



COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE

INITIAL LICENSE TRAINING

TIME:

10 MINUTES

NUMBER AND TITLE:

NRC2010-A1a
Calculate Reactor Vessel Void Vent Time

REVISION:

0

SCOPE OF REVISION

Initial Issue.
From: Audit06-A1a

DATE:

PREPARED BY:
(Exam Writer)

Name: _____

Signature: _____

APPROVED BY:
(Facility Reviewer)

Name: _____

Signature: _____

OPERATIONS JPM

REFERENCES/NRC KA/TASKS

Procedure: 1-OHP 4023 FR-I.3, R8 Response to Voids in Reactor Vessel
K/A Number: EPE: 009 EA2.38 Ability to interpret existence of head bubble during
2.1.25 SBLOCA.
Ability to obtain and interpret station reference
materials. (CFR: 41.7 / 45.5 to 45.8)

K/A Imp.: RO: 3.9 SRO: 4.3
3.9 4.2

Task Number: EOP1090512 Mitigate the effects of voids in the reactor vessel

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
1-OHP 4023 FR-I.3, Response to Voids in Reactor Vessel, Attachemnt A, Instructions For
Determaining Venting Time
1-OHP 4023 FR-I.3, Response to Voids in Reactor Vessel, Figure 1, Hydrogen Flow Rate
Versus RCS Pressure

ATTACHMENTS

None

EVALUATION SETTINGS

Classroom

EVALUATION METHOD:	PERFORM: <input checked="" type="checkbox"/>	SIMULATE: <input type="checkbox"/>
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OPERATIONS JPM

SIMULATOR/LAB SETUP

None

EVALUATOR INSTRUCTIONS

1. Ensure simulator setup is complete
2. Brief the operator (May be performed by giving out Task Briefing Sheet)
3. Announce start of the JPM
4. Perform evolution
5. At completion of evolution, announce the JPM is complete.
6. Document evaluation performance.

TASK BRIEFING

You are the extra RO from Unit 2.

The Unit 1 Control Room team is responding to a SBLOCA and is currently implementing ES-1.2, Post LOCA Cooldown and Depressurization. There has been significant voiding in the RCS. The Unit Supervisor has implemented FR-I.3, Response to Voids in Reactor Vessel.

The Unit Supervisor directs you to determine the maximum vent time for the Reactor vessel using Attachment A of FR-I.3. You are to report the calculated vent time to the US.

The following containment parameters were noted on 1-SG-18, Containment Air Temperature Recorder:

Point #	Point Id	Noun Name	Temperature (Deg F)
1	ETR-11	Upper Cont. 90	97
2	ETR-12	Upper Cont. 180	134
3	ETR-13	Upper Cont. 270	101
4	ETR-14	Upper Cont. 0	93
5	ETR-15	Lower Cont. Q1	173
6	ETR-16	Lower Cont. Q2	139
7	ETR-17	Lower Cont. Q3	129
8	ETR-18	Lower Cont. Q4	168
9	ETR-19	HV-CLV-1,4 Room	170
10	ETR-20	HV-CEQ-2 Room	151
11	ETR-21	HV-CLV-2,3 Room	146
12	ETR-22	INST Room	190
13	ETR-23	PZR Doghouse	367

RCS pressure is 1450 psig

NRC2010-A1a Calculate Reactor Vessel Void Vent Time	Revision: 0
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OPERATIONS JPM

Containment hydrogen concentration is 0.8%.

NOTE

Simulator Indications are NOT applicable to this JPM

GENERAL STANDARDS/PRECAUTIONS

Reactor Vessel Void Vent time is appropriately determined (+10% error) based upon initial conditions.

OPERATIONS JPM

EXPECTED ACTIONS	CUES/STANDARDS (“CS” Indicates Critical Standard)						
<table border="1" data-bbox="163 272 976 370"> <tr> <td data-bbox="163 272 294 316">Number: 01-OHP-4023</td> <td data-bbox="294 272 829 316">Title: RESPONSE TO VOIDS IN REACTOR VESSEL</td> <td data-bbox="829 272 976 316">Revision Number: 8</td> </tr> <tr> <td data-bbox="163 316 294 370">FR-I.3</td> <td colspan="2"></td> </tr> </table> <div data-bbox="163 406 976 1339"> <p style="text-align: center;">Attachment A Instructions For Determining Venting Time</p> <ol style="list-style-type: none"> <p>A = CNTMT Air Temperature (°R) = CNTMT temp (°F)* + 460 = ___ °F + 460 = ___ °R</p> <p>B = CNTMT Air Volume at STP = $1.24 \times 10^6 \text{ ft}^3 \times \frac{492^\circ\text{R}}{A}$ = $1.24 \times 10^6 \text{ ft}^3 \times \frac{492^\circ\text{R}}{\text{___}^\circ\text{R}}$ = ___ ft³</p> <p>C = Maximum Hydrogen volume that can be vented = $\frac{(3.0\% - \text{CNTMT Hydrogen Concentration}) \times B}{100\%}$ = $\frac{(3.0\% - \text{___}\%) \times \text{___} \text{ ft}^3}{100\%}$ = ___ ft³</p> <p>D = Hydrogen Flow Rate as a function of RCS pressure = Value from FIGURE 1 = ___ SCFM</p> <p>E = Maximum venting time in minutes = $\frac{C}{D}$ = $\frac{\text{___} \text{ ft}^3}{\text{___} \text{ SCFM}} = \text{___} \text{ minutes}$</p> <p>*1-SG-18, Containment Air Temperature Recorder Upper Containment, Average of Points 2, 4, and 10</p> <p style="text-align: center;">-END OF ATTACHMENT-</p> <p style="text-align: right;">(Attachment A, page 1 of 1)</p> </div> <p style="text-align: center;">Page 19 of 19</p>	Number: 01-OHP-4023	Title: RESPONSE TO VOIDS IN REACTOR VESSEL	Revision Number: 8	FR-I.3			<p>STANDARD: (CS) Determines Average Temp is 126 Deg F. (Points 2, 4, & 10 as per note at bottom of page) SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: Determine 586 Deg R SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: Determines $1.041 \times 10^6 \text{ ft}^3$ SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: Determines $2.290 \times 10^4 \text{ ft}^3$ SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: (CS): Determines $3300 \pm 100 \text{ SCFM}$ SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: (CS) Determines 6.94 (range of 6.7 – 7.2) minutes. SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>JPM TERMINATION: Reports to US a vent time</p>
Number: 01-OHP-4023	Title: RESPONSE TO VOIDS IN REACTOR VESSEL	Revision Number: 8					
FR-I.3							

Task Briefing

You are the extra RO from Unit 2.

The Unit 1 Control Room team is responding to a SBLOCA and is currently implementing ES-1.2, Post LOCA Cooldown and Depressurization. There has been significant voiding in the RCS. The Unit Supervisor has implemented FR-I.3, Response to Voids in Reactor Vessel.

The Unit Supervisor directs you to determine the maximum vent time for the Reactor vessel using Attachment A of FR-I.3. You are to report the calculated vent time to the US.

The following containment parameters were noted on 1-SG-18, Containment Air Temperature Recorder:

Point #	Point Id	Noun Name	Temperature (Deg F)
1	ETR-11	Upper Cont. 90	97
2	ETR-12	Upper Cont. 180	134
3	ETR-13	Upper Cont. 270	101
4	ETR-14	Upper Cont. 0	93
5	ETR-15	Lower Cont. Q1	173
6	ETR-16	Lower Cont. Q2	139
7	ETR-17	Lower Cont. Q3	129
8	ETR-18	Lower Cont. Q4	168
9	ETR-19	HV-CLV-1,4 Room	170
10	ETR-20	HV-CEQ-2 Room	151
11	ETR-21	HV-CLV-2,3 Room	146
12	ETR-22	INST Room	190
13	ETR-23	PZR Doghouse	367

RCS pressure is 1450 psig

Containment hydrogen concentration is 0.8%.



COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE

INITIAL LICENSE TRAINING

TIME:

30 MINUTES

NUMBER AND TITLE:

NRC2010-A1b-RO
Determination Of Reactor Shutdown Margin

REVISION:

0

SCOPE OF REVISION

Initial Issue.
From: Audit08-A1b-RO

DATE:

PREPARED BY:
(Exam Writer)

Name: _____

Signature: _____

APPROVED BY:
(Facility Reviewer)

Name: _____

Signature: _____

OPERATIONS JPM

REFERENCES/NRC KA/TASKS

Procedure: 2-OHP-4021-001-012, R16 Determination of Reactor Shutdown Margin
Misc: Unit 2 Technical Data Book Cycle 18
K/A Number: SYS 001 A4.11 Ability to manually determine shutdown margin in the control room.

K/A Imp.: RO: 3.5 SRO: 4.1
Task Number: 0010010501 Calculate Reactor Shutdown Margin.

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
2-OHP-4021-001-012, R16 Determination of Reactor Shutdown Margin, Attachment 1, Manual Shutdown Boron Calculation for Modes 3, 4, or 5.
Copy of Unit 2 Technical Data Book curves (Section 1, 4, 8.3 series)

ATTACHMENTS

None

EVALUATION SETTINGS

Classroom.

EVALUATION METHOD:	PERFORM: <input checked="" type="checkbox"/>	SIMULATE: <input type="checkbox"/>
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OPERATIONS JPM

SIMULATOR/LAB SETUP

None.

EVALUATOR INSTRUCTIONS

1. Ensure simulator setup is complete
2. Brief the operator (May be performed by giving out Task Briefing Sheet)
3. Announce start of the JPM
4. Perform evolution
5. At completion of evolution, announce the JPM is complete.
6. Document evaluation performance.

TASK BRIEFING

You are an extra Control Room Operator on Unit 2.

The Unit Supervisor has directed you to calculate the SHUTDOWN MARGIN using Attachment 1 of 02-OHP-4021-001-012, Determination of Reactor Shutdown Margin.

The reactor tripped from 100% steady state operations 32 hours ago. A Shutdown Margin Calculation Using Xenon Correction was performed to begin the cooldown.

You are to calculate the required Shutdown Boron Concentration for the **CURRENT** RCS conditions without use of the optional Xenon Correction.

- NERDS is NOT available.
- RCS Temperature is currently 215°F.
- PPC point U0035 indicates 8500 MWD/MTU
- RCS boron concentration is 1810 ppm per a chemistry sample taken 30 minutes ago.
- All Rods are fully inserted except Control Bank D Rod D-12 which indicates 105 steps.

NOTE

Simulator Indications are NOT applicable to this JPM

GENERAL STANDARDS/PRECAUTIONS

The net excess shutdown margin has been determined.

NRC2010-A1b-RO Determination Of Reactor Shutdown Margin	Revision: 0
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OPERATIONS JPM

EXPECTED ACTIONS	CUES/STANDARDS (“CS” Indicates Critical Standard)												
<table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="width: 25%; text-align: center;">Continuous</td> <td style="width: 25%; text-align: center;">02-OHP-4021-001-012</td> <td style="width: 25%; text-align: center;">Rev. 16</td> <td style="width: 25%; text-align: center;">Page 6 of 35</td> </tr> <tr> <td colspan="4" style="text-align: center;">Determination of Reactor Shutdown Margin</td> </tr> <tr> <td style="text-align: center;">Attachment 1</td> <td style="text-align: center;">Manual Shutdown Boron Calculation for Mode 3, 4, or 5</td> <td colspan="2" style="text-align: center;">Pages: 5 - 17</td> </tr> </table> <p>3.6 Cold shutdown (cold zero power - 68°F) SHUTDOWN MARGIN must be established prior to blocking P-11 or P-12 during a normal cooldown. If cooldown is urgent, verification of SHUTDOWN MARGIN need NOT be complete prior to starting the cooldown. [Ref. 7.2.2b]</p> <p>3.7 IF Core burnup is greater than the maximum value listed in the Technical Data Book, THEN it is acceptable to use the maximum core burnup value in the Shutdown Margin Calculation or use NERDS because it will predict a conservative Shutdown Margin value.</p> <div style="border: 2px solid black; padding: 5px; margin: 10px 0;"> <p>CAUTION: It is essential to use the proper mathematical sign (+ or -) and include proper sign when performing calculations.</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>NOTE:</p> <ul style="list-style-type: none"> Curves should be read as accurately as possible. This procedure is referenced for use in the Emergency Operating Procedures. Use of this procedure as directed by the EOP series is subject to rules of usage found in OHI-4023. </div> <p>4 DETAILS INIT</p> <p>4.1 Cycle data:</p> <p>4.1.1 Enter Cycle number from Technical Data Book (TDB):</p> <p style="margin-left: 40px;">Unit 2 Cycle _____</p> <p>4.1.2 Enter Date and Time of Shutdown:</p> <p style="margin-left: 40px;">Date: _____ Time: _____</p>	Continuous	02-OHP-4021-001-012	Rev. 16	Page 6 of 35	Determination of Reactor Shutdown Margin				Attachment 1	Manual Shutdown Boron Calculation for Mode 3, 4, or 5	Pages: 5 - 17		<p><u>ACTIONS:</u></p> <p>Instructor Note: IF candidate states that the previous Shutdown Margin calculation is No longer valid (Since it used Xenon correction and it is now > 30 hours), THEN:</p> <ul style="list-style-type: none"> Acknowledge that the Unit Supervisor will address that issue. Direct candidate to complete the Shutdown Margin as directed. <p>STANDARD: Records cycle number 18 from Technical Data Book. SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: Enters Time and Date SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p>
Continuous	02-OHP-4021-001-012	Rev. 16	Page 6 of 35										
Determination of Reactor Shutdown Margin													
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OPERATIONS JPM

EXPECTED ACTIONS	CUES/STANDARDS (“CS” Indicates Critical Standard)																																										
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Continuous	02-OHP-4021-001-012	Rev. 16	Page 7 of 35																																								
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OPERATIONS JPM

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Continuous	02-OHP-4021-001-012	Rev. 16	Page 8 of 35										
Determination of Reactor Shutdown Margin													
Attachment 1	Manual Shutdown Boron Calculation for Mode 3, 4, or 5	Pages: 5 - 17											

OPERATIONS JPM

EXPECTED ACTIONS	CUES/STANDARDS (“CS” Indicates Critical Standard)												
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Continuous	02-OHP-4021-001-012	Rev. 16	Page 9 of 35										
Determination of Reactor Shutdown Margin													
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OPERATIONS JPM

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Continuous	02-OHP-4021-001-012	Rev. 16	Page 10 of 35																									
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Attachment 1	Manual Shutdown Boron Calculation for Mode 3, 4, or 5	Pages: 5 - 17																										
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Continuous	02-OHP-4021-001-012	Rev. 16	Page 11 of 35																															
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Continuous	02-OHP-4021-001-012	Rev. 16	Page 12 of 35										
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<p>4.10 Minimum RCS Boron Required:</p> <p>4.10.1 IF there is NO correction for stuck rods or xenon to Minimum Boron Concentration calculated (Step 4.9 is N/A), THEN enter Uncorrected Minimum Boron Concentration (Step 4.6) value below. _____</p> <p style="text-align: center;">-OR-</p> <p>4.10.2 IF there is a correction for stuck rods or xenon to Minimum Boron Concentration calculated (Step 4.9), AND _____</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>NOTE: 2200 ppm is sufficient to ensure that SHUTDOWN MARGIN is maintained with any number of rods failing to be fully inserted. [Ref. 7.2.1d]</p> </div> <ul style="list-style-type: none"> • Corrected Minimum Boron Concentration (Step 4.9.7) is GREATER THAN 2200 ppm, THEN enter 2200 ppm below. _____ <li style="text-align: center;">-OR- • Corrected Minimum Boron Concentration (Step 4.9.7) is LESS THAN 2200 ppm, THEN enter the Corrected Minimum Boron Concentration value below. _____ <p>Minimum RCS Boron Required <input style="width: 50px;" type="text"/> ppm _____</p> <p>4.11 Record the current RCS boron concentration as determined from chemistry sampling from Data Sheet 1, RCS Boron Concentration Sample request, which was initiated in Step 2.1 OR the last recorded RCS boron sample result if no significant boration or dilution has occurred since the last sample time.</p> <p>RCS Boron Concentration <input style="width: 50px;" type="text"/> ppm _____</p> <p>Chemistry Sample Date: _____ Time: _____</p>	<p>Step 4.10.1 is N/A – Correction for Stuck rod is required.</p> <p>Step 4.10.2 is N/A – Concentration is < 2200 PPM</p> <p>STANDARD: (CS) Enters Required Boron Concentration of 1973.4 to 1997.0 ppm SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/> NOTE: If Candidate determines Minimum Boron Concentration is NOT MET and Emergency Boration is required, the JPM may be terminated.</p> <p>STANDARD: Enters Current RCS Boron Concentration of 1810 PPM SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: Enters sample time of Today’s date and 30 minutes ago SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p>												

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Task Briefing

You are an extra Control Room Operator on Unit 2.

The Unit Supervisor has directed you to calculate the SHUTDOWN MARGIN using Attachment 1 of 02-OHP-4021-001-012, Determination of Reactor Shutdown Margin.

The reactor tripped from 100% steady state operations 32 hours ago. A Shutdown Margin Calculation Using Xenon Correction was performed to begin the cooldown.

You are to calculate the required Shutdown Boron Concentration for the **CURRENT** RCS conditions without use of the optional Xenon Correction.

- NERDS is NOT available.
- RCS Temperature is currently 215°F.
- PPC point U0035 indicates 8500 MWD/MTU
- RCS boron concentration is 1810 ppm per a chemistry sample taken 30 minutes ago.
- All Rods are fully inserted except Control Bank D Rod D-12 which indicates 105 steps.

NOTE

Simulator Indications are NOT applicable to this JPM



COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE

INITIAL LICENSE TRAINING

TIME:

30 MINUTES

NUMBER AND TITLE:

NRC2010-A1b-SRO
SRO Review - Determination Of Reactor Shutdown Margin

REVISION:

0

SCOPE OF REVISION

Initial Issue.
From: Audit08-A1b-SRO

DATE:

PREPARED BY:
(Exam Writer)

Name: _____

Signature: _____

APPROVED BY:
(Facility Reviewer)

Name: _____

Signature: _____

OPERATIONS JPM

REFERENCES/NRC KA/TASKS

Procedure: 2-OHP-4021-001-012, R16 Determination of Reactor Shutdown Margin
Misc: Unit 2 Technical Data Book Cycle 18
K/A Number: SYS 001 A4.11 Ability to manually determine shutdown margin in the control room.

K/A Imp.: RO: 3.5 SRO: 4.1
Task Number: 0010010501 Calculate Reactor Shutdown Margin.

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
2-OHP-4021-001-012, R16 Determination of Reactor Shutdown Margin, Attachment 1, Manual Shutdown Boron Calculation for Modes 3, 4, or 5.
Copy of Unit 2 Technical Data Book curves (Section 1, 4, 8.3 series)

ATTACHMENTS

None

EVALUATION SETTINGS

Classroom.

EVALUATION METHOD:	PERFORM: <input checked="" type="checkbox"/>	SIMULATE: <input type="checkbox"/>
---------------------------	---	---

OPERATIONS JPM

SIMULATOR/LAB SETUP

None.

EVALUATOR INSTRUCTIONS

1. Ensure simulator setup is complete
2. Brief the operator (May be performed by giving out Task Briefing Sheet)
3. Announce start of the JPM
4. Perform evolution
5. At completion of evolution, announce the JPM is complete.
6. Document evaluation performance.

TASK BRIEFING

You are the Unit Supervisor on Unit 2. Per your direction, the extra Control Room Operator completed Attachment 2 of 02-OHP-4021-001-012, Determination of Reactor Shutdown Margin.

The reactor tripped from 100% steady state operations 32 hours ago.

The RO calculated the required Shutdown Boron Concentration for the CURRENT RCS conditions without use of the optional Xenon Correction.

- NERDS is NOT available.
- RCS Temperature is currently 215°F.
- PPC point U0035 indicates 8500 MWD/MTU
- RCS boron concentration is 1810 ppm per a chemistry sample taken 30 minutes ago.
- All Rods are fully inserted except Control Bank D Rod D-12 which indicates 105 steps.

Perform a complete review of the completed Attachment 1, noting all errors.

NOTE

Simulator Indications are NOT applicable to this JPM.

GENERAL STANDARDS/PRECAUTIONS

The net excess shutdown margin has been determined.

OPERATIONS JPM

EXPECTED ACTIONS	CUES/STANDARDS (“CS” Indicates Critical Standard)												
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Continuous	02-OHP-4021-001-012	Rev. 16	Page 6 of 35										
Determination of Reactor Shutdown Margin													
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OPERATIONS JPM

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Continuous	02-OHP-4021-001-012	Rev. 16	Page 7 of 35																									
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Core Burnup from Reactor Engineering	N/A	GWD/MTU <u>N/A</u>																										

OPERATIONS JPM

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Continuous	02-OHP-4021-001-012	Rev. 16	Page 8 of 35										
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OPERATIONS JPM

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Continuous	02-OHP-4021-001-012	Rev. 16	Page 10 of 35																									
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<p>4.8.3 Contact Reactor Engineering for Predicted Xenon for the 30th hour following the unit shutdown.</p> <p>4.8.4 Enter Xenon Reactivity value from either Step 4.8.1, 4.8.2, or 4.8.3 for the 30th hour following the unit shutdown:</p> <p style="margin-left: 40px;">Xenon Reactivity N/A pcm N/A</p> <p>4.9 IF there are corrections for stuck rods or xenon, THEN calculate Total Correction for the Minimum Boron Concentration as follows:</p> <p>4.9.1 Combined Reactivity for Stuck Rods and Xenon:</p> <p>Add Total Stuck Rod Worth to Xenon Reactivity, include proper mathematical signs in the calculation.</p> <table style="margin-left: 40px; border-collapse: collapse;"> <tr> <td style="padding-right: 10px;">Total Stuck Out Rod Worth (Step 4.7)</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">600</td> <td style="padding: 0 10px;">+</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">0</td> <td style="padding: 0 10px;">=</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">600</td> <td style="padding-left: 10px;">pcm</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="padding: 0 10px;">+</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-right: 10px;">Xenon Reactivity (Step 4.8.4)</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">0</td> <td></td> <td></td> <td></td> <td></td> <td>pcm</td> </tr> <tr> <td style="padding-right: 10px;">Combined Reactivity</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>pcm</td> </tr> </table>	Total Stuck Out Rod Worth (Step 4.7)	600	+	0	=	600	pcm				+				Xenon Reactivity (Step 4.8.4)	0					pcm	Combined Reactivity						pcm	<p style="text-align: right; margin-right: 20px;"><i>TZ Xenon Correction not used N/A</i></p> <p>STANDARD: Enters total stuck rod worth of 590 -610 pcm SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: Enters 0 for Xenon reactivity SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: Enters Combined Reactivity of 590 -610 pcm SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p>
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			+																										
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Combined Reactivity						pcm																							

OPERATIONS JPM

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<p>4.9.2 Boron Worth:</p> <p>Obtain Boron Worth from TDB Figure 4.1.b, 4.1.c, or 4.1.d using the following parameters AND enter the value below.</p> <ul style="list-style-type: none"> • Core Burnup (Step 4.3) • RCS Temperature* (Step 4.4) • Uncorrected Minimum Boron Concentration (Step 4.6) <p>*IF a TDB figure is NOT available for the recorded RCS temperature, THEN use the following guidance:</p> <ul style="list-style-type: none"> • IF Combined Reactivity (Step 4.9.1) is GREATER THAN 0, THEN the TDB Figure with the nearest HIGHER temperature shall be used. • IF Combined Reactivity (Step 4.9.1) is LESS THAN 0, THEN the TDB figure with the nearest LOWER temperature shall be used. <p>Boron Worth -10.8 pcm/ppm <u>TC</u></p> <p>4.9.3 Delta Boron:</p> <p>Divide Combined Reactivity by Boron Worth.</p> <p>Combined Reactivity (Step 4.9.1) 600 pcm</p> <p style="text-align: center;">÷</p> <p>Boron Worth (Step 4.9.2) -10.8 pcm/ppm</p> <p>Delta Boron = -55.5 ppm <u>TC</u></p>	<p>NOTE: Figure 4.1.c should have been used since Combined Reactivity is >0 and RCS Temperature is 215°F. Values entered in the JPM is from Figure 4.1.d at 1610 ppm</p> <p>STANDARD: CS – Identifies that Boron Worth & Delta Boron values are Incorrect. (Note this carries through the remainder of the calculation Step 4.9, 4.10, & 4.12) Uses MOC line at Boron Concentration of ~ 1920 PPM to obtain Differential Boron Worth of “-9.15 to to -9.35 pcm/ppm”. SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: Enters Combined Reactivity of 590 -610 pcm SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: Enters DBW of “-9.15 to to -9.35 pcm/ppm”. SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: (CS) Calculates Delta Boron of “-63.10 to - 66.67 ppm” SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p>												

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Determination of Reactor Shutdown Margin													
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<p>4.9.4 Adjusted Boron Concentration:</p> <p>Subtract Delta Boron from Uncorrected Minimum Boron Concentration</p> <p>Uncorrected Minimum Boron Concentration (Step 4.6) <input style="width: 50px; height: 20px;" type="text" value="1610"/> ppm</p> <p>Delta Boron (Step 4.9.3) <input style="width: 50px; height: 20px;" type="text" value="-55.5"/> ppm</p> <p>Adjusted Boron Concentration <input style="width: 50px; height: 20px;" type="text" value="-1665.5"/> ppm <u>TR</u></p> <p>4.9.5 Adjusted Boron Worth:</p> <p>Obtain Boron Worth from TDB Figure 4.1.b, 4.1.c, or 4.1.d using the following parameters AND enter the value below.</p> <ul style="list-style-type: none"> • Core Burnup (Step 4.3) • RCS Temperature* (Step 4.4) • Adjusted Boron Concentration (Step 4.9.4) <p>*IF a TDB figure is NOT available for the recorded RCS temperature, THEN use the following guidance:</p> <ul style="list-style-type: none"> • IF Combined Reactivity (Step 4.9.1) is GREATER THAN 0, THEN the TDB Figure with the nearest HIGHER temperature shall be used. • IF Combined Reactivity (Step 4.9.1) is LESS THAN 0, THEN the TDB figure with the nearest LOWER temperature shall be used. <p>Adjusted Boron Worth <input style="width: 50px; height: 20px;" type="text" value="-10.7"/> pcm/ppm <u>TR</u></p>	<p>STANDARD: Enters Uncorrected Boron Concentration is 1910 to 1930 ppm SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: Enters Delta Boron of "-63.10 to - 66.67 ppm" SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: (CS) Calculates Adjusted Boron Concentration of "-1973.1 to - 1996.67 ppm" SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: Uses figure 4.1.c since Combined Reactivity is >0 and RCS Temperature is 215°F SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: (CS) Uses MOC line at Adjusted Boron Concentration of ~ 1984.9 PPM to obtain Differential Boron Worth of "-9.1 to -9.3 pcm/ppm". SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p>												

OPERATIONS JPM

EXPECTED ACTIONS	CUES/STANDARDS (“CS” Indicates Critical Standard)												
<table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Continuous</td> <td style="padding: 2px;">02-OHP-4021-001-012</td> <td style="padding: 2px;">Rev. 16</td> <td style="padding: 2px;">Page 14 of 35</td> </tr> <tr> <td colspan="4" style="text-align: center; padding: 5px;">Determination of Reactor Shutdown Margin</td> </tr> <tr> <td style="padding: 2px;">Attachment 1</td> <td colspan="2" style="padding: 2px;">Manual Shutdown Boron Calculation for Mode 3, 4, or 5</td> <td style="padding: 2px;">Pages: 5 - 17</td> </tr> </table>		Continuous	02-OHP-4021-001-012	Rev. 16	Page 14 of 35	Determination of Reactor Shutdown Margin				Attachment 1	Manual Shutdown Boron Calculation for Mode 3, 4, or 5		Pages: 5 - 17
Continuous	02-OHP-4021-001-012	Rev. 16	Page 14 of 35										
Determination of Reactor Shutdown Margin													
Attachment 1	Manual Shutdown Boron Calculation for Mode 3, 4, or 5		Pages: 5 - 17										
<p>4.9.6 Correction for Minimum Boron:</p> <p>Divide Combined Reactivity by Adjusting Boron Worth.</p> <p>Combined Reactivity (Step 4.9.1) 600 pcm</p> <p style="text-align: center;">÷</p> <p>Adjusted Boron Worth (Step 4.9.5) -10.7 pcm/ppm</p> <p>Delta Boron =-56.1 ppm <u>TZ</u></p> <p>4.9.7 Corrected Minimum Boron Concentration:</p> <p>Subtract Correction for Minimum Boron from Uncorrected Minimum Boron Concentration.</p> <p>Uncorrected Minimum Boron Concentration (Step 4.6) 1610 ppm</p> <p style="text-align: center;">-</p> <p>Correction for Minimum Boron (Step 4.9.6) -56.1 ppm</p> <p>Corrected Minimum Boron Concentration =1666.1 ppm <u>TZ</u></p>	<p>STANDARD: Enters Combined Reactivity of 590 - 610 pcm SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: Enters DBW of “-9.1 to -9.3 pcm/ppm” SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: (CS) Calculates Delta Boron of “-63.4 to -67.0 ppm” SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: Enters Uncorrected Boron Concentration is 1910 to 1930 ppm SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: Enters Delta Boron of “-63.4 to -67.0 ppm” SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: (CS) Calculates Adjusted Boron Concentration of 1973.4 to 1997.0 ppm SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p>												

OPERATIONS JPM

EXPECTED ACTIONS	CUES/STANDARDS ("CS" Indicates Critical Standard)												
<table border="1" data-bbox="142 285 961 418"> <tr> <td>Continuous</td> <td>02-OHP-4021-001-012</td> <td>Rev. 16</td> <td>Page 15 of 35</td> </tr> <tr> <td colspan="4" style="text-align: center;">Determination of Reactor Shutdown Margin</td> </tr> <tr> <td>Attachment 1</td> <td>Manual Shutdown Boron Calculation for Mode 3, 4, or 5</td> <td>Pages:</td> <td>5 - 17</td> </tr> </table> <p>4.10 Minimum RCS Boron Required:</p> <p>4.10.1 IF there is NO correction for stuck rods or xenon to Minimum Boron Concentration calculated (Step 4.9 is N/A), THEN enter Uncorrected Minimum Boron Concentration (Step 4.6) value below.</p> <p style="text-align: center;">-OR-</p> <p>4.10.2 IF there is a correction for stuck rods or xenon to Minimum Boron Concentration calculated (Step 4.9), AND</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>NOTE: 2200 ppm is sufficient to ensure that SHUTDOWN MARGIN is maintained with any number of rods failing to be fully inserted. [Ref. 7.2.1d]</p> </div> <ul style="list-style-type: none"> • Corrected Minimum Boron Concentration (Step 4.9.7) is GREATER THAN 2200 ppm, THEN enter 2200 ppm below. <li style="text-align: center;">-OR- • Corrected Minimum Boron Concentration (Step 4.9.7) is LESS THAN 2200 ppm, THEN enter the Corrected Minimum Boron Concentration value below. <p>Minimum RCS Boron Required 1666.1 ppm</p> <p>4.11 Record the current RCS boron concentration as determined from chemistry sampling from Data Sheet 1, RCS Boron Concentration Sample request, which was initiated in Step 2.1 OR the last recorded RCS boron sample result if no significant boration or dilution has occurred since the last sample time.</p> <p>RCS Boron Concentration 1810 ppm</p> <p>Chemistry Sample Date: <u>TODAY</u> Time: <u>30 MIN A60</u></p>	Continuous	02-OHP-4021-001-012	Rev. 16	Page 15 of 35	Determination of Reactor Shutdown Margin				Attachment 1	Manual Shutdown Boron Calculation for Mode 3, 4, or 5	Pages:	5 - 17	<p>Step 4.10.1 is N/A – Correction for Stuck rod is required.</p> <p>Step 4.10.2 is N/A – Concentration is < 2200 PPM</p> <p>STANDARD: Enters Required Boron Concentration of 1973.4 to 1997.0 ppm SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: Enters Current RCS Boron Concentration of 1810 PPM SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: Enters sample time of Today's date and 30 minutes ago SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p>
Continuous	02-OHP-4021-001-012	Rev. 16	Page 15 of 35										
Determination of Reactor Shutdown Margin													
Attachment 1	Manual Shutdown Boron Calculation for Mode 3, 4, or 5	Pages:	5 - 17										

OPERATIONS JPM

EXPECTED ACTIONS	CUES/STANDARDS ("CS" Indicates Critical Standard)																												
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Continuous	02-OHP-4021-001-012	Rev. 16	Page 16 of 35																										
Determination of Reactor Shutdown Margin																													
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OPERATIONS JPM

EXPECTED ACTIONS				CUES/STANDARDS (“CS” Indicates Critical Standard)
Continuous	02-OHP-4021-001-012	Rev. 16	Page 17 of 35	No actions required.
Determination of Reactor Shutdown Margin				
Attachment 1	Manual Shutdown Boron Calculation for Mode 3, 4, or 5	Pages: 5 - 17		
<p>Comments:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>Calculated By: _____ Time: _____ Date: __/__/__</p> <p>Calculation Independently Verified By: _____ Time: _____ Date: __/__/__</p> <p>Reviewed By: _____ Date: __/__/__</p> <p style="margin-left: 100px;">US/SM/WCC-SRO</p>				

Task Briefing

You are the Unit Supervisor on Unit 2. Per your direction, the extra Control Room Operator completed Attachment 2 of 02-OHP-4021-001-012, Determination of Reactor Shutdown Margin.

The reactor tripped from 100% steady state operations 32 hours ago.

The RO calculated the required Shutdown Boron Concentration for the CURRENT RCS conditions without use of the optional Xenon Correction.

- NERDS is NOT available.
- RCS Temperature is currently 215°F.
- PPC point U0035 indicates 8500 MWD/MTU
- RCS boron concentration is 1810 ppm per a chemistry sample taken 30 minutes ago.
- All Rods are fully inserted except Control Bank D Rod D-12 which indicates 105 steps.

Perform a complete review of the completed Attachment 1, noting all errors.

<p style="text-align: center;">NOTE</p>
--

<p style="text-align: center;">Simulator Indications are NOT applicable to this JPM.</p>
--



COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE

INITIAL LICENSE TRAINING

TIME:

15 MINUTES

NUMBER AND TITLE:

NRC2010-A2
Perform Unit 2 LTOP Verification

REVISION:

0

SCOPE OF REVISION

Initial Issue.
From: Audit07-A1b-R

DATE:

PREPARED BY: (Exam Writer)

Name: _____

Signature: _____

APPROVED BY: (Facility Reviewer)
--

Name: _____

Signature: _____

OPERATIONS JPM

REFERENCES/NRC KA/TASKS

Procedure: 2-OHP-4030-214-030, R14

Daily and Shiftly Surveillance Checks

K/A Number: 2.2.37

Ability to determine operability and/or availability of safety related equipment.

(CFR: 41.7 / 43.5 / 45.12)

K/A Imp.: RO: 3.6 SRO: 4.6

Task Number: STP0390201

Perform Shiftly Surveillance checks for MODE 5 & 6

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing

2-OHP-4030-214-030, R14, Daily And Shiftly Surveillance Checks:

- Data Sheet 20, LTOP Verification
- Data Sheet 20A, LTOP Verification LCO 3.4.12.A
- Data Sheet 20B, LTOP Verification LCO 3.4.12.B

ATTACHMENTS

None

EVALUATION SETTINGS

Classroom.

EVALUATION METHOD:	PERFORM: <input checked="" type="checkbox"/>	SIMULATE: <input type="checkbox"/>
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OPERATIONS JPM

SIMULATOR/LAB SETUP

None.

EVALUATOR INSTRUCTIONS

1. Ensure simulator setup is complete
2. Brief the operator (May be performed by giving out Task Briefing Sheet)
3. Announce start of the JPM
4. Perform evolution
5. At completion of evolution, announce the JPM is complete.
6. Document evaluation performance.

TASK BRIEFING

The US directs you to determine whether the Unit 2 LTOP Requirements are met per 02-OHP-4030-214-030, Daily and Shiftly Surveillance Checks, Data Sheet 20
 Equipment availability, as shown below and on the attached Work Management (Open Items) Listing:

Unit 2 Equipment Status		
COMPONENT	NAME	STATUS
2-NMO-152	PORV Block Valve	Open & Energized
2-NMO-153	PORV Block Valve	Open & Energized
2-NRV-152 Control Selector	Cold Over-Pressure Block for 2-NRV-152	Cold Over Press
2-NRV-153 Control Selector	Cold Over-Pressure Block for 2-NRV-153	Cold Over Press
2-IMO-128	Return from Hot Leg 2	Open & Energized
2-ICM-129	Return from Hot Leg 2	Open & Energized
Annunciator Panel 208 Drop 27	2-NRV-152 EMER AIR TANK PRESSURE LOW	NOT Lit
Annunciator Panel 208 Drop 28	2-NRV-153 EMER AIR TANK PRESSURE LOW	Lit
2-PP-50E	East Centrifugal Charging Pump	PTL (Racked Out)
2-PP-50W	West Centrifugal Charging Pump	Running (Racked In)
Loop 2 WR Cold Leg Temp	RCS Lowest Cold Leg Temperature	185° F
RCS WR Pressure	RCS Highest Reading Pressure	230 psig

OPERATIONS JPM

2-NPS-121		
2-PP-26N	North Safety Injection Pump	PTL (Racked Out)
2-PP-26S	South Safety Injection Pump	PTL (Racked Out)
2-NTA-251	Pressurizer Liquid Temp	400° F
2-IMO-110, 120, 130, 140	SI Accumulator Isolation Valves	Closed & De-Energized
NOTE Simulator Indications are NOT applicable to this JPM		

GENERAL STANDARDS/PRECAUTIONS

When directed by the Unit Supervisor, determine if the LTOP Requirements for Unit 2 are met per 02-OHP-4030-214-030, Daily and Shiftly Surveillance Checks, Data Sheet 20.

OPERATIONS JPM

EXPECTED ACTIONS	CUES/STANDARDS (“CS” Indicates Critical Standard)												
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Continuous	2-OHP-4030-214-030	Rev. 14	Page 66 of 85										
Daily And Shiftly Surveillance Checks													
Data Sheet 20	LTOP Verification	Pages: 66 - 68											

OPERATIONS JPM

EXPECTED ACTIONS	CUES/STANDARDS ("CS" Indicates Critical Standard)												
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Continuous	2-OHP-4030-214-030	Rev. 14	Page 69 of 85										
Daily And Shiftly Surveillance Checks													
Data Sheet 20A	LTOP Verification LCO 3.4.12.A		Pages: 69 - 69										
	<p>STANDARD: (CS) Student Marks page as shown [X's] (one PORV is operable, RHR Suction Relief In-Operable)</p> <p>CUE: IF asked, THEN provide the following information for 2-NRV-153 and 2-NRV-152: Both PZR PORVs passed their required stroke time test. Normal and Backup air supplies are available. Setpoints are within the functional testing criteria.</p> <p>STANDARD: (CS) Determines that LTOP Requirements are NOT Met.</p> <p>STANDARD: Informs Unit Supervisor/Shift Manager That requirements are NOT Met.</p>												
<p>NOTE (1) Two Charging Pumps may be made capable of injecting into the RCS for ≤ 1 hour for pump swap operations. NOTE (2) Accumulators may be unisolated when the accumulator is depressurized and vented. NOTE (3) PORV with lift setting of ≤ 435 psig. NOTE (4) RHR Suction Relief with a setpoint of ≤ 450 psig.</p> <p>Reactor Coolant Pumps shall not be started with one or more RCS Cold Leg Temperatures ≤ 152 °F unless the pressurizer water level is $< 62\%$ or the secondary water temperature of each steam generator is < 50 °F above each of the RCS Cold Leg temperatures.</p>													

OPERATIONS JPM

EXPECTED ACTIONS	CUES/STANDARDS (“CS” Indicates Critical Standard)																						
<table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="width: 15%; text-align: center;">Continuous</td> <td style="width: 30%; text-align: center;">2-OHP-4030-214-030</td> <td style="width: 15%; text-align: center;">Rev. 14</td> <td style="width: 40%; text-align: center;">Page 66 of 85</td> </tr> <tr> <td colspan="4" style="text-align: center;">Daily And Shiftly Surveillance Checks</td> </tr> <tr> <td style="text-align: center;">Data Sheet 20</td> <td style="text-align: center;">LTOP Verification</td> <td colspan="2" style="text-align: center;">Pages: 66 - 68</td> </tr> </table> <p>1 PURPOSE AND SCOPE</p> <p>1.1 Provide instructions for performing LTOP verification.</p> <p>2 DETAILS</p> <p>2.1 Complete one of the following flowcharts:</p> <ul style="list-style-type: none"> • Data Sheet 20A, LTOP Verification TS 3.4.12.A • Data Sheet 20B, LTOP Verification TS 3.4.12.B <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE: When responding to OPERABILITY questions on the following flowchart:</p> <ul style="list-style-type: none"> • An LTOP PORV, (2-NRV-152 or 2-NRV-153), is considered OPERABLE if all of the following exist: <ul style="list-style-type: none"> • It has passed the required stroke time testing. • Backup and normal air supplies are available (and reading within limits). • Its setpoint is within Tech Spec requirements. • Its controls are in the Cold Overpressure Mode. • The RHR Suction Safety is considered OPERABLE if both of the following exist: <ul style="list-style-type: none"> • Its relief setpoint is set in accordance with Tech Spec requirements. • The suction path isolation valves are full open. </div> <p>3 ACCEPTANCE CRITERIA (✓ applicable conditions, mark others N/A)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;"><input type="checkbox"/> Accumulators are isolated per SR 3.4.12.3.</td> <td style="width: 20%; text-align: center;">_____</td> </tr> <tr> <td><input type="checkbox"/> RHR suction isolation valves are open for the required suction relief valve per SR 3.4.12.4.</td> <td style="text-align: center;">_____</td> </tr> <tr> <td><input type="checkbox"/> PORV block valve is open for each required PORV per SR 3.4.12.6</td> <td style="text-align: center;">_____</td> </tr> <tr> <td><input type="checkbox"/> Data Sheet 20A is met to satisfy Tech Spec 3.4.12</td> <td style="text-align: center;">_____</td> </tr> <tr> <td><input type="checkbox"/> Data Sheet 20B is met to satisfy Tech Spec 3.4.12</td> <td style="text-align: center;">_____</td> </tr> </table>	Continuous	2-OHP-4030-214-030	Rev. 14	Page 66 of 85	Daily And Shiftly Surveillance Checks				Data Sheet 20	LTOP Verification	Pages: 66 - 68		<input type="checkbox"/> Accumulators are isolated per SR 3.4.12.3.	_____	<input type="checkbox"/> RHR suction isolation valves are open for the required suction relief valve per SR 3.4.12.4.	_____	<input type="checkbox"/> PORV block valve is open for each required PORV per SR 3.4.12.6	_____	<input type="checkbox"/> Data Sheet 20A is met to satisfy Tech Spec 3.4.12	_____	<input type="checkbox"/> Data Sheet 20B is met to satisfy Tech Spec 3.4.12	_____	<p>STANDARD: Operator completes Section 3 based in Task Brief information and Data Sheet 20A: SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <ul style="list-style-type: none"> • Accumulators Isolated (Yes) • RHR Suctions Isolations Open (Yes) • PORV Block Valves Open (Yes) • Data Sheet 20A is Met (No) • Data Sheet 20B is met (N/A)
Continuous	2-OHP-4030-214-030	Rev. 14	Page 66 of 85																				
Daily And Shiftly Surveillance Checks																							
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OPERATIONS JPM

EXPECTED ACTIONS	CUES/STANDARDS (“CS” Indicates Critical Standard)												
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Continuous	2-OHP-4030-214-030	Rev. 14	Page 67 of 85										
Daily And Shiftly Surveillance Checks													
Data Sheet 20	LTOP Verification		Pages: 66 - 68										

Task Briefing

The US directs you to determine whether the Unit 2 LTOP Requirements are met per 02-OHP-4030-214-030, Daily and Shiftly Surveillance Checks, Data Sheet 20
Equipment availability, as shown below and on the attached Work Management (Open Items) Listing:

Unit 2 Equipment Status		
COMPONENT	NAME	STATUS
2-NMO-152	PORV Block Valve	Open & Energized
2-NMO-153	PORV Block Valve	Open & Energized
2-NRV-152 Control Selector	Cold Over-Pressure Block for 2-NRV-152	Cold Over Press
2-NRV-153 Control Selector	Cold Over-Pressure Block for 2-NRV-153	Cold Over Press
2-IMO-128	Return from Hot Leg 2	Open & Energized
2-ICM-129	Return from Hot Leg 2	Open & Energized
Annunciator Panel 208 Drop 27	2-NRV-152 EMER AIR TANK PRESSURE LOW	NOT Lit
Annunciator Panel 208 Drop 28	2-NRV-153 EMER AIR TANK PRESSURE LOW	Lit
2-PP-50E	East Centrifugal Charging Pump	PTL (Racked Out)
2-PP-50W	West Centrifugal Charging Pump	Running (Racked In)
Loop 2 WR Cold Leg Temp	RCS Lowest Cold Leg Temperature	185° F
RCS WR Pressure 2-NPS-121	RCS Highest Reading Pressure	230 psig
2-PP-26N	North Safety Injection Pump	PTL (Racked Out)
2-PP-26S	South Safety Injection Pump	PTL (Racked Out)
2-NTA-251	Pressurizer Liquid Temp	400° F
2-IMO-110, 120, 130, 140	SI Accumulator Isolation Valves	Closed & De-Energized
NOTE Simulator Indications are NOT applicable to this JPM		



COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE

INITIAL LICENSE TRAINING

TIME:

15 MINUTES

NUMBER AND TITLE:

NRC2010-A3
Perform Monthly Rad Liquid And Gaseous Monitor Source Checks

REVISION:

0

SCOPE OF REVISION

Initial Issue.
From: Audit06-A1a

DATE:

PREPARED BY:
(Exam Writer)

Name: _____

Signature: _____

APPROVED BY:
(Facility Reviewer)

Name: _____

Signature: _____

OPERATIONS JPM

REFERENCES/NRC KA/TASKS

Procedure: 1-OHP-4030-114-030, R18

K/A Number: 2.3.5

Daily And Shiftly Surveillance Checks

Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.

(CFR: 41.11 / 41.12 / 43.4 / 45.9)

SYS 073 A4.03

Ability to manually operate and/or monitor in the control room:

(CFR: 41.7 / 45.5 to 45.8)

Check source for operability demonstration

K/A Imp.: RO: 2.9 SRO: 2.9

4.3 4.0

Task Number: 0130310201

Perform monthly source checks on Westinghouse radiation monitors.

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing

1-OHP-4030-114-030, R18, Daily And Shiftly Surveillance Checks. Data Sheet 12, Monthly Rad Liquid And Gaseous Monitor Source Checks

ATTACHMENTS

None

EVALUATION SETTINGS

Simulator

EVALUATION METHOD:	PERFORM: <input checked="" type="checkbox"/>	SIMULATE: <input type="checkbox"/>
---------------------------	---	---

NRC2010-A3 Perform Monthly Rad Liquid And Gaseous Monitor Source Checks	Revision: 0
NRC2010-A3.doc	Page 2 of 2

OPERATIONS JPM

SIMULATOR/LAB SETUP

1. Reset to IC 994 (IC 38 with an SI with ES-1.1 performed through Step 14)
2. Verify Unit 1 SG Blowdown is removed from service.
3. Place the following Eberline Monitors to "Poll Off" with INOP Tags
 - DRS-3101, SG Blowdown
 - DRS-3201, SG Blowdown Treatment
4. Place the INOP Tag Westinghouse Radiation Monitor R-24 (SG Blowdown Treatment)

EVALUATOR INSTRUCTIONS

1. Ensure simulator setup is complete
2. Brief the operator (May be performed by giving out Task Briefing Sheet)
3. Announce start of the JPM
4. Perform evolution
5. At completion of evolution, announce the JPM is complete.
6. Document evaluation performance.

TASK BRIEFING

You are the RO from Unit 1.

The Unit Supervisor has requested that you perform the monthly radiation monitor source checks in accordance with 1-OHP-4030-114-030, Daily And Shiftly Surveillance Checks. Data Sheet 12, for scheduled surveillance.

Unit 1 SG Blowdown has been removed from service.

GENERAL STANDARDS/PRECAUTIONS

Perform Monthly Rad Liquid And Gaseous Monitor Source Checks.

OPERATIONS JPM

EXPECTED ACTIONS	CUES/STANDARDS (“CS” Indicates Critical Standard)																								
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Continuous	1-OHP-4030-114-030	Rev. 18	Page 42 of 94																						
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OPERATIONS JPM

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Continuous	1-OHP-4030-114-030	Rev. 18	Page 43 of 94																						
Daily And Shiftly Surveillance Checks																									
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Task Briefing

You are the RO from Unit 1.

The Unit Supervisor has requested that you perform the monthly radiation monitor source checks in accordance with 1-OHP-4030-114-030, Daily And Shiftly Surveillance Checks, Data Sheet 12, for scheduled surveillance.

Unit 1 SG Blowdown has been removed from service.



COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE

INITIAL LICENSE TRAINING

TIME:

25 MINUTES

NUMBER AND TITLE:

NRC2010-A4
Prepare Prompt NRC Notification Worksheet

REVISION:

0

SCOPE OF REVISION

Initial Issue.
From: N06-SRO-e

DATE:

PREPARED BY:
(Exam Writer)

Name: _____

Signature: _____

APPROVED BY:
(Facility Reviewer)

Name: _____

Signature: _____

OPERATIONS JPM

REFERENCES/NRC KA/TASKS

Procedure: PMP-7030-001-001, R11
10 CFR 50.72
NUREG-1022

K/A Number: 2.4.30

Prompt NRC Notification

Notification of NRC

Recent Reporting Guidelines

Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator. |

(CFR: 41.10 / 43.5 / 45.11)

K/A Imp.: RO: 2.7 SRO: 4.1

Task Number: ADM1250304

Make a prompt NRC notification

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
Copy of procedure PMP-7030-001-001

ATTACHMENTS

None

EVALUATION SETTINGS

Classroom

EVALUATION METHOD: PERFORM: SIMULATE:

OPERATIONS JPM

SIMULATOR/LAB SETUP

None

EVALUATOR INSTRUCTIONS

1. Brief the operator (May be performed by giving out Task Briefing Sheet)
2. Announce start of the JPM
3. Perform evolution
4. At completion of evolution, announce the JPM is complete.
5. Document evaluation performance.

TASK BRIEFING

You are the extra SRO.

The Shift Manager directs you to determine the NRC notification requirements and prepare an event notification worksheet (Data Sheet 1) for prompt NRC NOTIFICATION in accordance with PMP-7030-001-001.

The following plant conditions exist as noted.

- Current time is 1400
- DC Cook Unit 1 was in MODE 3 at Operating Temperature and Pressure. The Shutdown and Control Rods were fully inserted with the Reactor Trip Breakers Open.
- At 1325 today, Steam Generator #12 Safety Valve has opened and did not reseal (remains partially open).
- The Unit 1 operation crew manually initiated Safety Injection due to uncontrolled lowering of RCS temperature / pressure, and Steam Generator #12 pressure continues to lower.
- The Unit 1 operating crew has completed E-0, Reactor Trip and Safety Injection, E-2 Faulted Steam Generator Isolation, and is currently in ES-1.1, SI Termination. SI flow has been terminated per ES-1.1.
- Present RCS conditions: RCS is stable in Mode 3; level in SG #12 is at 5% WR and slowly lowering; all other SGs are being maintained between 26% and 50% NR on auxiliary feedwater; and there is no detectable radiation release in progress.
- All other plant systems responded normally to the event.
- The SM has determined that NO Emergency Classification is required per PMP-2080-EPP-101.

GENERAL STANDARDS/PRECAUTIONS

Determine NRC notification requirements and prepare an event notification worksheet.

NRC2010-A4 Prepare Prompt NRC Notification Worksheet	Revision: 0
NRC2010-A4.doc	Page 3 of 13

OPERATIONS JPM

EXPECTED ACTIONS	CUES/STANDARDS (“CS” Indicates Critical Standard)								
<table border="1" style="width: 100%; margin-bottom: 10px;"> <tr> <td style="width: 25%; text-align: center;">Information</td> <td style="width: 25%; text-align: center;">PMP-7030-001-001</td> <td style="width: 25%; text-align: center;">Rev. 11</td> <td style="width: 25%; text-align: center;">Page 5 of 32</td> </tr> <tr> <td colspan="4" style="text-align: center;">PROMPT NRC NOTIFICATION</td> </tr> </table> <p>3 DETAILS</p> <p>3.1 Reporting – Notification</p> <p>3.1.1 The purpose of this section is to outline the reportability process to be followed when issues arise as it applies to the following reports:</p> <ul style="list-style-type: none"> • One (1) hour • Four (4) hour • Eight (8) hour • Twenty-four (24) hour • Two (2) day <p>a. It is a requirement of 10 CFR 50.72 that the above reports be made within the required time frames.</p> <p>b. If an event occurs or an engineering issue is brought to light that may be reportable based on 10 CFR 50.72 reporting criteria, initiate the reportability process by promptly contacting the Shift Manager. The following activities shall be performed:</p> <ol style="list-style-type: none"> 1. The SM, in consultation with the Shift Technical Advisor, Operations and Regulatory Affairs Duty Personnel, will determine if assistance from other plant organizations is required to determine reportability. 2. Notify Regulatory Affairs of event or issue. <p>c. The individuals from step 3.1.1b.1 reviewing the event/issue shall make a determination of reportability.</p> <p>d. Use the Figure 1, Reportability Flowchart, to aid in determining the reportability of the event or issue. Use the text in the procedure as an additional source of information and clarification. In addition, NUREG-1022, Revision 2, Event Reporting Guidelines 10 CFR 50.72 and 50.73, contains additional information including examples that may clarify reportability.</p> <p>e. Reports not specifically identified in 10 CFR 50.72 are found in their respective parts of the CFR.</p>	Information	PMP-7030-001-001	Rev. 11	Page 5 of 32	PROMPT NRC NOTIFICATION				<p>STANDARD: (CS) Determine from conditions stated that the event is reportable per guidance provided in PMP 7030-001-001 SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>STANDARD: Refers to FIGURE 1 to identify reportability and the reference text section for information and clarification SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>Instructor Note: Step 3.1.1.f (Filling out Data Sheet 1) will be completed following the Reportability Determination using Figure 1.</p>
Information	PMP-7030-001-001	Rev. 11	Page 5 of 32						
PROMPT NRC NOTIFICATION									

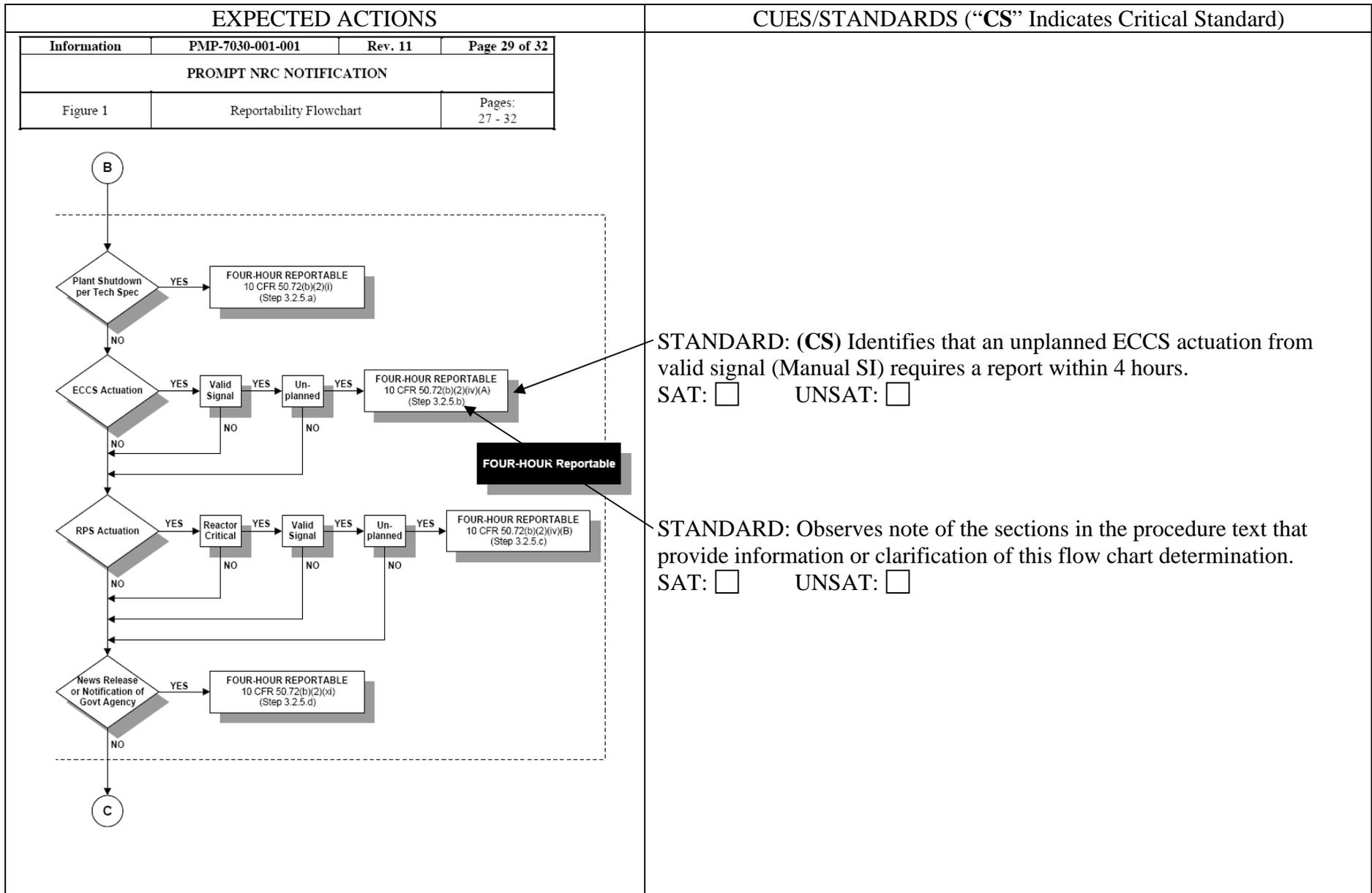
OPERATIONS JPM

EXPECTED ACTIONS			CUES/STANDARDS (“CS” Indicates Critical Standard)
Information	PMP-7030-001-001	Rev. 11	Page 27 of 32
PROMPT NRC NOTIFICATION			
Figure 1	Reportability Flowchart	Pages: 27 - 32	
<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>NOTE: This aid is intended to provide a quick reference to the user back to the appropriate procedure section.</p> <p>Initial notification requirements are listed below. Additional follow-up notification may be required. Refer to Step 3.2.9 for follow-up notification. Refer to Step 3.2.4a for notification requirements for missed Emergency Class declarations.</p> <p>Reference Step 3.2.4j for NRC-Employee Fitness for Duty reporting requirements.</p> </div> <pre> graph TD Start([EVENT or ISSUE]) --> D1{After-The-Fact Emergency Class} D1 -- YES --> R1[ONE-HOUR REPORTABLE 10 CFR 50.72(a)(1)(i) (Step 3.2.4.a) (Refer to note preceding step)] D1 -- NO --> D2{Emergency Class Declared} D2 -- YES --> R2[ONE-HOUR REPORTABLE 10 CFR 50.72(a)(1)(i) (Step 3.2.4.a)] D2 -- NO --> D3{10CFR50.54(x) TS Deviation} D3 -- YES --> R3[ONE-HOUR REPORTABLE 10 CFR 50.72(b)(1) (Step 3.2.4.b)] D3 -- NO --> D4{Violation of TS Safety Limit TS 2.1.1&2.1.2} D4 -- YES --> R4[ONE-HOUR REPORTABLE 10 CFR 50.36 (Step 3.2.4.c)] D4 -- NO --> D5{Accidental Criticality} D5 -- YES --> R5[ONE-HOUR REPORTABLE 10 CFR 70.52(a) (Step 3.2.4.d)] D5 -- NO --> A((A)) R1 -.-> R6[ONE-HOUR Reportable] R2 -.-> R6 R3 -.-> R6 R4 -.-> R6 R5 -.-> R6 </pre>			
			NO CRITERIA ON THIS PAGE APPLY TO THE STATED PLANT CONDITIONS.

OPERATIONS JPM

EXPECTED ACTIONS	CUES/STANDARDS (“CS” Indicates Critical Standard)												
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Information	PMP-7030-001-001	Rev. 11	Page 28 of 32										
PROMPT NRC NOTIFICATION													
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EXPECTED ACTIONS				CUES/STANDARDS (“CS” Indicates Critical Standard)
Information	PMP-7030-001-001	Rev. 11	Page 11 of 32	NO STEPS ON THIS PAGE APPLY TO THE STATED PLANT CONDITIONS.
PROMPT NRC NOTIFICATION				
<p>2. The release of radioactive material, inside or outside of a restricted area, so that, had an individual been present for 24 hours, the individual could have received an intake five times the annual limit on intake.</p> <p>h. The discovery of any loss or theft or other unlawful diversion of special nuclear material or any incident in which an attempt has been made to commit a theft or unlawful diversion of special nuclear material. [10 CFR 74.11(a)]</p> <p>i. Fitness for Duty. See Attachment 1, Section 3.3 for additional information.</p> <p>1. The regulations found in 10 CFR 26 do not apply to NRC employees, law enforcement personnel, or offsite emergency fire and medical response personnel while responding onsite. [10 CFR 26.2(b)]</p> <p>2. If a licensee has a reasonable belief that an NRC employee may be under the influence of any substance, or otherwise unfit for duty, the licensee may not deny access, but shall escort the individual. In any instance of this occurrence, the appropriate Regional Administrator must be notified immediately by telephone. During other than normal working hours, the NRC Operations Center must be notified. Concurrently, notify the Senior Resident Inspector. [10 CFR 26.27(d)]</p> <p>3.2.5 Four Hour Reports</p> <p>Notify the NRC as soon as practical and in all cases, within four hours, of the discovery of any event similar to the below listed events and identify that event as being reported as a Four Hour Report.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE: This includes initiation of any shutdown due to expected inability to restore equipment prior to exceeding the LCO action time. This does not include mode changes required by TS if initiated after the plant is already in a shutdown condition. [NUREG 1022, Sect. 3.2.1]</p> </div> <p>a. The initiation of any nuclear plant shutdown required by the plant’s Technical Specifications. [10 CFR 50.72(b)(2)(i)]</p>				

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<p>NOTE: Any valid unplanned automatic or manual ECCS signal is reportable. [NUREG 1022, Sect. 3.2.6]</p> <p>b. Any event that results or should have resulted in Emergency Core Cooling System (ECCS) discharge into the reactor coolant system as a result of a valid signal except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation. [10 CFR 50.72(b)(2)(iv)(A)]</p>				<p>STANDARD: (CS) Refers to sections in procedure text for information of clarification of flow chart results SAT: <input type="checkbox"/> UNSAT: <input type="checkbox"/></p> <p>Instructor Note: Once determination is made using Figure 1, return to Step 3.1.1.f to fill out Data Sheet 1.</p>	
<p>NOTE: Any valid unplanned automatic or manual critical scram is reportable. If an operator were to manually scram the reactor in anticipation of receiving an automatic reactor scram, this would be reportable. [NUREG 1022, Sect. 3.2.6]</p> <p>c. Any event or condition that results in actuation of the Reactor Protection System (RPS) when the reactor is critical except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation. [10 CFR 50.72(b)(2)(iv)(B)]</p> <p>d. Any event or situation, related to the health and safety of the public or onsite personnel, or protection of the environment, for which a news release is planned or notification to other government agencies has been or will be made. Such an event may include an onsite fatality or inadvertent release of radioactively contaminated materials. Some minor environmental reports to other government agencies do not need follow up NRC reporting. [10 CFR 50.72 (b)(2)(xi), NUREG 1022, Sect. 3.2.12]</p>					
<p>3.2.6 Eight Hour Reports</p> <p>Notify the NRC as soon as practical and in all cases, within eight hours, of the discovery of any event similar to the below listed events and identify that event as being reported as an Eight Hour Report.</p> <p>a. Any event or condition that results in: [10 CFR 50.72(b)(3)(ii)]</p>					

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Information	PMP-7030-001-001	Rev. 11	Page 6 of 32						
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Task Briefing

You are the extra SRO.

The Shift Manager directs you to determine the NRC notification requirements and prepare an event notification worksheet (Data Sheet 1) for prompt NRC NOTIFICATION in accordance with PMP-7030-001-001.

The following plant conditions exist as noted.

- Current time is 1400
- DC Cook Unit 1 was in MODE 3 at Operating Temperature and Pressure. The Shutdown and Control Rods were fully inserted with the Reactor Trip Breakers Open.
- At 1325 today, Steam Generator #12 Safety Valve has opened and did not reseal (remains partially open).
- The Unit 1 operation crew manually initiated Safety Injection due to uncontrolled lowering of RCS temperature / pressure, and Steam Generator #12 pressure continues to lower.
- The Unit 1 operating crew has completed E-0, Reactor Trip and Safety Injection, E-2 Faulted Steam Generator Isolation, and is currently in ES-1.1, SI Termination. SI flow has been terminated per ES-1.1.
- Present RCS conditions: RCS is stable in Mode 3; level in SG #12 is at 5% WR and slowly lowering; all other SGs are being maintained between 26% and 50% NR on auxiliary feedwater; and there is no detectable radiation release in progress.
- All other plant systems responded normally to the event.
- The SM has determined that NO Emergency Classification is required per PMP-2080-EPP-101.