b>	
<b>ALARA ID:</b>		<b>Job Supervisor:</b>	
<b>Stay Time Alarm(hh:mm):</b>			
<b>Estimated Dose:</b> 4,201 mrem	<b>Estimated Hours:</b> 246,556.00	<b>Chirp Rate:</b>	
<b>Actual Dose:</b> 2,630 mrem	<b>Actual Hours:</b> 140,822.08		
<b>Locations</b>			
<b>Buildings</b>	<b>Elevations</b>	<b>Rooms</b>	
Unit 1 & 2 RAB / RCA	All Areas	ALL AREAS	
<b>Radiological Conditions</b>			
<b>Description</b>	<b>Value</b>	<b>Unit</b>	
General Area Contamination Levels	<1K G/A	dpm / 100 cm2	
General Area Gamma Level	<1 G/A	mREM/HR	
<b>Tasks</b>			
<b>Task</b>	<b>Description</b>	<b>Status</b>	
1	RP Dept: Job Coverage, Surveys, Inspections. Source Check / Calibrate Survey Instr.	Active	
2	Operations Dept: Clearances, Tags, Surveillances and Inspections.	Active	
3	Security: Walkdowns, Inspections, Patrols.	Active	
4	Chemistry Dept: Sampling and Analysis.	Active	
5	Operations Dept (Trainees): Clearances, Tags, Surveillances and Inspections.	Active	
6	RP Dept (Trainees)	Active	
7	Chemistry Dept (Trainees)	Active	
<b>Requirements</b>			
<b>Requirement Groups</b>	<b>Requirement Descriptions</b>		
N/A			
<b>Additional Instructions</b>			
<b>Instructions 1:</b>			
<b>Instructions 2:</b>			
<b>Instructions 3:</b>			
<b>Approvals</b>			
<b>Approver Title</b>	<b>Name</b>	<b>Date</b>	
SUPERVISOR	SEXTON, ALAN B	03/06/2009	
<b>Attachments</b>			
N/A			





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RADIOLOGICAL WORK PERMIT

<b>Task Number:</b> 1		<b>RWP No.:</b> 09-0002 <b>Rev.:</b> 02	
<b>Task Description:</b> RP Dept: Job Coverage, Surveys, Inspections. Source Check / Calibrate Survey Instr.		<b>Task Status:</b> Active	
<b>1.16 Task:</b> ROUTINE MAINTENANCE			
<b>ALARA ID:</b>		<b>Stay Time Alarm(hh:mm):</b> 16:00	
<b>Estimate Dose:</b> 1,928.00		<b>Estimate Hours:</b> 53,205.00 <b>Chirp Rate:</b>	
<b>Hi-Rad:</b> Yes	<b>Hot Particle:</b> Yes	<b>Locked Hi-Rad:</b> No	<b>Hi-Contamination:</b> Yes
<b>Alarm Settings</b>			
<b>Low Gamma Dose (mrem)</b>	<b>Low Gamma Rate (mrem/hr)</b>	<b>High Gamma Dose (mrem)</b>	<b>High Gamma Rate (mrem/hr)</b>
		12.00	300.00
<b>Low Beta Dose</b>	<b>Low Beta Dose</b>	<b>High Beta Dose</b>	<b>High Beta Rate</b>
<b>Low Neutron Dose</b>	<b>Low Neutron Dose</b>	<b>High Neutron Dose</b>	<b>High Neutron Rate</b>
<b>Requirements</b>			
<b>Requirement Groups</b>	<b>Requirement Descriptions</b>		
DOSIMETRY	(PAM) Required to be worn in HRA's. ✓		
GENERAL INSTRUCTIONS	Refer to HPP-15 for hot particle area work. W/B scan with RO-2 or equivalent (open window) shall be done at ~ 2 hr intervals when in HPA's. Use HPP-3.3 form.		
	Observe & obey ALL RP postings & verbal instructions. Utilize low dose waiting areas.		
PROTECTIVE CLOTHING	RP will determine PC requirements based on radiological conditions in work areas.		
<b>Additional Instructions</b>			
<b>Instructions 1:</b> *This RWP is to be used for routine shift work including source check and calibration of survey instrumentation. *RPTs shall provide their own surveys, radiological job coverage. *Utilize RP procedures to provide radiological coverage. *Contact RPSS to obtain appropriate procedures. *Contact RPSS to discuss / resolve issues as needed.			
<b>Instructions 2:</b> *Sign in and out on Form HPP-30.14 while working with Neutron sources.			
<b>Instructions 3:</b> ALARA HOLDPOINTS: In case of an EPD alarm leave area immediately and report to RP at RCA control point. *Personnel are authorized to enter a HRA but are not to exceed the RWP EPD dose rate setpoint of 300 mrem/hr.			
<b>Attachments</b>			
N/A			





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RADIOLOGICAL WORK PERMIT

<b>Task Number:</b> 2		<b>RWP No.:</b> 09-0002 <b>Rev.:</b> 02	
<b>Task Description:</b> Operations Dept: Clearances, Tags, Surveillances and Inspections.		<b>Task Status:</b> Active	
<b>1.16 Task:</b> ROUTINE MAINTENANCE			
<b>ALARA ID:</b>		<b>Stay Time Alarm(hh:mm):</b> 16:00	
<b>Estimate Dose:</b> 1,823.00		<b>Estimate Hours:</b> 40,954.00 <b>Chirp Rate:</b>	
<b>Hi-Rad:</b> Yes	<b>Hot Particle:</b> Yes	<b>Locked Hi-Rad:</b> No	<b>Hi-Contamination:</b> Yes
<b>Alarm Settings</b>			
<b>Low Gamma Dose (mrem)</b>	<b>Low Gamma Rate (mrem/hr)</b>	<b>High Gamma Dose (mrem)</b>	<b>High Gamma Rate (mrem/hr)</b>
		12.00	300.00
<b>Low Beta Dose</b>	<b>Low Beta Dose</b>	<b>High Beta Dose</b>	<b>High Beta Rate</b>
<b>Low Neutron Dose</b>	<b>Low Neutron Dose</b>	<b>High Neutron Dose</b>	<b>High Neutron Rate</b>
<b>Requirements</b>			
<b>Requirement Groups</b>	<b>Requirement Descriptions</b>		
DOSIMETRY	(PAM) Required to be worn in HRA's.		
GENERAL INSTRUCTIONS	Check EPD frequently (about every 15 min). Observe & obey ALL RP postings & verbal instructions. Utilize low dose waiting areas. Refer to HPP-15 for hot particle area work. W/B scan with RO-2 or equivalent (open window) shall be done at ~ 2 hr intervals when in HPA's. Use HPP-3.3 form. Personnel SHALL receive a documented High Rad area briefing SPECIFIC to each HRA being accessed and sign in on RP form HPP-3.5 RP will survey work areas as needed. Use IPM A.S.A.P. after exiting contaminated areas (Immediately after removal of PC's, while wearing modesty clothing). If IPM alarms twice, contact RP immediately.		
HP INSTRUCTIONS	Periodic RP coverage required unless otherwise specified. PROVIDE workers with Low Dose Waiting Area information as appropriate.		
PROTECTIVE CLOTHING	RP will determine PC requirements based on radiological conditions in work areas.		
<b>Additional Instructions</b>			
<b>Instructions 1:</b> *Surgeon / Rubber gloves, labcoat are the minimum requirements to manipulate valves in posted contaminated areas. *This can be done when valve can be reached from clean side and only the hand will touch the valve. *Change out gloves prior to handling clean material and equipment. *Contact RP prior to moving containers of Radioactive Materials. *Contact RP prior to draining water to floor drains. *Ensure hose is secured in drain. *In the event of a spill, contain spill and notify RP immediately.			
<b>Instructions 2:</b> *U#1 ECCS Yard Sump: Contact RPSS / Shift RP prior to transferring yard sump water. *Connections on hoses and pumps to be redundantly wrapped or bagged at RP direction. *In the event of a leak or spill SECURE all pumping operations, contain the leak or spill and notify RP immediately.			
<b>Instructions 3:</b> ALARA HOLDPOINTS: In case of an EPD alarm leave area immediately and report to RP at RCA control point. *Personnel are authorized to enter a HRA but are not to exceed the RWP EPD dose rate setpoint of 300 mrem/hr. *CONTACT RP PRIOR TO ENTERING ANY OVERHEAD AREAS.			
<b>Attachments</b>			
N/A			





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<b>Task Number:</b> 3		<b>RWP No.:</b> 09-0002 <b>Rev.:</b> 02	
<b>Task Description:</b> Security: Walkdowns, Inspections, Patrols.		<b>Task Status:</b> Active	
<b>1.16 Task:</b> ROUTINE MAINTENANCE			
<b>ALARA ID:</b>		<b>Stay Time Alarm(hh:mm):</b> 16:00	
<b>Estimate Dose:</b> 40.00		<b>Estimate Hours:</b> 137,507.00 <b>Chirp Rate:</b>	
<b>Hi-Rad:</b> Yes	<b>Hot Particle:</b> No	<b>Locked Hi-Rad:</b> No	<b>Hi-Contamination:</b> No
<b>Alarm Settings</b>			
<b>Low Gamma Dose (mrem)</b>	<b>Low Gamma Rate (mrem/hr)</b>	<b>High Gamma Dose (mrem)</b>	<b>High Gamma Rate (mrem/hr)</b>
		5.00	125.00
<b>Low Beta Dose</b>	<b>Low Beta Dose</b>	<b>High Beta Dose</b>	<b>High Beta Rate</b>
<b>Low Neutron Dose</b>	<b>Low Neutron Dose</b>	<b>High Neutron Dose</b>	<b>High Neutron Rate</b>
<b>Requirements</b>			
<b>Requirement Groups</b>	<b>Requirement Descriptions</b>		
DOSIMETRY	(PAM) Required to be worn in HRA's.		
GENERAL INSTRUCTIONS	Observe & obey ALL RP postings & verbal instructions. Utilize low dose waiting areas. Check EPD frequently (about every 15 min). RP will survey work areas as needed. Personnel SHALL receive a documented High Rad area briefing SPECIFIC to each HRA being accessed and sign in on RP form HPP-3.5 Use IPM A.S.A.P. after exiting contaminated areas (Immediately after removal of PC's, while wearing modesty clothing). If IPM alarms twice, contact RP immediately.		
HP INSTRUCTIONS	Periodic RP coverage required unless otherwise specified. PROVIDE workers with Low Dose Waiting Area information as appropriate.		
PROTECTIVE CLOTHING	P.C.'s required for work in Contaminated areas. Full dress P.C.'s required for work in Contaminated areas in the overhead.		
<b>Additional Instructions</b>			
<b>Instructions 1:</b>			
<b>Instructions 2:</b>			
<b>Instructions 3:</b> ALARA HOLDPOINTS: In case of an EPD alarm leave area immediately, report to RP at RCA control point. *HRA entry allowed, personnel not to exceed EPD dose rate setpoint of 125 mrem/hr. *No work allowed in the 19.5 ft pipe pen with more than (1) charging pump in operation without the RPMs or ALARA supervisors permission. *CONTACT RP PRIOR TO ENTERING ANY OVERHEAD AREAS.			
<b>Attachments</b>			
N/A			





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RADIOLOGICAL WORK PERMIT

<b>Task Number:</b> 4		<b>RWP No.:</b> 09-0002 <b>Rev.:</b> 02	
<b>Task Description:</b> Chemistry Dept: Sampling and Analysis.		<b>Task Status:</b> Active	
<b>1.16 Task:</b> ROUTINE MAINTENANCE			
<b>ALARA ID:</b>		<b>Stay Time Alarm(hh:mm):</b> 16:00	
<b>Estimate Dose:</b> 250.00		<b>Estimate Hours:</b> 13,406.00 <b>Chirp Rate:</b>	
<b>Hi-Rad:</b> Yes	<b>Hot Particle:</b> Yes	<b>Locked Hi-Rad:</b> No	<b>Hi-Contamination:</b> Yes
<b>Alarm Settings</b>			
<b>Low Gamma Dose (mrem)</b>	<b>Low Gamma Rate (mrem/hr)</b>	<b>High Gamma Dose (mrem)</b>	<b>High Gamma Rate (mrem/hr)</b>
		12.00	125.00
<b>Low Beta Dose</b>	<b>Low Beta Dose</b>	<b>High Beta Dose</b>	<b>High Beta Rate</b>
<b>Low Neutron Dose</b>	<b>Low Neutron Dose</b>	<b>High Neutron Dose</b>	<b>High Neutron Rate</b>
<b>Requirements</b>			
<b>Requirement Groups</b>	<b>Requirement Descriptions</b>		
DOSIMETRY	(PAM) Required to be worn in HRA's.		
GENERAL INSTRUCTIONS	Use IPM A.S.A.P. after exiting contaminated areas (Immediately after removal of PC's, while wearing modesty clothing). If IPM alarms twice, contact RP immediately. Refer to HPP-15 for hot particle area work. W/B scan with RO-2 or equivalent (open window) shall be done at ~ 2 hr intervals when in HPA's. Use HPP-3.3 form. Check EPD frequently (about every 15 min). Observe & obey ALL RP postings & verbal instructions. Utilize low dose waiting areas. Personnel SHALL receive a documented High Rad area briefing SPECIFIC to each HRA being accessed and sign in on RP form HPP-3.5		
HP INSTRUCTIONS	Periodic RP coverage required unless otherwise specified.		
PROTECTIVE CLOTHING	RP will determine PC requirements based on radiological conditions in work areas.		
<b>Additional Instructions</b>			
<b>Instructions 1:</b> *A Minimum of Lab Coat and Rubber Gloves to be worn when sampling or reaching into a Contaminated Space to manipulate valves. *A Minimum of Lab Coat, Rubber Gloves and shoe covers to be worn when entering (walking into) a Contaminated Area. *Notify RP immediately in case of a spill.			
<b>Instructions 2:</b> *When taking primary samples wear face shield or Lower Fume Hood as much as possible while acquiring samples to maintain required face velocity. *Keep Fume Hood closed when not sampling. *Be aware of a change in dose rates while performing RCS sampling. *Keep Sample Sinks rinsed out to avoid High Contamination levels. *Personnel are to perform a hand and foot frisk prior to exiting Hot Labs after sample analysis. *Personnel are to use IPM as soon as practical after sampling and analysis of Primary samples is complete.			
<b>Instructions 3:</b> ALARA HOLDPOINTS: In case of an EPD alarm leave area immediately, report to RP at RCA control point. *HRA entry allowed, personnel not to exceed EPD dose rate setpoint of 125 mrem/hr. *No work allowed in the 19.5 ft pipe pen with more than (1) charging pump in operation without the RPMs or ALARA supervisors permission. *CONTACT RP PRIOR TO ENTERING ANY OVERHEAD AREAS.			
<b>Attachments</b>			
N/A			





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RADIOLOGICAL WORK PERMIT

<b>Task Number:</b> 5		<b>RWP No.:</b> 09-0002 <b>Rev.:</b> 02	
<b>Task Description:</b> Operations Dept (Trainees): Clearances, Tags, Surveillances and Inspections.		<b>Task Status:</b> Active	
<b>1.16 Task:</b> ROUTINE MAINTENANCE			
<b>ALARA ID:</b>		<b>Stay Time Alarm(hh:mm):</b> 16:00	
<b>Estimate Dose:</b> 150.00		<b>Estimate Hours:</b> 1,284.00 <b>Chirp Rate:</b>	
<b>Hi-Rad:</b> Yes	<b>Hot Particle:</b> Yes	<b>Locked Hi-Rad:</b> No	<b>Hi-Contamination:</b> Yes
<b>Alarm Settings</b>			
<b>Low Gamma Dose (mrem)</b>	<b>Low Gamma Rate (mrem/hr)</b>	<b>High Gamma Dose (mrem)</b>	<b>High Gamma Rate (mrem/hr)</b>
		12.00	300.00
<b>Low Beta Dose</b>	<b>Low Beta Dose</b>	<b>High Beta Dose</b>	<b>High Beta Rate</b>
<b>Low Neutron Dose</b>	<b>Low Neutron Dose</b>	<b>High Neutron Dose</b>	<b>High Neutron Rate</b>
<b>Requirements</b>			
<b>Requirement Groups</b>	<b>Requirement Descriptions</b>		
DOSIMETRY	(PAM) Required to be worn in HRA's.		
GENERAL INSTRUCTIONS	Observe & obey ALL RP postings & verbal instructions. Utilize low dose waiting areas.		
	Refer to HPP-15 for hot particle area work. W/B scan with RO-2 or equivalent (open window) shall be done at ~ 2 hr intervals when in HPA's. Use HPP-3.3 form.		
	Use IPM A.S.A.P. after exiting contaminated areas (Immediately after removal of PC's, while wearing modesty clothing). If IPM alarms twice, contact RP immediately.		
	RP will survey work areas as needed.		
	Personnel SHALL receive a documented High Rad area briefing SPECIFIC to each HRA being accessed and sign in on RP form HPP-3.5		
HP INSTRUCTIONS	Check EPD frequently (about every 15 min).		
	PROVIDE workers with Low Dose Waiting Area information as appropriate.		
PROTECTIVE CLOTHING	Periodic RP coverage required unless otherwise specified.		
	RP will determine PC requirements based on radiological conditions in work areas.		
<b>Additional Instructions</b>			
<b>Instructions 1:</b> *Surgeon / Rubber gloves, labcoat are the minimum requirements to manipulate valves in posted contaminated areas. *This can be done when valve can be reached from clean side and only the hand will touch the valve. *Change out gloves prior to handling clean material and equipment. *Contact RP prior to moving containers of Radioactive Materials. *Contact RP prior to draining water to floor drains. *Ensure hose is secured in drain. *In the event of a spill, contain spill and notify RP immediately.			
<b>Instructions 2:</b> *U#1 ECCS Yard Sump: Contact RPSS / Shift RP prior to transferring yard sump water. *Connections on hoses and pumps to be redundantly wrapped or bagged at RP direction. *In the event of a leak or spill SECURE all pumping operations, contain the leak or spill and notify RP immediately.			
<b>Instructions 3:</b> ALARA HOLDPOINTS: In case of an EPD alarm leave area immediately and report to RP at RCA control point. *Personnel are authorized to enter a HRA but are not to exceed the RWP EPD dose rate setpoint of 300 mrem/hr. *CONTACT RP PRIOR TO ENTERING ANY OVERHEAD AREAS.			
<b>Attachments</b>			
N/A			





St. Lucie Nuclear Power Plant  
FPL St. Lucie



RADIOLOGICAL WORK PERMIT

<b>Task Number:</b> 6		<b>RWP No.:</b> 09-0002 <b>Rev.:</b> 02	
<b>Task Description:</b> RP Dept (Trainees)		<b>Task Status:</b> Active	
<b>1.16 Task:</b> ROUTINE MAINTENANCE			
<b>ALARA ID:</b>		<b>Stay Time Alarm(hh:mm):</b> 16:00	
<b>Estimate Dose:</b> 5.00		<b>Estimate Hours:</b> 100.00 <b>Chirp Rate:</b>	
<b>Hi-Rad:</b> Yes	<b>Hot Particle:</b> Yes	<b>Locked Hi-Rad:</b> No	<b>Hi-Contamination:</b> Yes
<b>Alarm Settings</b>			
<b>Low Gamma Dose (mrem)</b>	<b>Low Gamma Rate (mrem/hr)</b>	<b>High Gamma Dose (mrem)</b>	<b>High Gamma Rate (mrem/hr)</b>
		12.00	300.00
<b>Low Beta Dose</b>	<b>Low Beta Dose</b>	<b>High Beta Dose</b>	<b>High Beta Rate</b>
<b>Low Neutron Dose</b>	<b>Low Neutron Dose</b>	<b>High Neutron Dose</b>	<b>High Neutron Rate</b>
<b>Requirements</b>			
<b>Requirement Groups</b>	<b>Requirement Descriptions</b>		
DOSIMETRY	(PAM) Required to be worn in HRA's.		
GENERAL INSTRUCTIONS	Refer to HPP-15 for hot particle area work. W/B scan with RO-2 or equivalent (open window) shall be done at ~ 2 hr intervals when in HPA's. Use HPP-3.3 form.		
	Observe & obey ALL RP postings & verbal instructions. Utilize low dose waiting areas.		
PROTECTIVE CLOTHING	RP will determine PC requirements based on radiological conditions in work areas.		
<b>Additional Instructions</b>			
<b>Instructions 1:</b> *This RWP is to be used for RP training including source check and calibration of survey instrumentation. *RPTs shall provide their own surveys, radiological job coverage. *Utilize RP procedures to provide radiological coverage. *Contact RP Training Supervisor / RPSS to obtain appropriate procedures. *Contact RP Training Supervisor / RPSS to discuss / resolve issues as needed.			
<b>Instructions 2:</b> *Sign in and out on Form HPP-30.14 while working with Neutron sources.			
<b>Instructions 3:</b> ALARA HOLDPOINTS: In case of an EPD alarm leave area immediately and report to RP at RCA control point. *Personnel are authorized to enter a HRA but are not to exceed the RWP EPD dose rate setpoint of 300 mrem/hr. *Contact RP ALARA Dept prior to any training that may involve personnel receiving dose.			
<b>Attachments</b>			
N/A			





St. Lucie Nuclear Power Plant  
FPL St. Lucie



RADIOLOGICAL WORK PERMIT

<b>Task Number:</b> 7		<b>RWP No.:</b> 09-0002 <b>Rev.:</b> 02	
<b>Task Description:</b> Chemistry Dept (Trainees)		<b>Task Status:</b> Active	
<b>1.16 Task:</b> ROUTINE MAINTENANCE			
<b>ALARA ID:</b>		<b>Stay Time Alarm(hh:mm):</b> 16:00	
<b>Estimate Dose:</b> 5.00		<b>Estimate Hours:</b> 100.00	
<b>Hi-Rad:</b> Yes		<b>Chirp Rate:</b>	
<b>Hot Particle:</b> Yes		<b>Locked Hi-Rad:</b> No	
<b>Hi-Contamination:</b> Yes			
<b>Alarm Settings</b>			
<b>Low Gamma Dose (mrem)</b>	<b>Low Gamma Rate (mrem/hr)</b>	<b>High Gamma Dose (mrem)</b>	<b>High Gamma Rate (mrem/hr)</b>
		12.00	125.00
<b>Low Beta Dose</b>	<b>Low Beta Rate</b>	<b>High Beta Dose</b>	<b>High Beta Rate</b>
<b>Low Neutron Dose</b>	<b>Low Neutron Rate</b>	<b>High Neutron Dose</b>	<b>High Neutron Rate</b>
<b>Requirements</b>			
<b>Requirement Groups</b>	<b>Requirement Descriptions</b>		
DOSIMETRY	(PAM) Required to be worn in HRA's.		
GENERAL INSTRUCTIONS	Observe & obey ALL RP postings & verbal instructions. Utilize low dose waiting areas. Refer to HPP-15 for hot particle area work. W/B scan with RO-2 or equivalent (open window) shall be done at ~ 2 hr intervals when in HPA's. Use HPP-3.3 form. Personnel SHALL receive a documented High Rad area briefing SPECIFIC to each HRA being accessed and sign in on RP form HPP-3.5 Check EPD frequently (about every 15 min). Use IPM A.S.A.P. after exiting contaminated areas (Immediately after removal of PC's, while wearing modesty clothing). If IPM alarms twice, contact RP immediately.		
HP INSTRUCTIONS	Periodic RP coverage required unless otherwise specified.		
PROTECTIVE CLOTHING	RP will determine PC requirements based on radiological conditions in work areas.		
<b>Additional Instructions</b>			
<b>Instructions 1:</b> *This RWP is to be used for Chemistry training. *A Minimum of Lab Coat and Rubber Gloves to be worn when sampling or reaching into a Contaminated Space to manipulate valves. *A Minimum of Lab Coat, Rubber Gloves and shoe covers to be worn when entering (walking into) a Contaminated Area. *Notify RP immediately in case of a spill.			
<b>Instructions 2:</b> *When taking primary samples wear face shield or Lower Fume Hood as much as possible while acquiring samples to maintain required face velocity. *Keep Fume Hood closed when not sampling. *Be aware of a change in dose rates while performing RCS sampling. *Keep Sample Sinks rinsed out to avoid High Contamination levels. *Personnel are to perform a hand and foot frisk prior to exiting Hot Labs after sample analysis. *Personnel are to use IPM as soon as practical after sampling and analysis of Primary samples is complete.			
<b>Instructions 3:</b> ALARA HOLDPOINTS: In case of an EPD alarm leave area immediately, report to RP at RCA control point. *HRA entry allowed, personnel not to exceed EPD dose rate setpoint of 125 mrem/hr. *No work allowed in the 19.5 ft pipe pen with more than (1) charging pump in operation without the RPMs or ALARA supervisors permission. *CONTACT RP PRIOR TO ENTERING ANY OVERHEAD AREAS. *Contact RP ALARA Dept prior to any training that may involve personnel receiving dose.			
<b>Attachments</b>			
N/A			



REGION II  
ST. LUCIE NUCLEAR PLANT  
INITIAL LICENSE EXAMINATION  
ADMINISTRATIVE JPM

RESPOND TO SECURITY EVENT

A-5

This JPM is TIME CRITICAL (portions)

This is a NON-FAULTED JPM



**REGION II  
ST LUCIE NUCLEAR PLANT  
INITIAL LICENSE EXAMINATION  
ADMINISTRATIVE JPM**

**RESPOND TO SECURITY EVENT**

**KA Statement:** 2.4.28 Knowledge of procedures relating to security event (non-safeguards information)

**KA #:** 3.2 / 4.1

**References:** ONP-72.01, 'Response to Security Events'  
EPIP-01, 'Classification of Emergencies'  
EPIP-02, 'Duties and Responsibilities of the Emergency Coordinator'  
EPIP-08, 'Off-Site Notifications and Protective Action  
Recommendations'

**Candidate:** \_\_\_\_\_  
Name

**Validation Time:** 30 minutes

**Start Time:** \_\_\_\_\_ **Finish Time:** \_\_\_\_\_

**Performance Rating:** Sat \_\_\_\_\_ Unsat \_\_\_\_\_

**Examiner:** \_\_\_\_\_ **Signature:** \_\_\_\_\_

**Comments**



NRC ADM JPM A-5  
**REGION II**  
**ST LUCIE NUCLEAR PLANT**  
**INITIAL LICENSE EXAMINATION**  
**ADMINISTRATIVE JPM**

RESPOND TO SECURITY EVENT

**Directions to the candidate for Administrative JPMS:**

I will explain the initial conditions and state the task to be performed. You will be allowed to use any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided to you.

**Initial Conditions**

Both Units are at 100% power.

Today at current time, **you** as the Shift Manager, receives a validated NRC Headquarters phone call to report an Airborne Threat.

The estimated time to site arrival is in 60 minutes.

A track of interest is verified by the NRC due to anomalous flight activity. The Airborne Threat has been validated with the NRC Headquarters Operations Center.

**Initiating Cue**

You are located in Unit 2.

The Unit 2 Unit Supervisor directs you the **Shift Manager** to:

1. Perform Step 6.0.4 in accordance with ONP-72.01, 'Response to Security Events'

**Portions of this JPM are time critical**



# NRC ADM JPM A-5

START TIME: \_\_\_\_\_

<p align="center"><b>ONP-72.01, 'Response to Security Events'</b></p> <p><u>STEP 1 (6.0.4):</u> IMPLEMENT Security Checklist in accordance with EPIP-02, Duties and Responsibilities of the Emergency Coordinator.</p> <p><u>STANDARD:</u> Refers to EPIP-02. 'Duties and Responsibilities of the Emergency Coordinator' Security Checklist.</p> <p><b>EXAMINER'S CUE:</b> NONE</p> <p><b>EXAMINERS NOTE:</b> Start time for time critical step _____</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p align="center"><b>EPIP-02, Duties and Responsibilities of the Emergency Coordinator.</b></p> <p><u>STEP 2 (5.2.1.C):</u> Determine Threat</p> <p>Informational Airborne Threat (greater than 30 minutes)</p> <p>Verify the Control Rooms are implementing ONP-72.01, Appendix D.</p> <ul style="list-style-type: none"> <li>• Unit 1</li> <li>• Unit 2</li> </ul> <p><u>STANDARD:</u> Informs the Control Rooms to implement ONP-72.01 Appendix D</p> <p><b>EXAMINER'S CUE:</b> Control Rooms have been notified</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>



# NRC ADM JPM A-5

<p style="text-align: center;"><b><u>NOTE</u></b></p> <p>If a threat has been validated via phone call to the NRC Headquarters, the accelerated notification to the NRC is not required.</p>	<p>_____ SAT</p>
<p><b><u>STEP 3 (5.2.2): Off Site Notifications</u></b></p> <p style="text-align: center;">A. Make an accelerated notification to the NRC in accordance with EPIP-08, Off-site Notifications and Protective Action Recommendations.</p> <p><b><u>STANDARD:</u></b> Determines from cue threat has been validated and NRC notification NOT required.</p> <p><b>EXAMINER'S CUE:     NONE</b></p> <p><b><u>COMMENTS:</u></b></p>	<p>_____ UNSAT</p>
<p><b><u>STEP 4 (5.2.2): Off Site Notifications and Protective Action Recommendations</u></b></p> <p style="text-align: center;">B. Airborne Threat - Make an abbreviated State Notification in accordance with EPIP-08.</p> <p><b><u>STANDARD:</u></b> Refers to EPIP-08 and commences filling out the State Notification form.</p> <p><b>EXAMINER'S CUE:     NONE</b></p> <p><b>EXAMINERS NOTE:</b> If asked for shift communicator, state the shift communicator is not available at this time.</p> <p><b><u>COMMENTS:</u></b></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>



NRC ADM JPM A-5

<p align="center"><b>EPIP-08, Off-Site Notifications and Protective Action Recommendations Appendix A <u>NOTIFICATIONS FROM THE AFFECTED CONTROL ROOM</u></b></p> <p><b><u>STEP 5 (1):</u></b> If Security Event, Then go to Step 3.A.1.a NRC Notification or N/A.</p> <p><b><u>STANDARD:</u></b> Determines step is N/A due to validation of threat as per cue.</p> <p><b>EXAMINER'S CUE:</b> NONE</p> <p><b>EXAMINER'S NOTE:</b> A potential exists for the candidate to make an accelerated NRC phone call. Step 3.A.1.b will direct the candidate to the next step.</p> <p><b><u>COMMENTS:</u></b></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><b><u>STEP 6 (2):</u></b> State Watch Office Notification</p> <p>A. Prepare the Florida Nuclear Plant Emergency Notification Form (form similar to Attachment 1).</p> <p>1. Airborne Threat – Abbreviated State Notification – Prepare State Notification Form by filling out the following:</p> <ul style="list-style-type: none"> <li>• Lines 1 through 6</li> <li>• Line 11</li> </ul> <p><b><u>STANDARD:</u></b></p> <p><b>EXAMINER'S CUE:</b> NONE</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>



ST. LUCIE TRAINING DEPT.  
ADMINISTRATIVE JPM A-5  
PAGE 7



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<p><b>STEP 9 (Line 3):</b></p> <p>3.* <u>Site:</u>    A. <input type="checkbox"/> Crystal River Unit 3                      B. <input type="checkbox"/> St. Lucie Unit 1                      C. <input type="checkbox"/> St. Lucie Unit 2                         D. <input type="checkbox"/> Turkey Point Unit 3                      E. <input type="checkbox"/> Turkey Point Unit 4</p> <p><b>STANDARD:</b>    C, St. Lucie Unit 2 (St. Lucie Unit 2 is expected, Unit 1 is acceptable, but not both marked)</p> <p><b>EXAMINER'S CUE:</b>    NONE  <b>EXAMINER'S NOTE:</b>    EPIP Attachment 1A step 3 requires only one affected unit be selected (either one can be selected but not both).</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><b>STEP 10 (Line 4):</b></p> <p>4.* <u>Emergency Classification:</u>    A. <input type="checkbox"/> Notification of Unusual Event                      B. <input type="checkbox"/> Alert       C. <input type="checkbox"/> Site Area Emergency                      D. <input type="checkbox"/> General Emergency</p> <p><b>STANDARD:</b>    A, Unusual Event</p> <p><b>EXAMINER'S CUE:</b>    NONE</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>



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<p><u>STEP 11 (Line 5):</u></p> <p>5.* A. <input type="checkbox"/> <u>Emergency Declaration:</u>      B. <input type="checkbox"/> <u>Emergency Termination:</u>      Date: / /      Time: </p> <p><u>STANDARD:</u>    A, Emergency Declaration, current date and time</p> <p><b>EXAMINER'S CUE:</b>     NONE</p> <p><b>EXAMINERS NOTE:</b>   This is the time emergency declaration is made.</p> <p><b>EXAMINER'S NOTE:</b>   STOP TIME for Time Critical Action _____. This time must less than 15 minutes from the time in step 1. Also START TIME for second critical time.</p> <p style="padding-left: 150px;">START TIME: _____</p> <p>COMMENTS:</p>	<p><b>TIME CRITICAL STEP</b></p>  <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 12 (Line 6):</u></p> <p>6.* <u>Reason for Emergency Declaration:</u>      A. <input type="checkbox"/> EAL Number _____ OR    B. <input type="checkbox"/> Description: _____</p> <hr/> <p><u>STANDARD:</u>    A. EAL Number 21.A (Validated notification from NRC providing information of an aircraft threat).</p> <p><b>EXAMINER'S CUE:</b>     NONE</p> <p>COMMENTS:</p>	<p><b>CRITICAL STEP</b></p>  <p>_____ SAT</p> <p>_____ UNSAT</p>



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<p><b>STEP 13 (Line 11):</b></p> <p>11.* UTILITY PROTECTIVE ACTION RECOMMENDATIONS FOR THE PUBLIC:</p> <p>A. <input type="checkbox"/> No utility recommended actions at this time.</p> <p>B. <input type="checkbox"/> The utility recommends the following protective actions:</p> <table border="0"> <thead> <tr> <th></th> <th></th> <th><u>Evacuate Sectors</u></th> <th><u>Shelter Sectors</u></th> <th><u>No Action Sectors</u></th> </tr> </thead> <tbody> <tr> <td>Evacuate Zones:</td> <td>_____ OR 0 - 2</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>Shelter Zones:</td> <td>_____ 2 - 5</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td></td> <td>_____ 5 - 10</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </tbody> </table> <p>AND consider issuance of potassium iodide (KI)*</p> <p><b>STANDARD:</b> A. No utility protective action recommendations for the public.</p> <p><b>EXAMINER'S CUE:</b> NONE</p> <p><b>COMMENTS:</b></p>			<u>Evacuate Sectors</u>	<u>Shelter Sectors</u>	<u>No Action Sectors</u>	Evacuate Zones:	_____ OR 0 - 2	_____	_____	_____	Shelter Zones:	_____ 2 - 5	_____	_____	_____		_____ 5 - 10	_____	_____	_____	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>
		<u>Evacuate Sectors</u>	<u>Shelter Sectors</u>	<u>No Action Sectors</u>																	
Evacuate Zones:	_____ OR 0 - 2	_____	_____	_____																	
Shelter Zones:	_____ 2 - 5	_____	_____	_____																	
	_____ 5 - 10	_____	_____	_____																	
<p><b>EPIP-08, Off-Site Notifications and Protective Action Recommendations</b>  <b>Appendix A</b>  <b><u>NOTIFICATIONS FROM THE AFFECTED CONTROL ROOM</u></b></p> <p><b>STEP 14 (Appendix A, 2.A.2):</b> State Watch Office Notification</p> <p>A. Prepare the Florida Nuclear Plant Emergency Notification Form (form similar to Attachment 1).</p> <p>2. All other Security and Non-Security Events – Prepare the State Notification Form in accordance with Attachment 1A, Directions for Completing the Florida Nuclear Plant Emergency Notification Form.</p> <p><b>STANDARD:</b> Determines this step is N/A</p> <p><b>EXAMINER'S CUE:</b> NONE</p> <p><b>COMMENTS:</b></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>																				



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<p align="center"><b>EPIP-08, Off-Site Notifications and Protective Action Recommendations</b>  <b>Appendix A</b>  <b><u>NOTIFICATIONS FROM THE AFFECTED CONTROL ROOM</u></b></p> <p><u>STEP 15 (A 2.B):</u>      Emergency Coordinator (EC) approval.</p> <p align="center"><b>ATTACHMENT 1</b>  <b><u>FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM</u></b></p> <p>(Line 15)</p> <p>15. (Do Not Read) EC or RM Approval Signature: _____ Date: <u>  /  /  </u> Time: <u>      </u></p> <p>Message Received By: Name: _____ Date: <u>  /  /  </u> Time: <u>      </u></p> <p><u>STANDARD:</u>      Documents approval including date and time.</p> <p><b>EXAMINER'S CUE:</b>      NONE</p> <p>COMMENTS:</p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p align="center"><b>EPIP-08, Off-Site Notifications and Protective Action Recommendations</b>  <b>Appendix A</b>  <b><u>NOTIFICATIONS FROM THE AFFECTED CONTROL ROOM</u></b></p> <p><u>STEP 16 (A 2.C):</u>      Using the State HOT RINGDOWN PHONE, dial 100</p> <p><u>STANDARD:</u>      Dials 100 on the State HOT RINGDOWN PHONE.</p> <p><b>EXAMINER'S CUE:</b>      100 has been dialed, the state watch office picks up the phone.</p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>



# NRC ADM JPM A-5

<p><b>STEP 17 (A.2.D):</b></p> <p>Hold down the button on the handset while talking. This must be done each time you talk. Release the button in order to listen. When the State Duty Officer answers, announce:</p> <p>"This is St. Lucie Nuclear Plant [as applicable (Unit 1, 2)] with an emergency message. <b>Contact Time is</b> _____. I am standing by to transmit the Florida Nuclear Plant Emergency Notification Form when you are ready to copy."</p> <p><b>STANDARD:</b> Communicates message. States the contact time as the current time.</p> <p><b>EXAMINER'S CUE:</b> Answer as the State Watch Office</p> <p><b>EXAMINERS NOTE:</b> Contact time above is Stop time for time critical step. This time must be less than 15 minutes from the time listed in step 11.</p> <p><b>EXAMINERS NOTE:</b> Upon completion of communication, terminate the task.</p> <p><b>COMMENTS:</b></p> <p><b>END OF TASK</b></p>	<p><b>TIME CRITICAL STEP</b></p> <p>_____ SAT</p> <p>_____ UNSAT</p>
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**CANDIDATE COPY**  
**(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF ANSWER)**

**Directions to the candidate for Administrative JPMS:**

I will explain the initial conditions and state the task to be performed. You will be allowed to use any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided to you.

**Initial Conditions**

Both Units are at 100% power.

Today at current time, **you** as the Shift Manager, receives a validated NRC Headquarters phone call to report an Airborne Threat.

The estimated time to site arrival is in 60 minutes.

A track of interest is verified by the NRC due to anomalous flight activity. The Airborne Threat has been validated with the NRC Headquarters Operations Center.

**Initiating Cue**

You are located in Unit 2.

The Unit 2 Unit Supervisor directs you the **Shift Manager** to:

- Perform Step 6.0.4 in accordance with ONP-72.01, 'Response to Security Events'

**Portions of this JPM are time critical**







# A-5 Key

## ATTACHMENT 1 FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM (Page 1 of 1)

On-line Verification: ☐ SWP/DEM ☐ DOH/BRC ☐ St. Lucie County/Ft. Pierce ☐ Martin County

- 1.\* A. ☒ THIS IS A DRILL B. ☐ THIS IS AN EMERGENCY
2. A. Date: Today B.\* Contact Time: \_\_\_\_\_ C. Reported by: (Name) Candidate  
D. Message Number: 1 E. Reported from: ☒ Control Room ☐ TSC ☐ EOF  
F. ☒ Initial / New Classification OR ☐ Update Notification

- 3.\* Site: A. ☐ Crystal River Unit 3 B. ☒ St. Lucie Unit 1 C. ☒ St. Lucie Unit 2  
D. ☐ Turkey Point Unit 3 E. ☐ Turkey Point Unit 4

- 4.\* Emergency Classification: A. ☒ Notification of Unusual Event B. ☐ Alert  
C. ☐ Site Area Emergency D. ☐ General Emergency

- 5.\* A. ☒ Emergency Declaration: B. ☐ Emergency Termination: Date: Today Time: \_\_\_\_\_

- 6.\* Reason for Emergency Declaration: A. ☒ EAL Number 21.A OR B. ☐ Description:

7. Additional Information or Update: A. ☐ None OR B. ☐ Description:

- 8.\* Weather Data: A. Wind direction from \_\_\_\_\_ degrees B. Downwind Sectors Affected: \_\_\_\_\_

- 9.\* Release Status: A. ☐ None (Go to Item 11) B. ☐ In progress C. ☐ Has occurred, but stopped (Go to Item 11)

10. Release Significance Category (at the Site Boundary):  
A. ☐ Under evaluation.  
B. ☐ Release within normal operating limits ( $\leq 3.5$  E-1 Ci/sec noble gas,  $\leq 4.6$  E-5 Ci/sec iodine)  
C. ☐ Non-Significant Fraction of PAG Range (release is  $>$  normal limits and  $<$  500 mrem TEDE and 1000 mrem CDE)  
D. ☐ PAG Range ( $\geq 500$  mrem TEDE or  $\geq 1000$  mrem CDE)  
E. ☐ Liquid release (no actions required)

### 11.\* UTILITY PROTECTIVE ACTION RECOMMENDATIONS FOR THE PUBLIC:

- A. ☒ No utility recommended actions at this time.  
B. ☐ The utility recommends the following protective actions:

	Evacuate Sectors	Shelter Sectors	No Action Sectors
Evacuate Zones: _____ OR 0 - 2	_____	_____	_____
Shelter Zones: _____ 2 - 5	_____	_____	_____
_____ 5 - 10	_____	_____	_____

AND consider issuance of potassium iodide (KI)\*

If form is completed in the Control Room, go to Item 15. If completed in the TSC or EOF, continue with item 12.

12. Plant Conditions: A. Reactor Shutdown? ☐ Yes ☐ No B. Core Adequately Cooled? ☐ Yes ☐ No  
C. Containment Intact? ☐ Yes ☐ No D. Core Condition: ☐ Stable ☐ Degrading

13. Weather Data: A. \* Wind Speed \_\_\_\_\_ mph B. Stability Class \_\_\_\_\_

14. Additional Release Information: A. ☐ N/A OR Read this statement: "1 hour projected doses as follows:

Distance	Projected Thyroid Dose (CDE) for 1 Hour	Projected Total Dose (TEDE) for 1 Hour
1 Mile (Site Boundary)	B. _____ mrem	C. _____ mrem
2 Miles	D. _____ mrem	E. _____ mrem
5 Miles	F. _____ mrem	G. _____ mrem
10 Miles	H. _____ mrem	I. _____ mrem

15. (Do Not Read) EC or RM Approval Signature: \_\_\_\_\_

Date: today Time: Now

Message Received By: Name: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

\* Items are evaluated for NRC Performance Indicators (PI's)



REVISION NO.: 4A	PROCEDURE TITLE: RESPONSE TO SECURITY EVENTS	PAGE: 6 of 27
PROCEDURE NO.: ONP-72.01	ST. LUCIE PLANT	

## 6.0 OPERATOR ACTIONS

## INSTRUCTIONS

## CONTINGENCY ACTIONS

1. VALIDATE the authenticity of any Airborne Threat by calling NRC Headquarters Operations Center. USE the NRC ENS telephone or a commercial line to call 301-816-5100.

2. If any of the following conditions exist:
  - Security Department reports ARMED intruders are within the Protected Area fence.
  - **IMMINENT** Aircraft Threat (less than 5 minutes arrival time).
  - An Aircraft has impacted inside the Protected Area Fence.

Then PERFORM the following:

- A. TRIP Unit 1 Reactor.
- B. TRIP Unit 2 Reactor.
- C. DON headset attached to Control Room Security hotline phone.

3. If the Aircraft has impacted the plant site, Then REFER TO EDMG-01, Guideline for Responding to Large Area Fire or Explosion Involving Multiple Fire Zones, AND EDMG-02, Major Loss of Plant Control Systems - Initial Response.

4. IMPLEMENT Security Checklist in accordance with EPIP-02, Duties and Responsibilities of the Emergency Coordinator.

5. If the Security Event is a **LAND BASED** Threat, Then GO TO Appendix A, Response to LAND BASED Threat.



REVISION NO.: 28	PROCEDURE TITLE: DUTIES AND RESPONSIBILITIES OF THE EMERGENCY COORDINATOR ST. LUCIE PLANT	PAGE: 15 of 47
PROCEDURE NO.: EPIP-02		

## 5.2 Security Checklist

INITIAL

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

### NOTE

This is to be used for Actual Events or Credible Threats.

### 1. Determine Threat

### CAUTION

- Plant page announcements must take in to account the current conditions (e.g., severe weather). Ensure the E-Plan announcements do NOT conflict with Security-related announcements.
- Movement of plant personnel, including site evacuation, must take into account the current conditions and safety of personnel.

### NOTE

The Operations Shift Manager Selects the personnel required to remain in the Control Room in order to perform the actions of this procedure.

### A. Imminent Airborne Threat (less than 5 minutes)

#### 1. Verify the Control Rooms are implementing ONP-72.01, Appendix B.

- Unit 1 \_\_\_\_\_
- Unit 2 \_\_\_\_\_

### B. Probable Airborne Threat (5 to 30 minutes)

#### 1. Verify the Control Rooms are implementing ONP-72.01, Appendix C.

- Unit 1 \_\_\_\_\_
- Unit 2 \_\_\_\_\_

C.

### Informational Airborne Threat (greater than 30 minutes)

#### 1. Verify the Control Rooms are implementing ONP-72.01, Appendix D.

- Unit 1 \_\_\_\_\_
- Unit 2 \_\_\_\_\_



REVISION NO.: 28	PROCEDURE TITLE: DUTIES AND RESPONSIBILITIES OF THE EMERGENCY COORDINATOR ST. LUCIE PLANT	PAGE: 16 of 47
PROCEDURE NO.: EPIP-02		

5.2 Security Checklist (continued)

INITIAL

1. (continued)

D. Land-Based Threat

1. Verify the Control Rooms are implementing ONP-72.01, Appendix A.

- Unit 1 \_\_\_\_\_
- Unit 2 \_\_\_\_\_

2. Off-Site Notifications

**NOTE**

If a threat has been validated via phone call to the NRC Headquarters, the accelerated notification to the NRC is not required.

A. §2 Make an accelerated notification to the NRC in accordance with EPIP-08, Off-site Notifications and Protective Action Recommendations. \_\_\_\_\_

B. Airborne Threat - Make an abbreviated State Notification in accordance with EPIP-08. \_\_\_\_\_

3. ERO Activation

**NOTE**

The PSL Conference Bridge can be used to communicate with the ERO at an alternate location. Refer to the PSL Emergency Response Directory (ERD) for the phone number and password.

A. Normal business hours -

1. Delay activation of the Emergency Response Facilities or direct ERO personnel to an alternate location. \_\_\_\_\_
2. Request off-site responders to go to EOF / alternate facility per EPIP-03, Attachment 4. \_\_\_\_\_

B. Off-normal hours - based on site accessibility, consider directing ERO personnel to report to the EOF or alternate location. \_\_\_\_\_



REVISION NO.: 20	PROCEDURE TITLE: OFF-SITE NOTIFICATIONS AND PROTECTIVE ACTION RECOMMENDATIONS ST. LUCIE PLANT	PAGE: 19 of 56
PROCEDURE NO.: EPIP-08		

**APPENDIX A**  
**NOTIFICATIONS FROM THE AFFECTED CONTROL ROOM**  
(Page 1 of 6)

INITIAL

**CAUTION**

- §<sub>1</sub> Notification of State and local agencies shall be made as soon as practicable within 15 minutes of declaration of an Emergency Class.
- ¶<sub>3</sub> A new Florida Nuclear Plant Emergency Notification Form shall be completed for all updates.

**NOTE**

- ¶<sub>9</sub> 1. Completion of this checklist requires the following Attachments (all from EPIP-08):
- Attachment 1 – Florida Nuclear Plant Emergency Notification Form
- Attachment 1A – Directions for Completing the Florida Nuclear Plant Emergency Notification Form
- Attachment 2 – Determination of Protective Action Recommendations (PARs)
- Attachment 3 – NRC Reactor Plant Event Notification Worksheet
- Attachment 3A – Directions for Completing the NRC Reactor Plant Event Notification Worksheet
2. Checklist Part 1 is for State Watch Office notification.
3. Checklist Part 2 is for NRC notification.
4. Completion of this Appendix (A) may be delegated to the Shift Communicator.

1. If Security Event, Then go to Step 3.A.1.a NRC Notification or N/A.

2. State Watch Office Notification

A. Prepare the Florida Nuclear Plant Emergency Notification Form (form similar to Attachment 1).

1. Airborne Threat – Abbreviated State Notification – Prepare State Notification Form by filling out the following:

- Lines 1 through 6
- Line 11

OR

N/A



REVISION NO.: 20	PROCEDURE TITLE: OFF-SITE NOTIFICATIONS AND PROTECTIVE ACTION RECOMMENDATIONS ST. LUCIE PLANT	PAGE: 20 of 56
PROCEDURE NO.: EPIP-08		

**APPENDIX A**  
**NOTIFICATIONS FROM THE AFFECTED CONTROL ROOM**  
(Page 2 of 6)

2. **A.** (continued) INITIAL

**2.** All other Security and Non-Security Events - Prepare the State Notification Form in accordance with Attachment 1A, Directions for Completing the Florida Nuclear Plant Emergency Notification Form. N/A

**B.** Emergency Coordinator (EC) approval. \_\_\_\_\_

**NOTE**

1. Primary notification method to the State Watch Office (SWO) is to use the Hot Ring Down (HRD) phone.

2. If the HRD is out-of-service, alternate notification methods are provided in Section E, below.

**C.** Using the State HOT RING DOWN (HRD) Phone, dial 100. \_\_\_\_\_

**D.** Hold down the button on the handset while talking. This must be done each time you talk. Release the button in order to listen. When the State Duty Officer answers, announce:

"This is St. Lucie Nuclear Plant [as applicable (Unit 1, 2)] with an emergency message. **Contact Time is** \_\_\_\_\_. I am standing by to transmit the Florida Nuclear Plant Emergency Notification Form when you are ready to copy."

Allow the Duty Officer to contact St. Lucie County, Martin County and the Bureau of Radiation Control prior to transmitting the information from the notification form. When the parties are on line, provide the information slowly (e.g., in three word intervals) and deliberately, providing time for the information to be written down.

1. ¶15.17 All four off-site agencies have been notified:
- A. Florida Department of Emergency Management (DEM) \_\_\_\_\_
  - B. Florida Department of Health, Bureau of Radiation Control (DOH / BRC) \_\_\_\_\_
  - C. St. Lucie County Department of Public Safety / Ft. Pierce Control \_\_\_\_\_
  - D. Martin County Department of Emergency Services \_\_\_\_\_



REVISION NO.: <b>20</b>	PROCEDURE TITLE: <b>OFF-SITE NOTIFICATIONS AND PROTECTIVE ACTION RECOMMENDATIONS ST. LUCIE PLANT</b>	PAGE: <b>38 of 56</b>
PROCEDURE NO.: <b>EPIP-08</b>		

**16 ATTACHMENT 1A**  
**DIRECTIONS FOR COMPLETING THE FLORIDA NUCLEAR PLANT EMERGENCY**  
**NOTIFICATION FORM**  
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**ITEM ENTRY**

On-line Verification - **Check the appropriate boxes** as the State Watch Office Florida Division of Emergency Management (DEM) requests that the Department of Health Bureau of Radiation Control, St. Lucie County Department of Public Safety and the Martin County Department of Emergency Management get on the line, prior to initiating the notification. **All four agencies must be notified (includes Florida DEM)** through the SWO or alternate means.

1. Check appropriate box for drill or actual emergency as the case may be. During exercises, drills, or tests, each message shall be checked **THIS IS A DRILL.**
- 2A. Enter today's date.
- 2B. Enter the time (using the official time, normally synchronized with ERDADS) when contact is made with the State Watch Office. For initial notification of classification, this shall be within 15 minutes of the "Emergency Declaration" time in item 5.
- 2C. Enter the name of the person making the notification call.
- 2D. Enter the message number beginning with #1 and following sequentially in all facilities (e.g., if the Control Room transmitted two messages the TSC would start with #3).
- 2E. Check the box for the facility from which the notification is being made.
- 2F. Check the box for Initial / New Classification or Update Notification.
3. Site  
Check the affected site / unit. Do not check more than one unit. For dual unit events such as the approach of a hurricane or loss of off-site power, the fact that the other unit is affected by the condition should be stated in the "Additional Information or Update" section.
4. Emergency Classification  
Check the box corresponding to current accident classification declared.



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**ATTACHMENT 1A**  
**DIRECTIONS FOR COMPLETING THE FLORIDA NUCLEAR PLANT EMERGENCY**  
**NOTIFICATION FORM**  
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**NOTE**

When opening and closing an event in one notification:

- On line 5, both box A and box B apply
- Date(s) and times of declaration and termination are to be indicated

5. Emergency Declaration or Emergency Termination  
Enter the **date** and **time** when the current emergency classification was (A) declared OR (B) terminated.
  
6. Reason for Emergency Declaration
  - A. Enter the Emergency Action Level (EAL) number as given in EPIP-01 Attachment 2, EAL Descriptions for Florida Nuclear Plant Emergency Notification Form (St. Lucie Nuclear Plant).
  
  - OR
  - B. Enter wording like that found in the EAL information in EPIP-01, Classification Of Emergencies. Wording should be brief yet descriptive enough for the off-site agencies to gain an understanding of the event. It should be clear from the incident description which EAL has necessitated the emergency declaration. Wording should be as non-technical as possible with no acronyms or abbreviations. This information should remain the same throughout update messages, unless there is a classification change.
  
7. Additional Information or Update  
Check "A" (None) if there is no information or "B" to provide additional information/clarification or reason for the update, for example:
  - A condition is occurring/occurred that would otherwise have resulted in the declaration of the same or lesser emergency classification.
  - Identify that both units are affected by the condition, e.g., due to a loss of off-site power or hurricane warning, etc.
  - Change Protective Action Recommendations (PARs)
  - Change in radiological conditions
  - Change in equipment status
  - Injuries
  - Termination of event



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**5.1 State and County Notification (continued)**

**3. B. (continued)**

2. If one Unit is in a classified event and the other Unit enters into a more severe event in which a higher Emergency Class would apply, Then a new classification shall be declared and promptly, within the regulatory time limits, issued to the State, Counties and the NRC.

**C.**

**Abbreviated Notification Due to an Airborne Threat**

**NOTE**

Concurrence for use of an abbreviated notification in response to an on-site airborne threat situation has been obtained from State and county officials.

**1.**

If the site is under a potential or actual airborne threat, Then complete lines 1 through 6 and line 11 of the State Notification Form, obtain approval from the Emergency Coordinator or Recovery Manager and transmit the abbreviated notification to the State Watch Office.

**END OF SECTION 5.1**



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**NOTE**

- Initiating Conditions / Emergency Action Levels are applicable to all modes unless otherwise indicated.
- The Emergency Coordinator should not wait until the applicable time (as stated in the Initiating Condition / Emergency Action Level) has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.

**5.2 Classifying the Event**

1. ¶<sub>3</sub> A goal of fifteen (15) minutes should be used for assessing and classifying an emergency once indications (Emergency Action Levels (EALs)) are available to Control Room Operators that an Initiating Condition (IC) has been met and/or exceeded.

- A. This goal should allow time for determination of indications (leak rate, etc.) and detailed review of Attachment 1, Emergency Classification Table.

1. ¶<sub>8</sub> For EALs that are time-based, a prescribed assessment period is provided. It is to be acknowledged that the condition described in the EAL has been met if the stated time period has elapsed. There is not an additional 15 minute assessment period.

**Example EALs:**

*No main or auxiliary feedwater flow available for greater than **15 minutes** when required for heat removal and Steam Generator levels are less than 40% wide range*

OR

*Uncontrolled fire within the Power Block lasting more than **10 minutes***

OR

*LOCA with initially successful ECCS and subsequent failure of containment heat removal systems for greater than **2 hours***