

Facility: <u>River Bend Nuclear Station</u> Examination Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/>		Date of Examination: <u>7/23/2018</u> Operating Test Number: <u>2018-07</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	R,N	Determine If the Reactor Remains Shutdown under All Conditions – Incomplete SCRAM K/A: 2.1.37 JPM: RJPM-NRC18-A1
Conduct of Operations	R,D	Perform Surveillances Required Following Entry Into Single Loop Operation K/A: 2.1.7 JPM: RJPM-NRC18-A2
Equipment Control	R,N	Determine Protected Equipment Posting Requirements for Risk Related Equipment Out of Service K/A: 2.2.14 JPM: RJPM-NRC18-A3
Radiation Control	R,M	Prepare for RCA Entry K/A: 2.3.7 JPM: RJPM-NRC18-A4
Emergency Plan		
NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).		
* Type Codes and Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs and RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1 , randomly selected)		

Facility: <u>River Bend Nuclear Station</u> Examination Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/>	Date of Examination: <u>7/23/2018</u> Operating Test Number: <u>2018-07</u>	
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	R,N	Determine If the Reactor Remains Shutdown under All Conditions – Incomplete SCRAM K/A: 2.1.37 JPM: RJPM-NRC18-A5
Conduct of Operations	R,D	Determine If Core Alterations Are Allowed K/A: 2.1.36 JPM: RJPM-NRC18-A6
Equipment Control	R,D	Determine Plant Safety Level During Shutdown Conditions K/A: 2.2.18 JPM: RJPM-NRC18-A7
Radiation Control	R,N	Evaluate And Administer Potassium Iodide To Individual Following Airborne Exposure. K/A: 2.3.4 JPM: RJPM-NRC18-A8
Emergency Plan	R,N	NRC Notification Requirements K/A: 2.4.30 JPM: RJPM-NRC18-A9
NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).		
* Type Codes and Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs and RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1 , randomly selected)		

Facility: <u>River Bend</u>	Date of Examination: <u>7/23/2018</u>	
Exam Level: <i>RO</i> <input checked="" type="checkbox"/> <i>SRO-I</i> <input checked="" type="checkbox"/> SRO-U <input checked="" type="checkbox"/>	Operating Test Number: <u>2018-07</u>	
Control Room Systems:* <i>8 for RO</i> , 7 for <i>SRO-I</i> , and 3 for SRO-U		
System/JPM Title	Type Code*	Safety Function
S1 STP-052-0101, Fully Withdrawn Control Rod Insertion Operability Check K/A: 201003 A2.02 RJPM-NRC18-S1	A D S	1
S2 Start 3rd condensate pump 104-01 K/A: 256000 A4.01 RJPM-NRC18-S2	A D S	2
S3 Main Stop Valve Testing (1 for retest) per OSP-0102 K/A: 241000 A4.07 RJPM-NRC18-S3	N S	3
S4 Align LPCS to maintain RWL K/A: 209001 A1.01 RJPM-NRC18-S4	A E E N L N S	4
S5 Makeup Supp Pool Level with HPCS [02/14 Audit] K/A: 223001 A1.08 RJPM-NRC18-S5	M E E N S	5
<i>S6 Div 1 Manual Scram Pushbuttons IAW STP-508-0201</i> <i>K/A: 212000 A4.01 RJPM-NRC18-S6</i>	<i>D S</i>	<i>7</i>
S7 Emergency Operation of Containment Coolers with service water [03/14 NRC] K/A: 223001 A2.01 & A2.13 RJPM-NRC18-S7	D E E N S	8
S8 Place SFC-P1B, Fuel Pool Cooling Pump 1B, in service on the Upper Pools K/A: 233000 A4.04 RJPM-NRC18-S8	A N S	9
In-Plant Systems:* <i>3 for RO</i> , 3 for <i>SRO-I</i> , and 2 for SRO-U		
P1 Manually Startup RHR "B" In Suppression Pool Cooling From RSP 12/10 NRC K/A 219000 A1.02 RJPM-NRC18-P1	E D E N	5
P2 Transfer E51-F063 (RCIC STEAM SUPPLY INBD ISOL VALVE) to Alternate Power K/A: 217000 A2.04 RJPM-NRC18-P2	E E N D L R	4
P3 Manual Start HPCS Diesel Generator K/A: 264000 A4.04 RJPM-NRC18-P3	A E N N	6

* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions, all five SRO-U systems must serve different safety functions, and in-plant systems and functions may overlap those tested in the control room.	
* Type Codes	Criteria for R /SRO-I/SRO-U
(A)lternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (EN)gineered safety feature (L)ow-Power/Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator	4–6/4–6 /2–3 $\leq 9/\leq 8/\leq 4$ $\geq 1/\geq 1/\geq 1$ $\geq 1/\geq 1/\geq 1$ (control room system) $\geq 1/\geq 1/\geq 1$ $\geq 2/\geq 2/\geq 1$ $\leq 3/\leq 3/\leq 2$ (randomly selected) $\geq 1/\geq 1/\geq 1$

	RO		SRO-I		SRO-U	
	Required	Actual	Required	Actual	Required	Actual
A	4–6	5	4–6	5	2–3	3
D	≤ 9	6	≤ 8	5	≤ 4	3
E	≥ 1	5	≥ 1	5	≥ 1	2
EN	≥ 1	6	≥ 1	6	≥ 1	3
L	≥ 1	2	≥ 1	2	≥ 1	1
N or M	≥ 2	5	≥ 2	5	≥ 1	2
P	≤ 3	0	≤ 3	0	≤ 2	0
R	≥ 1	1	≥ 1	1	≥ 1	1

Simulator Schedule

S1 and S7

S2 and S5

S3 and S8

S4

S6

2018 A1

River Bend Nuclear Station

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-A1JPM Title Determine If the Reactor Remains Shutdown
Under All Conditions – Incomplete SCRAMFacility Number: N/A
(If Bank or Modified from Bank)**JPM Attributes:**

<input checked="" type="checkbox"/> New	<input type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 min

Prepared By:	<u>Rich Bolduc</u>	<u>5-4-2018</u>
		Date
Ops Review:	<u>Rob Melton</u>	<u>5-4-2018</u>
		Date
Facility Review:	<u>Rick Northrup</u>	<u>5-4-2018</u>
		Date
Approved By:	<u>Gabe Kimich</u>	<u>5-4-2018</u>
	Project Lead or Exam Team Lead	Date

Determine If the Reactor Remains Shutdown Under All Conditions – Incomplete SCRAM

<u>Setting:</u>	Classroom
<u>Type:</u>	RO/SRO
<u>K&A:</u>	Generic 2.1.37 (4.3)
<u>Safety Function:</u>	Generic – Conduct of Operations
<u>PRA Applicability:</u>	No
<u>10CFR 55.45(a):</u>	(3)
<u>Performance:</u>	Perform
<u>Reference(s):</u>	EOP-0005 Enclosure 26 Control Rod Insertion Method/Reactor Will Remain Shutdown under All Conditions without Boron Determination
<u>Handout(s):</u>	EOP-0005 Enclosure 26 Control Rod Insertion Method/Reactor Will Remain Shutdown under All Conditions without Boron Determination Full Core Display Current Rod Pattern Enclosure 26 Figure 2 Worksheet
<u># Manipulations:</u>	N/A
<u># Critical Steps:</u>	2

ADMINISTRATIVE JPM

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None

Determine If the Reactor Remains Shutdown Under All Conditions – Incomplete SCRAM

Task Overview:

This JPM assesses an RO applicant's ability to determine whether a given rod pattern following an incomplete scram will maintain the reactor shutdown under all conditions without boron. Also, the RO applicant will identify the rod pattern discrepancies that do not meet the rod pattern criteria for meeting reactor shutdown status.

Following an incomplete scram, licensed operators at the majority of BWR's determine if the reactor will remain shutdown under all conditions without boron by verifying that 1) that all control rods are inserted to 00 except one or 2) by verifying that all control rods are inserted to or beyond the Maximum Subcritical Banked Withdrawal Position (Notch Position 02). At Riverbend, a third method is available for license operators to use. The method consists of evaluating individual control rod positions to determine if the rod patterns supports criteria which states: *"if the control rods which are not fully inserted are surrounded by three fully inserted control rods on each face adjacent side and by one fully inserted control rod diagonally"*.

The RO applicant is provided a control room graphic of the full core display with an incomplete scram rod pattern. Using the procedural guidance of EOP Enclosure 26, the applicant must correctly apply the criteria to determine whether or not the reactor will remain shutdown under all conditions without boron. The examiner can observe applicant's method of evaluating the rod pattern to determine if the multiple rod criteria are being correctly applied to determine the reactor core state. The rod pattern will be determined to NOT meet the shutdown criteria and the applicant will be required to identify rod pattern discrepancies that prevent the reactor from remaining shutdown.

Notes to Evaluator: REVIEW PRIOR TO ADMINISTRATION OF JPM

- This JPM will be performed in the classroom.
- Critical steps are marked with an * and shaded. If some elements of the Standard are non-critical, only the critical elements of the Standard are marked with an * and shaded.
- Provide the applicant with the following references after providing the Initiating Cue.
 - EOP-0005 Enclosure 26 Control Rod Insertion Method/Reactor Will Remain Shutdown under All Conditions without Boron Determination
 - Full Core Display Current Rod Pattern
- The Start Time is when the applicant acknowledges the Initiating Cue.
- Grading of the JPM is done in accordance with NUREG 1021.
- When the applicant begins the JPM, it is expected that he will begin by reviewing Enclosure 26 page 107 which describes rod patterns that support “remain shutdown under all conditions without boron”. The applicant will also review Figure 1 which is an example of meeting the criteria “control rods which are not fully inserted are surrounded by three fully inserted control rods on each face adjacent side and by one fully inserted control rod diagonally”. The first verifiable action will be to transcribe the current rod pattern from the control room graphic of the full core display.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- The reactor experienced an incomplete scram with multiple control rods that are NOT fully inserted.
- Actions for EOP-1A RPV Control – ATWS are in progress

Initiating Cue(s):

- Based on the current rod pattern, determine if the reactor WILL REMAIN SHUTDOWN UNDER ALL CONDITIONS WITHOUT BORON using the supplied Enclosure 26 reference.
 - 1) Circle YES or NO on the supplied Enclosure 26 Figure 2 Worksheet.
- If it is determined the reactor does NOT meet shutdown criteria (answered NO), identify all control rods that do not meet separation criteria on the supplied Enclosure 26 Figure 2 Worksheet. Mark square with an X or a rod position. Then circle the pair of control rods with the discrepancy.

RECORD START TIME _____

Tasks: Critical steps are shaded, bolded, italicized, and denoted by an (*)

<u>Action:</u> <input type="checkbox"/> * <i>Using criteria given in Enclosure 26, determine whether the reactor will remain shutdown under all conditions without boron.</i>	
<u>Standard:</u> <i>Applicant determines that the reactor will NOT remain shutdown under all conditions without boron and circles NO on the supplied Enclosure 26 Figure 2 Worksheet.</i>	
SAT / UNSAT	
<u>Evaluator Cue:</u> None	
<u>Evaluator Note:</u> None	
<u>Performance Comments:</u>	

Action:

☐ *Identifies the positions of all control rods that do not meet separation criteria

Standard: *Using the Enclosure 26 Figure 2 Worksheet, documents four discrepancies where “three fully inserted control rods on each face adjacent side” not met and two discrepancies where “one fully inserted control rod diagonally” not met. (See JPM Answer Key for details.)*

SAT / UNSAT

Evaluator Cue:**Evaluator Note:****Performance Comments:**

TIME STOP: _____

Task Standard(s):

Given an incomplete scram rod pattern, using Enclosure 26, determine that the reactor will NOT remain shutdown under all conditions without boron and identify all six rod pattern discrepancies that do not meet the rod pattern criteria for meeting reactor shutdown status in accordance with the answer key.

SAT / UNSAT

RJPM-NRC18-A1 JPM ANSWER KEY

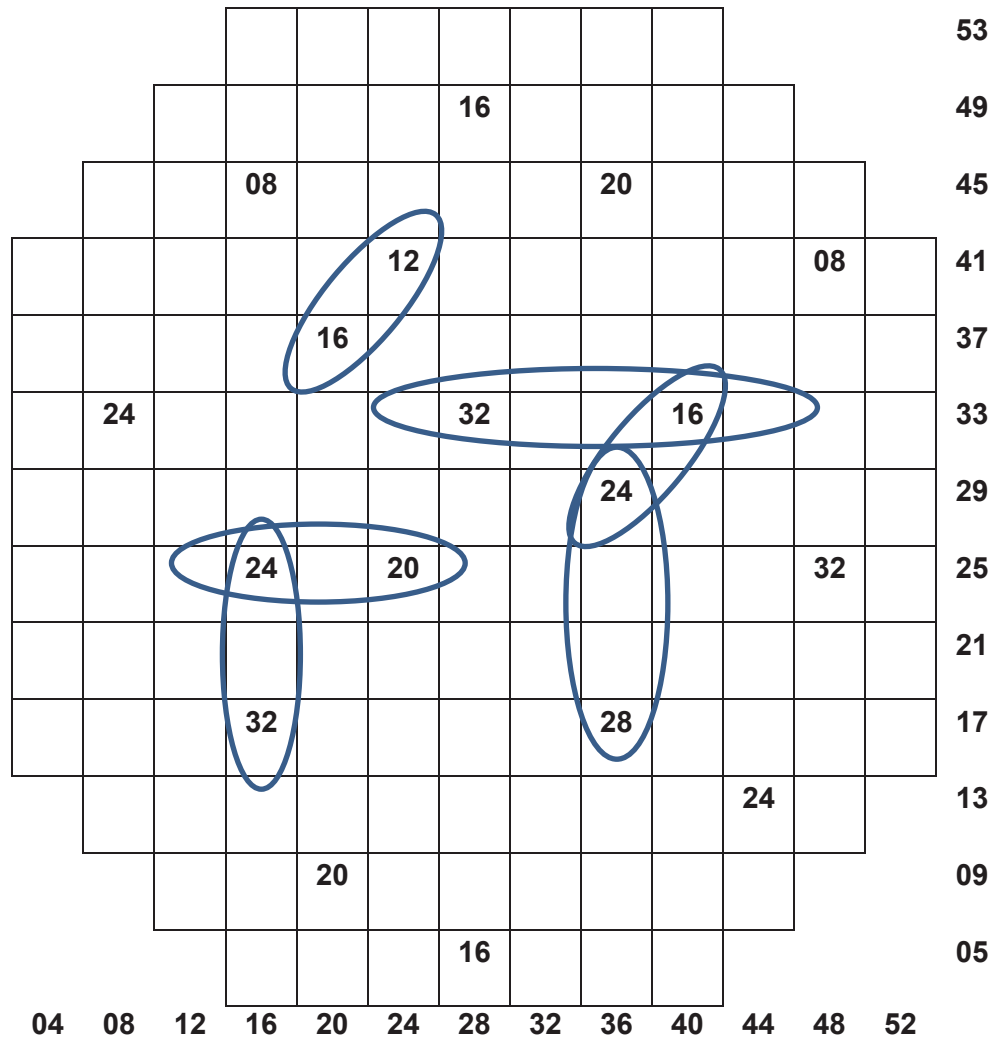


Figure 2

JPM ANSWER KEY NOTES:

Blank squares are fully inserted control rods at position 00

Discrepancies to Reactor Shutdown Criteria are circled.

Determine If the Reactor Remains Shutdown
Under All Conditions – Incomplete SCRAM

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant

Initial Condition(s):

- The reactor experienced an incomplete scram with multiple control rods that are NOT fully inserted.
- Actions for EOP-1A RPV Control – ATWS are in progress

Initiating Cue(s):

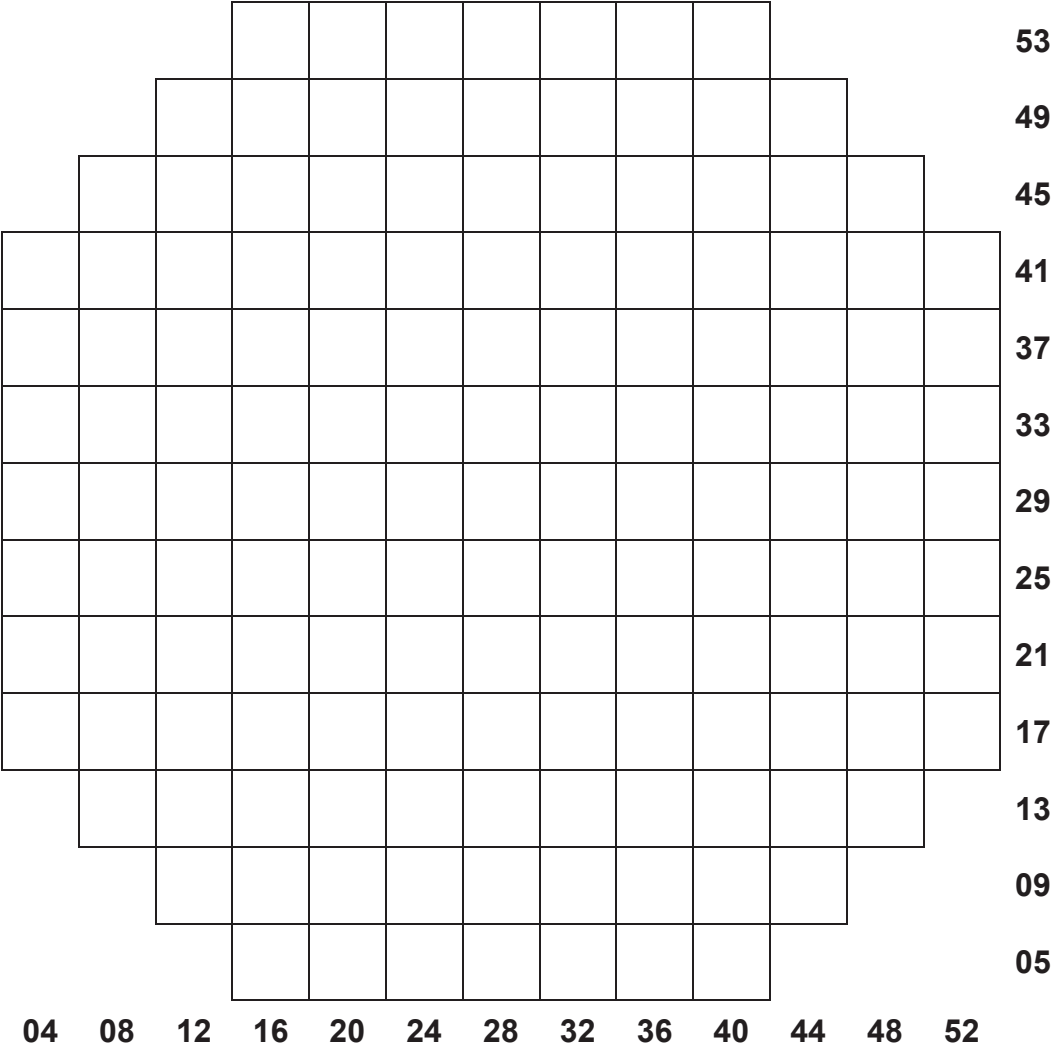
- Based on the current rod pattern, determine if the reactor WILL REMAIN SHUTDOWN UNDER ALL CONDITIONS WITHOUT BORON using the supplied Enclosure 26 reference.
2) Circle YES or NO on the supplied Enclosure 26 Figure 2 Worksheet.
- If it is determined the reactor does NOT meet shutdown criteria (answered NO), identify all control rods that do not meet separation criteria on the supplied Enclosure 26 Figure 2 Worksheet. Mark square with an X or a rod position. Then circle the pair of control rods with the discrepancy.

RJPM-NRC18-A1 Applicant JPM Worksheet
Figure 2

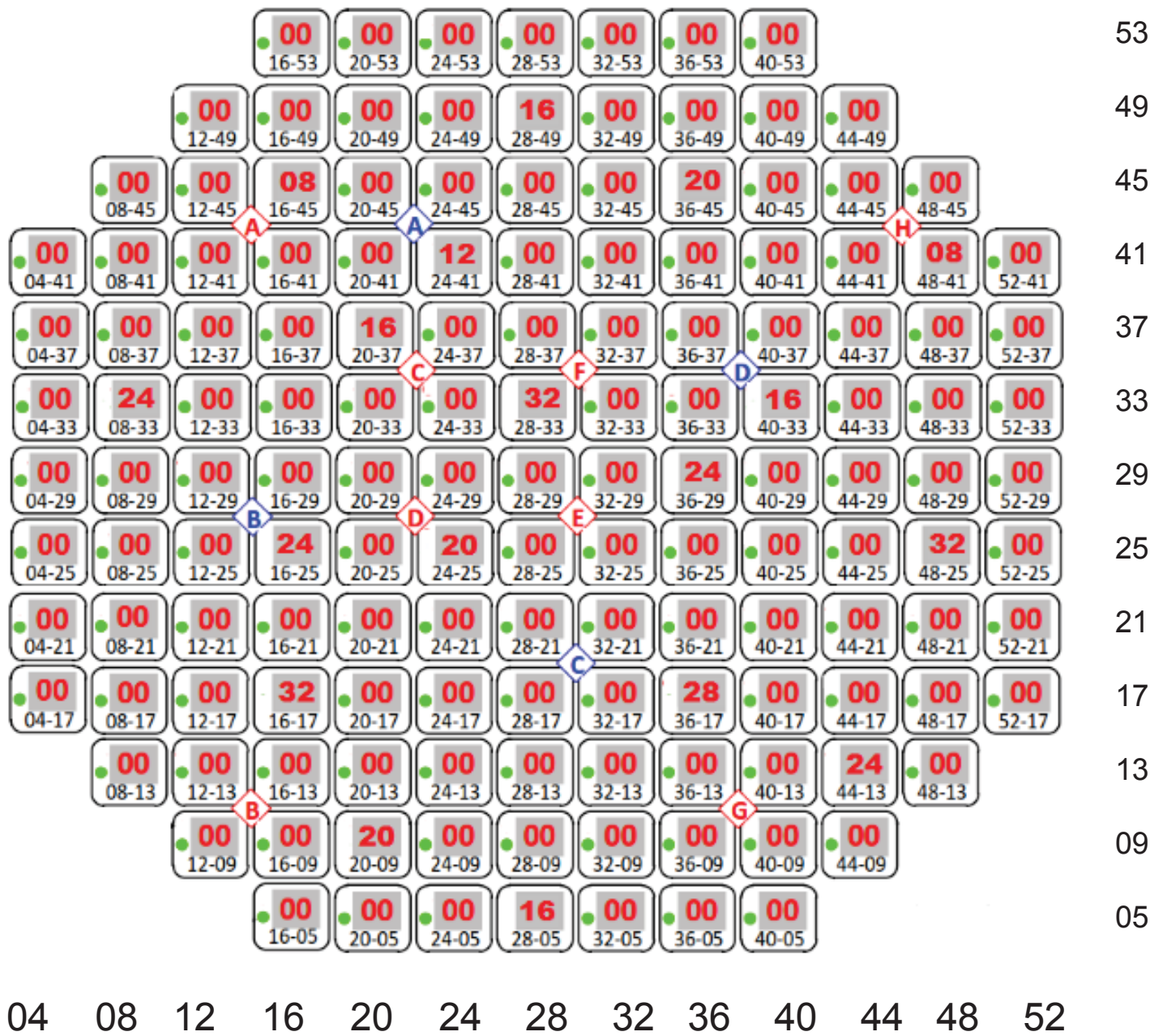
ENCLOSURE 26

CONTROL ROD INSERTION METHOD / REACTOR WILL REMAIN
SHUTDOWN UNDER ALL CONDITIONS WITHOUT BORON
DETERMINATION

SHUTDOWN CRITERIA MET
YES NO (circle YES or NO)



RJPM-NRC18-A1 Applicant JPM Reference



2018 A2

River Bend Nuclear Station

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-A2JPM Title: Perform Surveillances Required for
Entry Into Single Loop OperationFacility Number: RJPM-NRC-M14-A2

(If Bank or Modified from Bank)

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 min

Prepared By:	Rich Bolduc	5-4-2018
		Date
Ops Review:	Rob Melton	5-4-2018
		Date
Facility Review:	Rick Northrup	5-4-2018
		Date
Approved By:	Gabe Kimich	5-4-2018
	Project Lead or Exam Team Lead	Date

Perform Surveillances Required for Entry into Single Loop Operation

<u>Setting:</u>	Classroom
<u>Type:</u>	RO/SRO
<u>K&A:</u>	Generic 2.1.7 (4.4)
<u>Safety Function:</u>	Generic – Conduct of Operations
<u>PRA Applicability:</u>	No
<u>10CFR 55.45(a):</u>	(13)
<u>Performance:</u>	Perform
<u>Reference(s):</u>	GOP-0004, Rev 25 Single Loop Operation
<u>Handout(s):</u>	GOP-0004, Rev 25 Single Loop Operation GOP-0004, Rev 25, Attachment 1, page 7 of 26 Steam Tables
<u># Manipulations:</u>	N/A
<u># Critical Steps:</u>	3

ADMINISTRATIVE JPM

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None

Perform Surveillances Required for Entry into Single Loop Operation

Task Overview:

This JPM assesses RO candidate's ability to complete requirements following entry into Single Loop Operation.

The RO candidate is given current Single Loop Operation plant conditions. The candidate is directed to complete Single Loop Operation surveillance. The surveillance consists of documenting core thermal power and running loop flow and verifying that they are less than Technical Specification Requirement (TSR) limits. The candidate also verifies that the running loop flow control valve is in LOOP MANUAL.

Notes to Evaluator: REVIEW PRIOR TO ADMINISTRATION OF JPM

- This JPM will be performed in the classroom.
- Critical steps are marked with a * and shaded. If some elements of the Standard are non-critical, only the critical elements of the Standard are marked with a * and shaded.
- Provide the applicant with the following references after providing the Initiating Cue:
 - GOP-0004, Rev 25 Single Loop Operation
 - GOP-0004, Rev 25 Single Loop Operation, Attachment 1, page 7 of 26
 - Steam Tables
- The Start Time is when the candidate acknowledges the Initiating Cue.
- Grading of the JPM is done in accordance with NUREG 1021.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- The plant experienced a trip of the B Recirc Pump 30 minutes ago.
- Steps 1 - 3 of Attach 1 of GOP-0004, Single Loop Operation, have been completed.
- Core Thermal Power is 901 MW
- A and B Recirc Flow Control Valves are in Loop Manual
- Loop A Flow recorder on C51-R614 is failed downscale
- Computer Point B33NA005 reads 2.7 mlbm/hr
- Computer Point B33NA007 reads 0.1 mlbm/hr
- Loop A temperature reads 515°F.
- Loop B temperature reads 497°F.

Initiating Cue(s):

- The CRS has directed you to complete step 4 of Attachment 1 of GOP-0004, Single Loop Operation.

RECORD START TIME _____

Tasks: Critical steps are shaded, bolded, italicized, and denoted by an (*)

Action: <input type="checkbox"/> * <i>Verify Thermal Power is less than or equal to 77.6% Rated Thermal Power</i>	
<u>Standard:</u> <i>Applicant documents that thermal power was less than or equal to 77.6% as shown on the Answer Key.</i>	
SAT / UNSAT	
<u>Evaluator Cue:</u> None	
<u>Evaluator Note:</u>	
<u>Performance Comments:</u>	

<u>Action:</u> <input type="checkbox"/> * <i>Verify At H13-P680, B33-HYVF060A and B33-HYVF060B, FLOW CONT VALVE, is in LOOP MANUAL</i>	
<u>Standard:</u> <i>Documents that The Flow Control Valves are in LOOP Manual as shown on the Answer Key.</i>	
SAT / UNSAT	
<u>Evaluator Cue:</u> None	
<u>Evaluator Note:</u>	
<u>Performance Comments:</u>	

Action:

☐ * *Verify total loop flow in running loop is less than 33 kgpm*

Standard: *Applicant documents that loop flow was less than 33 kgpm as shown on the Answer Key.*

SAT / UNSAT

Evaluator Cue: After applicant has finished filling out the Step 4 of the surveillance sheet or at the discretion of the evaluator, state, "That completes the JPM" and then record Stop Time

Evaluator Notes:

Performance Comments:

TIME STOP: _____

Task Standard(s):

Step 4 of Attachment 1 from GOP-0004, Single Loop Operation, is complete in accordance with the answer key.

SAT / UNSAT

JPM ANSWER KEY

(Critical Information Highlighted in Yellow)

REFERENCE USE SINGLE LOOP OPERATION

ATTACHMENT 1 PAGE 4 OF 5

Step		Initials Date/Time
	<p style="text-align: center;"><u>NOTE</u></p> <p style="text-align: center;"><i>Steps 4, 5, and 6 should be performed concurrently but completed within their respective time limits.</i></p> <p style="text-align: center;"><i>Record initial reading here, then every 12 hours on STP-000-0001, Daily Operating Logs.</i></p>	
4	<p>Within one hour of entering Single Loop Operation, verify the following:</p> <p>4.1. Thermal Power is less than or equal to 77.6% Rated Thermal Power (2400 MWTH)</p> $\frac{901}{3091} \text{ CMWTH} = \frac{\approx 29.15}{(\text{TSR 3.4.1.1.2})} \% \leq 77.6\%$ <p style="text-align: center;"><u>AND</u></p> <p>4.2. At H13-P680, B33-HYVF060A and B33-HYVF060B, FLOW CONT VALVE, is in LOOP MANUAL. (TSR 3.4.1.1.3)</p> <p>4.3. Total loop flow in running loop is less than 33 kgpm using one of the following methods (N/A method <u>not</u> used): (TSR 3.4.1.1.1)</p> <p>1. Obtain flow from C51-R614, LOOP A/B FLOW RECORDER, for the operating loop.</p> <p style="text-align: right;">_____ kgpm</p> <p>2. Use computer point for the operating loop (LOOP A - B33NA005 or B33NA006; LOOP B - B33NA007 or B33NA008) and convert from mlbm/hr to kgpm using the following formula:</p> $\frac{2.7}{(\text{flow})} \times \frac{0.0208}{(\text{sv})} \times (124.68) = \approx 7.00 \text{ (kgpm)}$ <p>where flow = loop flow from computer point in mlbm/hr. sv = specific volume from steam tables (Vf) (dependent on loop temp) in ft³/lbm.</p>	<p style="text-align: center;">____INITIALS____</p> <p style="text-align: center;">____INITIALS____</p> <p style="text-align: center;">____N / A____</p> <p style="text-align: center;">____INITIALS____</p>

**Perform Surveillances Required for
Entry into Single Loop Operation**

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant

Initial Condition(s):

- The plant experienced a trip of the B Recirc Pump 30 minutes ago.
- Steps 1 - 3 of Attach 1 of GOP-0004, Single Loop Operation, have been completed.
- Core Thermal Power is 901 MW
- A and B Recirc Flow Control Valves are in Loop Manual
- Loop A Flow recorder on C51-R614 is failed downscale
- Computer Point B33NA005 reads 2.7 mlbm/hr
- Computer Point B33NA007 reads 0.1 mlbm/hr
- Loop A temperature reads 515°F.
- Loop B temperature reads 497°F.

Initiating Cue(s):

- The CRS has directed you to complete step 4 of Attachment 1 of GOP-0004, Single Loop Operation.

For Examinee Use

REFERENCE USE SINGLE LOOP OPERATION

ATTACHMENT 1 PAGE 4 OF 5

Step		Initials Date/Time
4	<p style="text-align: center;"><u>NOTE</u></p> <p style="text-align: center;"><i>Steps 4, 5, and 6 should be performed concurrently but completed within their respective time limits.</i></p> <p style="text-align: center;"><i>Record initial reading here, then every 12 hours on STP-000-0001, Daily Operating Logs.</i></p> <p>Within one hour of entering Single Loop Operation, verify the following:</p> <p>4.1. Thermal Power is less than or equal to 77.6% Rated Thermal Power (2400 MWTH)</p> $\frac{\text{CMWTH}}{3091} = \frac{\text{ }}{(\text{TSR 3.4.1.1.2})} \% \leq 77.6\%$ <p style="text-align: center;"><u>AND</u></p> <p>4.2. At H13-P680, B33-HYVF060A and B33-HYVF060B, FLOW CONT VALVE, is in LOOP MANUAL. (TSR 3.4.1.1.3)</p> <p>4.3. Total loop flow in running loop is less than 33 kgpm using one of the following methods (N/A method <u>not</u> used): (TSR 3.4.1.1.1)</p> <ol style="list-style-type: none"> 1. Obtain flow from C51-R614, LOOP A/B FLOW RECORDER, for the operating loop. _____ kgpm 2. Use computer point for the operating loop (LOOP A - B33NA005 or B33NA006; LOOP B - B33NA007 or B33NA008) and convert from mlbm/hr to kgpm using the following formula: $\frac{\text{ }}{(\text{flow})} \times \frac{\text{ }}{(\text{sv})} \times (124.68) = \frac{\text{ }}{(\text{kgpm})}$ <p>where flow = loop flow from computer point in mlbm/hr. sv = specific volume from steam tables (Vf) (dependent on loop temp) in ft³/lbm.</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>

2018 A3

River Bend Nuclear Station

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-A3JPM Title: Determine Protected Equipment Posting
Requirements for Risk Related Equipment Out of ServiceFacility Number: N/A
(If Bank or Modified from Bank)**JPM Attributes:**

<input checked="" type="checkbox"/> New	<input type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 10 min

Prepared By:	Rich Bolduc	5-4-2018
		Date
Ops Review:	Rob Melton	5-4-2018
		Date
Facility Review:	Rick Northrup	5-4-2018
		Date
Approved By:	Gabe Kimich	5-4-2018
	Project Lead or Exam Team Lead	Date

Determine Protected Equipment Posting Requirements For Risk Related Equipment Out of Service

Setting: Classroom
Type: RO/SRO
K&A: Generic 2.2.14 (4.1)
Safety Function: Generic – Equipment Control
PRA Applicability: No
10CFR 55.45(a): (13)
Performance: Perform
Reference(s): OSP-22 Rev 107 Operations General Administrative Guidelines
 EN OP-119 Rev 9 Protected Equipment Postings
Handout(s): OSP-22 Rev 107 Operations General Administrative Guidelines Section 4.16,
 Protected Division Signs and Barrier Guidelines, Attachments 2 through 8, and
 Attachment 15, Protected Equipment Postings with Area/Components
 Columns redacted for RCIC, HPCS, and LPCS.
 EN OP-119 Rev 9 Protected Equipment Postings
 Protected Equipment Postings Worksheet
Manipulations: N/A
Critical Steps: 2

ADMINISTRATIVE JPM

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None

Determine Protected Equipment Posting Requirements For Risk Related Equipment Out of Service

Task Overview:

This JPM assesses an RO applicant's ability to accurately identify plant components that require postings to protect them due to safety related equipment being out of service.

The RO applicant is given plant conditions that include HPCS out of service. The applicant is directed to identify protected equipment posting requirements for these conditions. The applicant will refer to EN OP-119 Protected Equipment Postings and OSP-0022, Operations General Administrative Guidelines, Section 4.16, Protected Division Signs and Barrier Guidelines. Using the instructions of Section 4.16, he (she) will refer to Attachment 15, Protected Equipment Postings of OSP-0022 and look up necessary protected equipment for HPCS out of service which consists of RCIC and LPCS components. The applicant will then describe for each component the method of posting.

Notes to Evaluator: REVIEW PRIOR TO ADMINISTRATION OF JPM

- This JPM will be performed in the classroom.
- Critical steps are marked with a * and shaded. If some elements of the Standard are non-critical, only the critical elements of the Standard are marked with a * and shaded.
- Provide the applicant with the following references after providing the Initiating Cue.
 - OSP-22 Operations General Administrative Guidelines Section 4.16, Protected Division Signs and Barrier Guidelines and Attachment 15, Protected Equipment Postings with Area/Components Columns redacted
 - EN OP-119 Protected Equipment Postings
 - Protected Equipment Postings Worksheet
- The Start Time is when the applicant acknowledges the Initiating Cue.
- Grading of the JPM is done in accordance with NUREG 1021.
- The steps of JPM can be done in any order.
- When the applicant begins the JPM, it is expected that he will begin by reviewing EN OP-119 Protected Equipment Postings. Next the applicant will review OSP-0022, Operations General Administrative Guidelines, Section 4.16, Protected Division Signs and Barrier Guidelines. This will lead to Attachment 15, Protected Equipment Postings of OSP-0022. Here will be found a table for protected equipment for HPCS out of service which includes RCIC and LPCS components. The applicant. The Door Number/ Area /Component column of the table is redacted requiring the applicant to document this information based on his knowledge of locations and use of references of posting requirements. The first verifiable action will be locating and documenting the equipment from the HPCS OOS table from Attachment 15, Protected Equipment Postings.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Plant is operating at 100 percent power with no equipment out of service.
- A malfunction in HPCS has resulted in it being Inoperative and Out of Service.
- A work order and clearance order have been written to repair HPCS.
- Due to HPCS being Out of Service, a Protected Equipment Posting is required

Initiating Cue(s):

- Using the supplied Protective Posting Worksheet, list all of the equipment that requires protective posting for HPCS Out of Service.
- Document on the Protective Posting Worksheet the method of posting each component (where posted) in accordance with procedure guidance. (i.e. with sufficient detail so that an individual assigned to perform the protective posting would meet posting requirements)

RECORD START TIME _____

Tasks: Critical steps are shaded, bolded, italicized, and denoted by an (*)

Action:

- ☐ * *Locate and document equipment requiring protective posting with HPCS OOS in accordance with Attachment 15 of OSP-22, Protected Equipment Postings.*

Standard: *Documents on the supplied worksheet 3 RCIC and 3 LPCS components from the HPCS OOS table.*

SAT / UNSAT

Evaluator Cue: None

Evaluator Note: Attachment 2 through 8 are designed to protect “areas” related to protected equipment. These attachments are designed to be used during outages per step 4.16.5 “Plant equipment should be posted using the following guidance during planned refueling outages” and then it lists Attachments 2 through 8. Attachment 15 is the correct attachment to use based on the given conditions.

Performance Comments:

Action:

- ☐ * *Determine the required method of posting in accordance with the guidance given the procedures.*

Standard: *Documents a description of location with sufficient detail as given in Protective Posting Worksheet Answer Key*

SAT / UNSAT

Evaluator Cue: After applicant has completed documenting the posing details for each component on the Protective Posting Worksheet, or at the discretion of the evaluator, state, "That completes the JPM" and then record Stop Time

Evaluator Notes:

Performance Comments:

TIME STOP: _____

Task Standard(s):

Document on the Protective Posting Worksheet the 3 RCIC and 3 LPCS components that require protective posting in accordance with Attachment 15, Protected Equipment Postings, HPCS table. Documents a description of location and type of posting with sufficient detail as given Protective Posting Worksheet Answer Key

SAT / UNSAT

Protective Posting Worksheet Answer Key

List all of the equipment that requires protective posting for HPCS Out of Service and where the posting would be located.	
Equipment	Location / Component
RCIC Control Switch	RCIC Trip & Throttle Valve Operator @ H13-P601
RCIC door	Sign on door (AB 95 ft.)
RCIC door	Sign on door (AB 78 ft.)
LPCS Control Switch	LPCS Pump control switch@ H13-P601
LPCS Breaker	(CB 98 ft.) Div 1 Switchgear (ENS-SWG1A ACB08) (cover or barricade operating mechanism from Note 1)
LPCS Room	Barrier at ladder (AB 95')
	Note: Items in () not necessary to meet standard.

Determine Protected Equipment Posting Requirements
For Risk Related Equipment Out of Service

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant

Initial Condition(s):

- Plant is operating at 100 percent power with no equipment out of service.
- A malfunction in HPCS has resulted in it being Inoperative and Out of Service.
- A work order and clearance order have been written to repair HPCS.
- Due to HPCS being Out of Service, a Protected Equipment Posting is required

Initiating Cue(s):

- Using the supplied Protective Posting Worksheet, list all of the equipment that requires protective posting for HPCS Out of Service.
- Document on the Protective Posting Worksheet the method of posting each component (where and how) in accordance with procedure guidance. (i.e. with sufficient detail so that an individual assigned to perform the protective posting would meet posting requirements)

Protective Posting Worksheet for Examinee Use

List all of the equipment that requires protective posting for HPCS Out of Service and where the posting would be located	
Equipment	Location / Component
	.

2018 A4

River Bend Nuclear Station

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-A4JPM Title: Prepare for RCA EntryFacility Number: RJPM-NRC-M14-A4 Rev 1 ____

(If Bank or Modified from Bank)

JPM Attributes:

<input type="checkbox"/> New	<input checked="" type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 10 min

Prepared By:	<u>Rich Bolduc</u>	<u>5-4-2018</u> Date
Ops Review:	<u>Rob Melton</u>	<u>5-4-2018</u> Date
Facility Review:	<u>Rick Northrup</u>	<u>5-4-2018</u> Date
Approved By:	<u>Gabe Kimich</u>	<u>5-4-2018</u> Date
	Project Lead or Exam Team Lead	Date

Prepare for RCA Entry

<u>Setting:</u>	Classroom
<u>Type:</u>	RO/SRO
<u>K&A:</u>	Generic 2.3.7 (3.5)
<u>Safety Function:</u>	Generic – Radiation Control
<u>PRA Applicability:</u>	No
<u>10CFR 55.45(a):</u>	(10)
<u>Performance:</u>	Perform
<u>Reference(s):</u>	RWP-2018-1057, Rev 0 EN-RP-101, Rev 14 Access Control for Radiologically Controlled Areas (Section 5.4) Handout of Survey Maps of the RCIC cubicle (contamination and radiation levels) EN-RP-100 Rev 12 Radiation Worker Expectations
<u>Handout(s):</u>	EN-RP-101, Rev 14 Access Control for Radiologically Controlled Areas Combined Handout consisting of: -RWP-2018-1057, Rev 0 (altered for JPM) -Survey Maps of the RCIC cubicle (contamination and radiation levels) Protective Clothing Requirements Answer Sheet Radiation Worker Trip Ticket EN-RP-100 Rev 12 Radiation Worker Expectations Calculator
<u># Manipulations:</u>	N/A
<u># Critical Steps:</u>	2

ADMINISTRATIVE JPM

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None

Prepare for RCA Entry

Task Overview:

This task will have the applicant prepare for RCA entry by reviewing a RWP and Survey map to determine both the dress-out requirements and fill out a Radiation Worker Trip Ticket.

The activity is to perform a fill and vent on the 95 foot elevation of the RCIC cubicle.

Notes to Evaluator: REVIEW PRIOR TO ADMINISTRATION OF JPM

- This JPM will be performed in the classroom.
- Critical steps are marked with a * and shaded. If some elements of the Standard are non-critical, only the critical elements of the Standard are marked with a * and shaded.
- Provide the applicant with the following references after providing the Initiating Cue.
 - EN-RP-101, Rev 14 Access Control for Radiologically Controlled Areas
 - EN-RP-100 Rev 12 Radiation Worker Expectations
 - Combined Handout consisting of:
 - RWP-2018-1057, Rev 0 (altered for JPM)
 - Survey Maps of the RCIC cubicle (contamination and radiation levels)
 - Protective Clothing Requirements Answer Sheet
 - Radiation Worker Trip Ticket
 - Calculator
- The Start Time is when the candidate acknowledges the Initiating Cue.
- Grading of the JPM is done in accordance with NUREG 1021.
- The steps of JPM can be done in any order.
- The applicant begins the JPM by reviewing the supplied survey maps to review the radiological conditions on the 95 foot elevation RCIC cubicle. The applicant will then review Radiation Work Permit (RWP) and EN-RP-101, Access Control for Radiologically Controlled Areas. The first verifiable action will be to determine the type of protective clothing requirements; and then document the information on the supplied JPM answer sheet.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- A RCIC fill and vent needs to be performed in the in the center of 95' elevation RCIC cubicle.
- The expected duration of the activity is 1 hour

Initiating Cue(s):

You have been directed to prepare for RCA entry by performing the following::

- Determine the protective clothing requirements for entry into this area and document the protective clothing determination on the supplied JPM Answer Sheet.
- Fill out Radiation Worker Trip Ticket in accordance with EN-RP-100.

RECORD START TIME _____

Tasks: Critical steps are shaded, bolded, italicized, and denoted by an (*)

Action:

- ☐ * *Determine the protective clothing requirements for entering the RCIC cubicle 95' elevation.*

Standard: *Documents on the JPM answer sheet that single Anti-Cs are required.*

SAT / UNSAT

Evaluator Cue: After applicant has finished the necessary documentation on the JPM Answer Sheet or at the discretion of the evaluator, state, "That completes the JPM" and then record Stop Time.

Evaluator Note: The applicant will review the RWP for the protective clothing requirements. The contamination level survey map shows contamination levels greater than 1000 dpm which is a Contamination Area. The RWP states that, "Single Anti-Cs are required for entry into Contamination Areas"

Action:

☐ * *Fill out a Radiation Worker Trip Ticket*

Standard: *Fill out a Radiation Worker Trip Ticket and completes critical elements identified on the Fill out a Radiation Worker Trip Ticket Answer key.*

SAT / UNSAT

Evaluator Cue: After applicant has finished the Trip Ticket or at the discretion of the evaluator, state, "That completes the JPM" and then record Stop Time.

Evaluator Note: N/A

Performance Comments:

TIME STOP: _____

Task Standard(s):

Documents on the JPM answer sheet that single Anti-Cs are required to enter the 95 foot elevation RCIC cubicle.

Fills out a Radiation Worker Trip Ticket and completes critical elements identified on the completed Radiation Worker Trip Ticket Answer key.


SAT / UNSAT

Protective Clothing Requirements Answer Key

What protective clothing is required?


Single Anti-Cs

Radiation Worker Trip Ticket Answer Key

	NUCLEAR MANAGEMENT MANUAL	NON-QUALITY RELATED	EN-RP-100	REV. 12
		INFORMATIONAL USE	PAGE 36 OF 38	
Radiation Worker Expectations				

Note: Critical Elements are highlighted in yellow 

Sheet 1 of 2

	Radiation Worker Trip Ticket RJPM-NRC18-A4	
	<hr/>	
Name: <u>Bob White</u> WO#: _____ Dept: <u>Ops</u>	Badge: <u>003</u> RWP: <u>20181057</u> Supervisor: <u>J. Reynolds</u>	Date: <u>Today's Date</u> Task: <u>2</u>
Self-Reading Dosimeter (SRD) Set Points		
SRD Dose Alarm: <u>350</u> mrem SRD Dose Rate Alarm: <u>800</u> mrem/hr 80% SRD Dose Alarm: <u>280</u> mrem Expected Dose: <u>200</u> mrem Dose Received: _____ mrem If you receive dose alarm or an unbriefed dose rate alarm, leave the area immediately, and report to RP.		
Work Area Information		
Work Location: <u>RCIC 95 Ft.</u> Work Area Dose Rate: <u>135</u> mrem/hr Contamination Level: <u>8K</u> dpm/100cm ² Work and Rad conditions qualify for Radworker Self-Briefing: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No ≤ 10k dpm/100cm ² and ≤ 25 mR/hr No system breach or work expected to change conditions No welding, burning, grinding in contaminated area No entry into Alpha Level 2 or Level 3 areas Low Dose Area Location: <u>RCIC 70 Ft</u>		
Specific RCA Hazards (circle all that apply)		
RA HRA LHRA CA HCA ARA High Radiation Area or Locked High Radiation Area: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If Yes, then a HRA or LHRA briefing by Radiation Protection is required prior to entering area. Name of the RP Technician who performed the HRA Briefing: (Name): _____		
RP Coverage Requirements (circle all that apply)		
Intermittent Continuous None Required		

Prepare for RCA Entry

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant

Initial Condition(s):

- A RCIC fill and vent needs to be performed in the in the center of 95' elevation RCIC cubicle.
- The expected duration of the activity is 1 hour.

Initiating Cue(s):


You have been directed to prepare for RCA entry by performing the following:

- Determine the protective clothing requirements for entry into this area and document the protective clothing determination on the supplied JPM Answer Sheet.
- Fill out Radiation Worker Trip Ticket in accordance with EN-RP-100.

Give this page to the applicant

Protective Clothing Requirements Answer Sheet

What protective clothing is required?

	NUCLEAR MANAGEMENT MANUAL	NON-QUALITY RELATED	EN-RP-100	REV. 12
		INFORMATIONAL USE	PAGE 36 OF 38	
Radiation Worker Expectations				

ATTACHMENT 9.1

RADIATION WORKER TRIP TICKET (FRONT SIDE)

Sheet 1 of 2



Radiation Worker Trip Ticket

Name: _____ Badge: _____ Date: _____
 WO#: _____ RWP: _____ Task: _____
 Dept: _____ Supervisor: _____

Self-Reading Dosimeter (SRD) Set Points

SRD Dose Alarm: _____ mrem SRD Dose Rate Alarm: _____ mrem/hr
 80% SRD Dose Alarm: _____ mrem
 Expected Dose: _____ mrem Dose Received: _____ mrem
If you receive dose alarm or an unbriefed dose rate alarm, leave the area immediately, and report to RP.

Work Area Information

Work Location: _____
 Work Area Dose Rate: _____ mrem/hr
 Contamination Level: _____ dpm/100cm²
 Work and Rad conditions qualify for Radworker Self-Briefing: ☐ Yes ☐ No
 $\leq 10\text{k dpm}/100\text{cm}^2$ and $\leq 25\text{ mR/hr}$
 No system breach or work expected to change conditions
 No welding, burning, grinding in contaminated area
 No entry into Alpha Level 2 or Level 3 areas
 Low Dose Area Location: _____


Specific RCA Hazards (circle all that apply)

RA HRA LHRA CA HCA ARA

High Radiation Area or Locked High Radiation Area: ☐ Yes ☐ No
 If Yes, then a HRA or LHRA briefing by Radiation Protection is required prior to entering area.
 Name of the RP Technician who performed the HRA Briefing:
 (Name): _____

RP Coverage Requirements (circle all that apply)

Intermittent Continuous None Required

	NUCLEAR MANAGEMENT MANUAL	NON-QUALITY RELATED	EN-RP-100	REV. 12
		INFORMATIONAL USE	PAGE 37 OF 38	
Radiation Worker Expectations				

ATTACHMENT 9.1

RADIATION WORKER TRIP TICKET (BACK SIDE)

Sheet 2 of 2

Good Rad Worker Practices

1. Read AND Understand your RWP.
2. Wear your DLR in close proximity (e.g., hands width) of your SRD.
3. Contact RP prior to going above seven feet in the RCA.
4. Check SRD 1 – 2 times per hour routinely.
5. Check SRD every 15 minutes in a HRA.
6. Exit RCA at 80% of SRD accumulated dose alarm.
7. Secure all material crossing a contaminated boundary.
8. Exit your work area safely and contact RP if:
 - a. Failure or suspected failure of PCs
 - b. Loss or damage of dosimetry
 - c. Unexpected change in or unexpected radiological conditions
 - d. Any unexpected SRD alarm
 - e. Unexpected ARM alarm
 - f. You have any concerns with working in the area

ALARA Suggestions What can we do to save dose?

FOCUS ON GOOD RADIATION PROTECTION WORK PRACTICES!

2018 A5

River Bend Nuclear Station

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-A5 JPM Title: Determine If the Reactor Remains Shutdown Under All Conditions – Incomplete SCRAM

Facility Number: N/A
(If Bank or Modified from Bank)

JPM Attributes:

<input checked="" type="checkbox"/> New	<input type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 20 min

Prepared By:	<u>Rich Bolduc</u>	<u>5-4-2018</u>
		Date
Ops Review:	<u>Rob Melton</u>	<u>5-4-2018</u>
		Date
Facility Review:	<u>Rick Northrup</u>	<u>5-4-2018</u>
		Date
Approved By:	<u>Gabe Kimich</u>	<u>5-4-2018</u>
	Project Lead or Exam Team Lead	Date

Determine If the Reactor Remains Shutdown Under All Conditions – Incomplete SCRAM

<u>Setting:</u>	Classroom
<u>Type:</u>	SRO Only
<u>K&A:</u>	Generic 2.1.37 (4.3)
<u>Safety Function:</u>	Generic – Conduct of Operations
<u>PRA Applicability:</u>	No
<u>10CFR 55.45(a):</u>	(3)
<u>Performance:</u>	Perform
<u>Reference(s):</u>	EOP-5 Rev 321 Emergency Operating and Severe Accident Procedures Enclosures OSP-53 Rev 25 Emergency and Transient Response Support Procedure - Attachment 14/15, Maximizing CRD/Maximizing CRD Drive Water D/P AOP-1 Reactor Scram EOP-1A RPV Control – ATWS Flowchart
<u>Handout(s):</u>	EOP-5 Rev 321 Emergency Operating and Severe Accident Procedures Enclosures -Excerpt that includes all EOP-1A control rod insertion Enclosures Full Core Display Current Rod Pattern Enclosure 26 Figure 2 Worksheet EOP-1A RPV Control – ATWS Flowchart AOP-1 Reactor Scram OSP-53 Attachment 14/15, Maximizing CRD/Maximizing CRD Drive Water D/P Worksheet: Directions to RO to Insert Control Rods
<u># Manipulations:</u>	N/A
<u># Critical Steps:</u>	3

ADMINISTRATIVE JPM

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None

Determine If the Reactor Remains Shutdown Under All Conditions – Incomplete SCRAM

Task Overview:

This is an SRO version of RO Admin JPM A1 (RJPM-NRC18-A1). This JPM includes and then continues beyond the RO termination criteria. The RO termination criteria is to determine whether the reactor will remain shutdown under all conditions without boron. Also, the RO applicant will identify the rod pattern discrepancies that do not meet the rod pattern criteria for meeting reactor shutdown status. The SRO applicant's ability to also assess an effective method for control rod insertion based on plant indications in order to direct ROs to carry out appropriate EOP-0005 Enclosure procedures.

Following an incomplete scram, licensed operators at the majority of BWR's determine if the reactor will remain shutdown under all conditions without boron by verifying that 1) that all control rods are inserted to 00 except one or 2) by verifying that all control rods are inserted to or beyond the Maximum Subcritical Banked Withdrawal Position (Notch Position 02). At Riverbend, a third method is available for license operators to use. The method consists of evaluating individual control rod positions to determine if the rod patterns supports criteria which states: *"if the control rods which are not fully inserted are surrounded by three fully inserted control rods on each face adjacent side and by one fully inserted control rod diagonally"*.

In the RO part of the JPM, the SRO applicant is provided a control room graphic of the full core display with an incomplete scram rod pattern. Using the procedural guidance of EOP Enclosure 26, the applicant must correctly apply the criteria to determine whether or not the reactor will remain shutdown under all conditions without boron. The examiner can observe applicant's method of evaluating the rod pattern to determine if the multiple rod criteria are being correctly applied to determine the reactor core state. The rod pattern will be determined to NOT meet the shutdown criteria and the applicant will be required to identify rod pattern discrepancies that prevent the reactor from remaining shutdown.

After the SRO applicant completes the RO portion of the JPM, the applicant determines an effective method for inserting control rods based on given indications to correct the rod pattern discrepancies to obtain a reactor status that meets "reactor will remain shutdown" criteria

Notes to Evaluator: REVIEW PRIOR TO ADMINISTRATION OF JPM

- This JPM will be performed in the classroom.
- Critical steps are marked with a * and shaded. If some elements of the Standard are non-critical, only the critical elements of the Standard are marked with a * and shaded.
- Provide the applicant with the following references after providing the Initiating Cue:
 - EOP-5 Rev 321 Emergency Operating and Severe Accident Procedures Enclosures
 - Excerpt that includes all EOP-1A control rod insertion Enclosures
 - Full Core Display Current Rod Pattern
 - Enclosure 26 Figure 2 Worksheet
 - EOP-1A RPV Control – ATWS Flowchart
 - AOP-1 Reactor Scram
 - OSP-53 Attachment 14/15, Maximizing CRD/Maximizing CRD Drive Water D/P
 - Worksheet: Directions to RO to Insert Control Rods
- The Start Time is when the applicant acknowledges the Initiating Cue.
- Grading of the JPM is done in accordance with NUREG 1021.
- This JPM has two activities to perform. In the first activity, the SRO applicant determines whether or not the reactor will remain shutdown under all conditions without boron. In the second activity, the SRO applicant determines from EOP-1A and Enclosure 26 what direction to give the our RO for insertion of control rods.
- When the applicant begins the JPM, it is expected that he will begin by reviewing Enclosure 26 page 107 which describes rod patterns that support “remain shutdown under all conditions without boron”. The applicant will also review Figure 1 which is an example of meeting the criteria “control rods which are not fully inserted are surrounded by three fully inserted control rods on each face adjacent side and by one fully inserted control rod diagonally”. The first verifiable action will be to transcribe the current rod pattern from the control room graphic of the full core display. The applicant will continue until he has determined that the reactor will NOT remain shutdown and provide justification to the evaluator for this determination.
- When the first activity is complete, the applicant begins the second activity. In the second activity, the applicant refers to the references and reviews the direction of EOP-1A, RPV Control – ATWS. The first verifiable action in the second activity will be when the SRO applicant begins documenting directions on the supplied worksheet. The JPM is completed when the applicant has identified one or more methods for inserting control rods.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- The reactor experienced an incomplete scram with multiple control rods that are NOT fully inserted.
- Actions for EOP-1A RPV Control – ATWS are in progress
- Initial power level after the scram was subcritical below the heating range
- Reactor water level is being maintained in the normal band
- The lowest reactor level following the scram was -30 inches
- Actions for EOP-1A RPV Control – ATWS are in progress
- The following alarms are sealed-in:
 - SCRAM PILOT VLV AIR HEADER LOW PRESSURE (H13-P680/05A/C08)
 - CRD SCRAM DISCH VOL HIGH WATER LEVEL (H13-P680/06A/A08)
 - SCRAM DISCH VOL NOT DRAINED (H13-P680/06A/C08)
- CRD flow is greater than 100 gpm and the CRD flow control valve is closed
- The only scram signal still present is CRD SCRAM DISCH VOL HIGH WATER LEVEL

Initiating Cue(s):

First Activity

- Based on the current rod pattern, determine if the reactor WILL REMAIN SHUTDOWN UNDER ALL CONDITIONS WITHOUT BORON using the supplied Enclosure 26 reference.
 - 1) Circle YES or NO on the supplied Enclosure 26 Figure 2 Worksheet.
- If it is determined the reactor does NOT meet shutdown criteria (answered NO), identify all control rods that do not meet separation criteria on the supplied Enclosure 26 Figure 2 Worksheet. Mark square with an X or a rod position. Then circle the pair of control rods with the discrepancy.

Second Activity

- Determine what directions (orders) you would give the RO to insert control rods.
 - 1) Document your orders to the RO on the supplied DIRECTIONS TO RO TO INSERT CONTROL RODS WORKSHEET.

RECORD START TIME _____

Tasks: Critical steps are shaded, bolded, italicized, and denoted by an (*)

<u>Action:</u> <input type="checkbox"/> * <i>Using criteria given in Enclosure 26, determine whether the reactor will remain shutdown under all conditions without boron.</i>
<u>Standard:</u> <i>Applicant determines that the reactor will NOT remain shutdown under all conditions without boron and circles NO on the supplied Enclosure 26 Figure 2 Worksheet.</i> <div style="text-align: right;">SAT / UNSAT</div>
<u>Evaluator Cue:</u> None
<u>Evaluator Note:</u> None
<u>Performance Comments:</u>

<u>Action:</u> <input type="checkbox"/> * <i>Identifies the positions of all control rods that do not meet separation criteria</i>
<u>Standard:</u> <i>Using the Enclosure 26 Figure 2 Worksheet, documents four discrepancies where “three fully inserted control rods on each face adjacent side” not met and two discrepancies where “one fully inserted control rod diagonally” not met. (See JPM Answer Key for details.)</i> <div style="text-align: right;">SAT / UNSAT</div>
<u>Evaluator Cue:</u>
<u>Evaluator Notes:</u>
<u>Performance Comments:</u>

☐ * *Determine directions for inserting control rods.*

Standard: At a minimum, documents on the worksheet, 1 or more of the following:

- 1) Complete Enclosure 14 2) Reset the scram 3) Insert control rods OR
 1) Complete Enclosure 13 (Reset the scram and individually scram rods) OR
 1) Reset the scram 2) Drain the SDV 3) Initiate a manual scram.

SAT / UNSAT

Evaluator Cue: After applicant has completed identifying directions on the worksheet for inserting control rods, or at the discretion of the evaluator, state, "That completes the JPM" and then record Stop Time

Evaluator Notes: The applicant should recognize from the given conditions that a hydraulic lock condition exists. Enclosure 26 and EOP-1A list five methods for inserting control rods. Maximizing CRD flow to drift rods is satisfactory but may by itself not be sufficient to fully insert control rods. Venting CRD over pistons volumes is also satisfactory but would unnecessarily delay insertion of control rods. The applicant should also add for driving control rods to maximize CRD Drive water DP IAW OSP-53 but is not required per the standard.

Performance Comments:

TIME STOP: _____

Task Standard(s):

Given an incomplete scram rod pattern, using Enclosure 26, determine that the reactor will NOT remain shutdown under all conditions without boron and identify all six rod pattern discrepancies that do not meet the rod pattern criteria for meeting reactor shutdown status in accordance with the answer key.

Given initial conditions and references, provide directions in accordance with EOP-1A and Enclosure 26 to insert control rods, and document on the supplied worksheet , 1 or more of the following:

- 1) Complete Enclosure 14 2) Reset the scram 3) Insert control rods OR
 1) Complete Enclosure 13 (Reset the scram and individually scram rods) OR
 1) Reset the scram 2) Drain the SDV 3) Initiate a manual scram.

SAT / UNSAT

RJPM-NRC18-A1 JPM ANSWER KEY

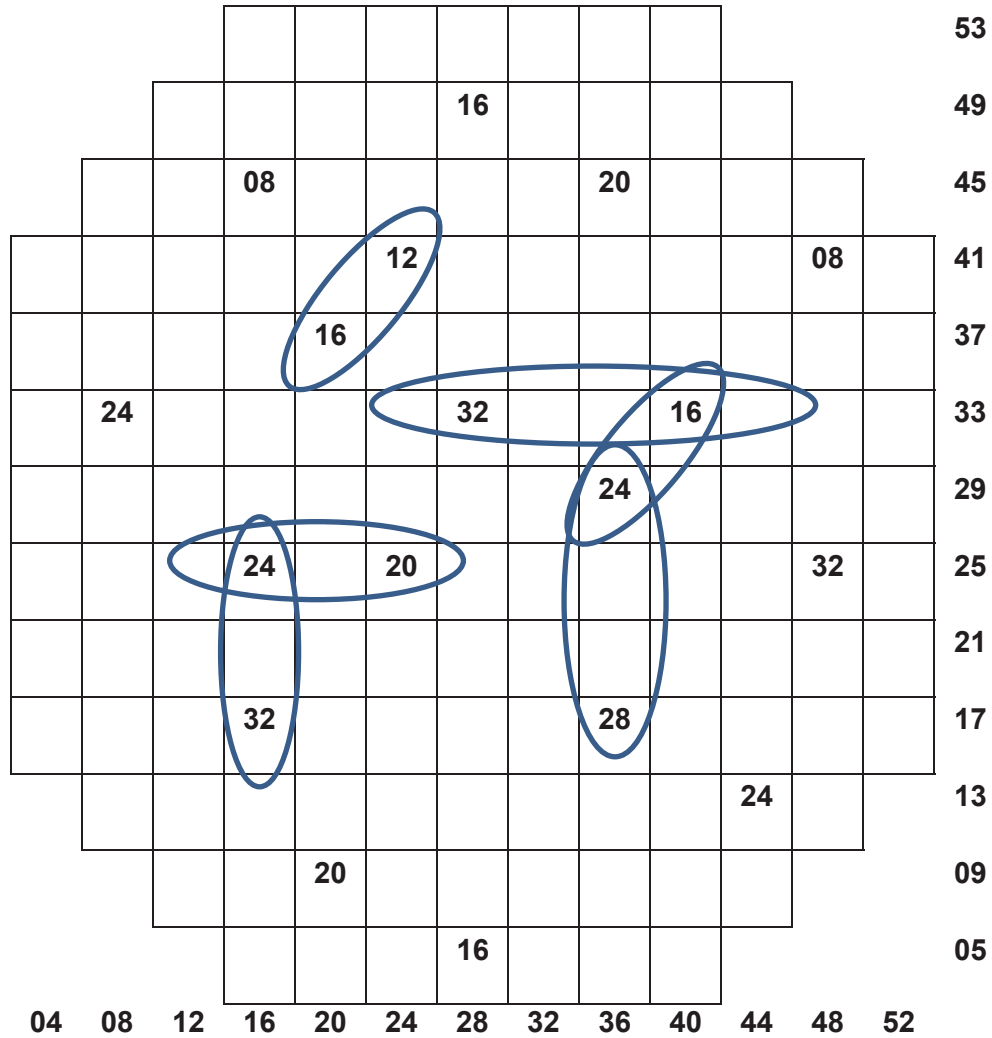


Figure 2

JPM ANSWER KEY NOTES:

Blank squares are fully inserted control rods at position 00

Discrepancies to Reactor Shutdown Criteria are circled.

Determine If the Reactor Remains Shutdown
Under All Conditions – Incomplete SCRAM

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant

Initial Condition(s):

- The reactor experienced an incomplete scram with multiple control rods that are NOT fully inserted.
- Actions for EOP-1A RPV Control – ATWS are in progress
- Initial power level after the scram was subcritical below the heating range
- Reactor water level is being maintained in the normal band
- The lowest reactor level following the scram was -30 inches
- Actions for EOP-1A RPV Control – ATWS are in progress
- The following alarms are sealed-in:
 - SCRAM PILOT VLV AIR HEADER LOW PRESSURE (H13-P680/05A/C08)
 - CRD SCRAM DISCH VOL HIGH WATER LEVEL (H13-P680/06A/A08)
 - SCRAM DISCH VOL NOT DRAINED (H13-P680/06A/C08)
- CRD flow is greater than 100 gpm and the CRD flow control valve is closed
- The only scram signal still present is CRD SCRAM DISCH VOL HIGH WATER LEVEL

Initiating Cue(s):

First Activity

- Based on the current rod pattern, determine if the reactor WILL REMAIN SHUTDOWN UNDER ALL CONDITIONS WITHOUT BORON using the supplied Enclosure 26 reference.
 - 2) Circle YES or NO on the supplied Enclosure 26 Figure 2 Worksheet.
- If it is determined the reactor does NOT meet shutdown criteria (answered NO), identify all control rods that do not meet separation criteria on the supplied Enclosure 26 Figure 2 Worksheet. Mark square with an X or a rod position. Then circle the pair of control rods with the discrepancy.

Second Activity

- Determine what directions (orders) you would give the RO to insert control rods.
 - 2) Document your orders to the RO on the supplied DIRECTIONS TO RO TO INSERT CONTROL RODS WORKSHEET.

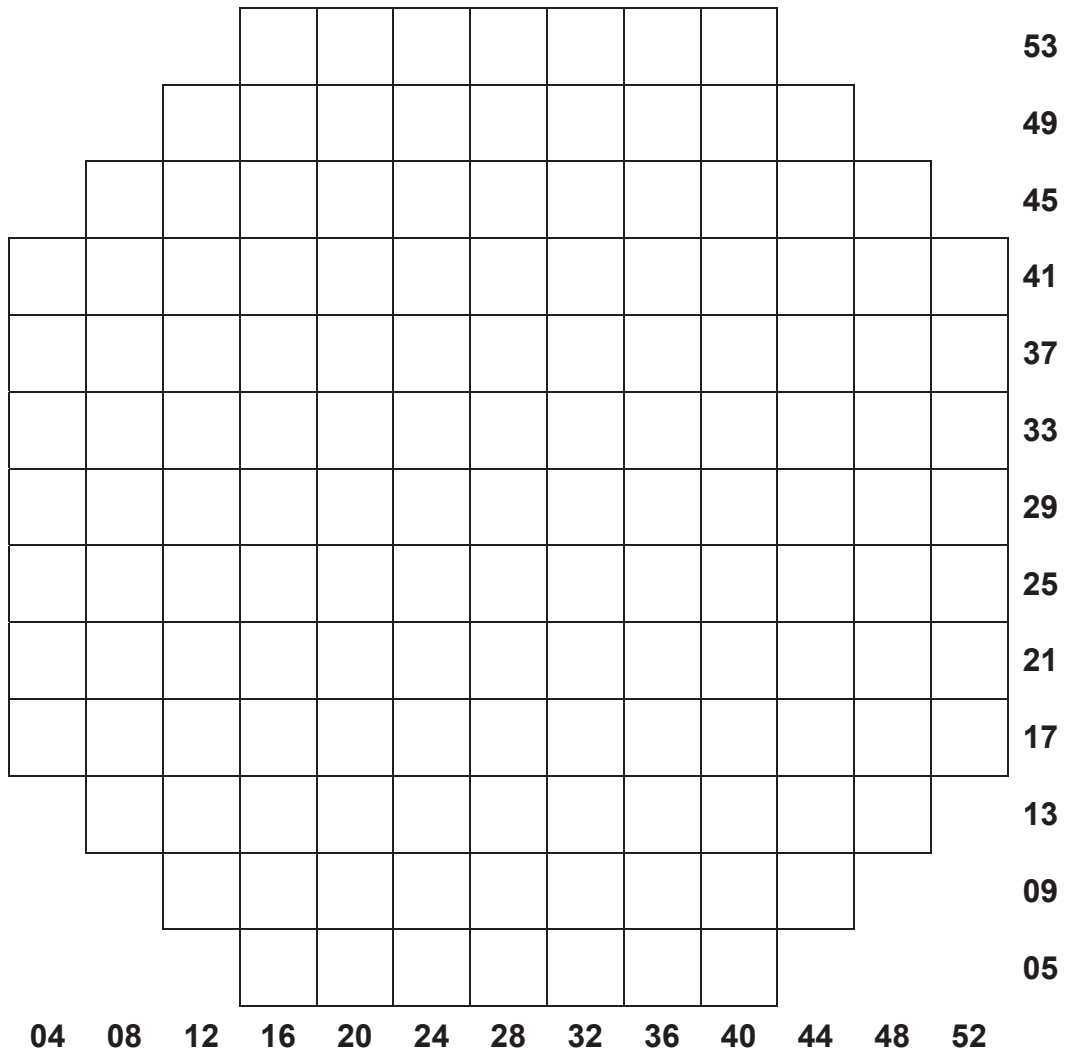
RJPM-NRC18-A1 Applicant JPM Worksheet
Figure 2

RJPM-NRC18-A5 Rev 0

ENCLOSURE 26

CONTROL ROD INSERTION METHOD / REACTOR WILL REMAIN
 SHUTDOWN UNDER ALL CONDITIONS WITHOUT BORON
 DETERMINATION

SHUTDOWN CRITERIA MET
YES NO (circle YES or NO)



ENCLOSURE 26

PAGE 4 OF 4

EOP-0005

REV.-321

PAGE 11 OF 168

DIRECTIONS TO RO TO INSERT CONTROL RODS WORKSHEET

1.

2.

3.

4.

5.

6.

Page 13 of 13

2018 A6

River Bend Nuclear Station

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-A6JPM Title: Determine If Core Alterations
Are AllowedFacility Number: RJPM-AUD10-A5
(If Bank or Modified from Bank)**JPM Attributes:**

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 min

Prepared By:	Rich Bolduc	5-4-2018
		Date
Ops Review:	Rob Melton	5-4-2018
		Date
Facility Review:	Rick Northrup	5-4-2018
		Date
Approved By:	Gabe Kimich	5-4-2018
	Project Lead or Exam Team Lead	Date

Determine If Core Alterations Are Allowed

<u>Setting:</u>	Classroom
<u>Type:</u>	SRO Only
<u>K&A:</u>	Generic 2.1.36 (4.1) and 2.2.18 (3.9)
<u>Safety Function:</u>	Generic - Emergency Procedures/Plan
<u>PRA Applicability:</u>	No
<u>10CFR 55.45(a):</u>	(7, 13)
<u>Performance:</u>	Perform
<u>Reference(s):</u>	FHP-0001 Rev 36 Control of Fuel Handling and Refueling Operations OSP-33 Rev 12 Operations with the Potential to Drain the Vessel/Cavity RBS Technical Specifications (3.3, 3.6, 3.9)
<u>Handout(s):</u>	FHP-0001 Rev 36 Control of Fuel Handling and Refueling Operations OSP-33 Rev 12 Operations with the Potential to Drain the Vessel/Cavity RBS Technical Specifications (3.3, 3.6, 3.9) Blank JPM Answer Sheet
<u># Manipulations:</u>	N/A
<u># Critical Steps:</u>	2

ADMINISTRATIVE JPM

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None

Determine If Core Alterations Are Allowed

Task Overview:

This JPM assesses and SRO applicant's ability to evaluate plant conditions during a refueling outage to determine whether or not specific a core alteration is allowed to be performed. Additionally, the SRO applicant will evaluate whether or not plant conditions will support under vessel work for removal of a LPRM dry tube.

The SRO applicant is given current refueling outage conditions. The first task is to determine whether or not a change in the fuel movement plan is allowed and justify their answer. The applicant refers to FHP-0001, Control of Fuel Handling and Refueling Operations to determine if the specified change in the fuel movement plan can be authorized. The applicant determines the change in the fuel movement plan is not allowed due to an inoperable SRM in the affected quadrant.

The second task is to determine whether or not removal of a LPRM dry tube is allowed and justify their answer. The applicant refers to OSP-33, Operations with the Potential to Drain the Vessel/Cavity (OPDRV) to determine if removal of the LPRM dry tube is allowed. The applicant determines that the removal of the LPRM dry tube is not allowed because it has the potential for draining the reactor vessel and the containment is open.

Notes to Evaluator: REVIEW PRIOR TO ADMINISTRATION OF JPM

- This JPM will be performed in the classroom.
- Critical steps are marked with a * and shaded. If some elements of the Standard are non-critical, only the critical elements of the Standard are marked with a * and shaded.
- Provide the applicant with the following references after providing the Initiating Cue.
 - FHP-0001 Rev 36 Control of Fuel Handling and Refueling Operations
 - OSP-33 Rev 12 Operations with the Potential to Drain the Vessel/Cavity
 - RBS Technical Specifications
 - Blank JPM Answer Sheet
- The Start Time is when the applicant acknowledges the Initiating Cue.
- Grading of the JPM is done in accordance with NUREG 1021.
- The steps of JPM can be done in any order.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- The plant has been shutdown for 15 days.
- The RPV head is removed.
- Containment pool water level is greater than 23' above the vessel flange.
- Refuel bridge has continuous communication with the main control room
- SRM B and C are failed down scale and I&C is making repairs
- SRM A and D are operable
- Quadrant D fuel movement is complete
- Quadrant A fuel movement is in progress at this time
- IFTS bottom valve will not open and the tube is empty
- Containment is open
- The refuel floor supervisor has called to request authorization:
 - 1) To modify the fuel movement plan to shift to core alterations in quadrant B due to the issue with IFTS.
 - 2) For the under vessel team to remove a LPRM dry tube in quadrant B

Initiating Cue(s):

- 1) Determine whether the requested change to the fuel movement plan can be authorized at this time? Explain why or why not?
- 2) Determine whether removal of the LPRM dry tube can be authorized at this time. Explain why or why not?
- 3) Document your answers and explanations on the supplied JPM Answer Sheet.

RECORD START TIME _____

Tasks: Critical steps are shaded, bolded, italicized, and denoted by an (*)

Action:

- ☐ * *Referring to Tech Specs or FHP-0001, determine whether the requested change to the fuel movement plan can be authorized at this time and explain why or why not.*

Standard: *Documents on the JPM Answer Sheet the fuel movement plan cannot be changed. Reason: no operable SRM in 'B' quadrant.*

SAT / UNSAT

Evaluator Cue: None

Evaluator Note: FHP-0001 includes Tech Spec 3.3.1.2 in step 2.7. The applicant is given a choice of reference to use to determine the answer.

Performance Comments:

Action:

- ☐ * *Referring to OSP-33, FHP-0001 or Tech Specs, determine whether the removal of the LPRM dry tube can be authorized at this time and explain why or why not.*

Standard: *Documents on the JPM Answer Sheet that the LPRM dry tube cannot be removed. Reason: removable of the LPRM dry tube would be an OPDRV which is not allowed with the containment open.*

SAT / UNSAT

Evaluator Cue: After applicant has finished filling out the JPM ANSWER SHEET or at the discretion of the evaluator, state, "That completes the JPM" and then record Stop Time

Evaluator Note: OSP-33 Step 5.1 defines an OPDRV and lists specific components and systems, if breached, would be considered an OPDRV. LPRM dry tube is listed. TS 3.6.1.10 requires that primary containment integrity be maintained during OPDRVs. This info is also located in FHP-0001 Step 4.1 and step 6 of Attachment 2.

Performance Comments:

TIME STOP: _____

Task Standard(s):

- 1) Documents on the JPM Answer Sheet the fuel movement plan cannot be changed.
Reason: no operable SRM in 'B' quadrant.
- 2) Documents on the JPM Answer Sheet that the LPRM dry tube cannot be removed.
Reason: removable of the LPRM dry tube would be an OPDRV which is not allowed with the containment open

SAT / UNSAT

JPM Worksheet Answer Key

Document whether the requested refueling activity can be authorized and a short explanation for you answer.	
Requested Activity	Explanation for Answer
<p>Change fuel movement plan to perform core alteration in quadrant B?</p> <p><input type="checkbox"/> Yes</p> <p><input checked="" type="checkbox"/> No</p>	<p><u>Reason: SRM INOP in B Quadrant</u></p> <hr/> <hr/> <hr/>
<p>Remove LPRM dry tube?</p> <p><input type="checkbox"/> Yes</p> <p><input checked="" type="checkbox"/> No</p>	<p><u>Reason: Removing dry tube is an OPDRV.</u></p> <p><u>Primary containment integrity is required.</u></p> <p><u>Containment is Open</u></p> <hr/> <hr/> <hr/>

Determine If Core Alterations Are Allowed

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant

Initial Condition(s):

- The plant has been shutdown for 15 days.
- The RPV head is removed.
- Containment pool water level is greater than 23' above the vessel flange.
- Refuel bridge has continuous communication with the main control room
- SRM B and C are failed down scale and I&C is making repairs
- SRM A and D are operable
- Quadrant D fuel movement is complete
- Quadrant A fuel movement is in progress at this time
- IFTS bottom valve will not open and the tube is empty
- Containment is open
- The refuel floor supervisor has called to request authorization:
 - 1) To modify the fuel movement plan to shift to core alterations in quadrant B due to the issue with IFTS.
 - 2) For the under vessel team to remove a LPRM dry tube in quadrant B

Initiating Cue(s):

- 1) Determine whether the requested change to the fuel movement plan can be authorized at this time? Explain why or why not?
- 2) Determine whether removal of the LPRM dry tube can be authorized at this time. Explain why or why not?
- 3) Document your answers and explanations on the supplied JPM Answer Sheet.

JPM Answer Sheet for Examinee Use

Document whether the requested refueling activity can be authorized and a short explanation for you answer.	
Requested Activity	Explanation for Answer
<p>Modify fuel movement plan to perform core alteration in quadrant B?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>	<p><u>Reason:</u> _____</p> <p>_____</p> <p>_____</p>
<p>Remove LPRM dry tube?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>	<p><u>Reason:</u> _____</p> <p>_____</p> <p>_____</p>

2018 A7

River Bend Nuclear Station

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-A7JPM Title: Determine Plant Safety Level
During Shutdown ConditionsFacility Number: RJPM-NRC12-A6
(If Bank or Modified from Bank)**JPM Attributes:**

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 20 min

Prepared By:	Rich Bolduc	5-4-2018
		Date
Ops Review:	Rob Melton	5-4-2018
		Date
Facility Review:	Rick Northrup	5-4-2018
		Date
Approved By:	Gabe Kimich	5-4-2018
	Project Lead or Exam Team Lead	Date

Determine Plant Safety Level During Shutdown Conditions

<u>Setting:</u>	Classroom
<u>Type:</u>	SRO Only
<u>K&A:</u>	Generic 2.2.18 (3.9)
<u>Safety Function:</u>	Generic – Equipment Control
<u>PRA Applicability:</u>	No
<u>10CFR 55.45(a):</u>	(13)
<u>Performance:</u>	Perform
<u>Reference(s):</u>	OSP-0037, Rev 36 Shutdown Operations Protection Plan (SOPP)
<u>Handout(s):</u>	OSP-0037, Rev 36 Shutdown Operations Protection Plan (SOPP) Incomplete SOPP Status Sheet
<u>Manipulations:</u>	N/A
<u># Critical Steps:</u>	4

ADMINISTRATIVE JPM

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None

Determine Plant Safety Level During Shutdown Conditions

Task Overview:

This JPM assesses and SRO candidate's ability to perform a shutdown risk assessment.

The SRO candidate is given current shutdown conditions. The candidate is then directed to determine the plant safety level by completing a Shutdown Operations Protection Plan (SOPP) Status Sheet in accordance with procedure OSP-0037, Shutdown Operations Protection Plan.

Using the given plant conditions, the candidate refers to multiple attachments in OSP-0037 to determine the safety level for Shutdown Cooling Function, Inventory Control Function, and Fuel Building Ventilation Function. From those individual risk assessments, the candidate determines the overall risk for the given shutdown conditions. The individual and overall risk assessments are documented on the SOPP Status Sheet.

Notes to Evaluator: REVIEW PRIOR TO ADMINISTRATION OF JPM

- This JPM will be performed in the classroom.
- Critical steps are marked with a * and shaded. If some elements of the Standard are non-critical, only the critical elements of the Standard are marked with a * and shaded.
- Provide the applicant with the following after providing the Initiating Cue.
 - OSP-0037, Rev 36 Shutdown Operations Protection Plan (SOPP)
 - Incomplete SOPP Status Sheet
- The Start Time is when the candidate acknowledges the Initiating Cue.
- Grading of the JPM is done in accordance with NUREG 1021.
- The steps of JPM can be done in any order.
- When the applicant begins the JPM, he/she will recognize that the incomplete SOPP Status Sheet needs to be completed for Shutdown Cooling, Inventory Control, Fuel Building, and Overall Risk. The applicant will then enter OSP-0037, Shutdown Operations Protection Plan and review the applicable sections for the guidelines for Shutdown Cooling (4.2) and Inventory Control (4.3). The applicant will then use the attachments to determine the color states to complete the SOPP Status Sheet. The JPM depends upon completion of the SOPP Status Sheet.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

RBS is at day 25 of Refueling Outage 15 (RF-15). The last time the SOPP Status Sheet was completed it indicated that all Safety Levels were GREEN. Since that time the following changes have occurred:

- The Upper Storage Pool is +23' 1" and the cavity gate has been closed to prepare for draining the upper cavity.
- Reactor coolant temperature is 105°F.
- Decay heat is Medium
- RHR 'A' was started in Shutdown Cooling; RHR 'B' was secured and is available for shutdown cooling
- All fuel handling activities in Containment and Fuel Building have been completed
- ADHR is not available due to signature testing of the suction valves
- LPCS is now Operable following STP run.
- All other equipment status is unchanged from last shift

Initiating Cue(s):

Complete the remaining entries of SOPP Status Sheet to show the Overall Risk (Plant Safety Level) per OSP-0037, Shutdown Operations Protection Plan.

RECORD START TIME _____

Tasks: Critical steps are shaded, bolded, italicized, and denoted by an (*)

Action: <input type="checkbox"/> * <i>Using Attachment 1, determine the Safety Level for Shutdown Cooling Function Color State</i>	
<u>Standard:</u> <i>Documents on the SOPP Status Sheet the Shutdown Cooling Function Color State is YELLOW.</i>	
SAT / UNSAT	
<u>Evaluator Cue:</u> None	
<u>Evaluator Note:</u> From Attachment 1 YELLOW Color State is derived from Med Decay Heat/ Not Flooded Up With only RHR A&B available, and ADHR is not available.	
<u>Performance Comments:</u>	

Action: <input type="checkbox"/> * <i>Using Attachment 2, determine the Safety Level for Inventory Control Function Color State.</i>	
<u>Standard:</u> <i>Documents on the SOPP Status Sheet the Inventory Control Function Color State is GREEN.</i>	
SAT / UNSAT	
<u>Evaluator Cue:</u> None	
<u>Evaluator Note:</u> From Attachment 2 GREEN Color State is derived from RHR A&B and LPCS available therefore 3 ECCS trains are available and >23' above the flange	
<u>Performance Comments:</u>	

<u>Action:</u> <input type="checkbox"/> * <i>Using Attachment 6 determine the Safety Level for Fuel Building Ventilation Function Color State.</i>	
<u>Standard:</u> <i>Documents on the SOPP Status Sheet the Fuel Building Ventilation Function Color State is GREEN.</i>	SAT / UNSAT
<u>Evaluator Cue:</u> None	
<u>Evaluator Note:</u> From Attachment 6 GREEN Color State is derived from previous shift, the color was Green, indicating that 2 HVF Trains were available, and with no fuel movement in progress the color remains GREEN	
<u>Performance Comments:</u>	

Action:

- ☐ * *In accordance with Step 3.13, using the Color State from the Key Shutdown Function Areas Determine the Overall Risk*

Standard: *Documents on the SOPP Status Sheet the Overall Risk Color State is YELLOW.*

SAT / UNSAT

Evaluator Cue: After applicant has finished filling out the JPM ANSWER SHEET or at the discretion of the evaluator, state, "That completes the JPM" and then record Stop Time

Evaluator Note: Step 3.13 states, "Overall Risk – The most conservative color-code assignment found in the Shutdown Safety Level and Shutdown EOOS Safety Index. This approach insures that both defense-in-depth and core damage risk are evaluated and the most conservative value is chosen." Since the Shutdown Cooling Safety Level is YELLOW (and all others are GREEN), Overall Risk is Yellow.

Performance Comments:

TIME STOP: _____

Task Standard(s):

Correctly document Shutdown Cooling, Inventory Control, Fuel Building, and Overall Risk Color States on the attached SOPP Status Sheet in accordance with SOPP Status Sheet Answer Key.

SAT / UNSAT

ANSWER KEY
SHUTDOWN OPERATIONS PROTECTION PLAN (SOPP)
Status Sheet

Shutdown EOOS Safety Index	9.4 - GREEN
1. Shutdown Cooling	<u>YELLOW</u>
2. Inventory Control	<u>GREEN</u>
3. AC Power	GREEN
4. Fuel Pool Cooling	GREEN
5. Containment Control	GREEN
6. Fuel Building	<u>GREEN</u>
7. Reactivity Control	GREEN
8. Fire	GREEN
OVERALL RISK	<u>YELLOW</u>

Determine Plant Safety Level During Shutdown Conditions

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant

Initial Condition(s):

RBS is at day 25 of Refueling Outage 15 (RF-15). The last time the SOPP Status Sheet was completed it indicated that all Safety Levels were GREEN. Since that time the following changes have occurred:

- The Upper Storage Pool is +23' 1" and the cavity gate has been closed to prepare for draining the upper cavity.
- Reactor coolant temperature is 105°F.
- Decay heat is Medium
- RHR 'A' was started in Shutdown Cooling; RHR 'B' was secured and is available for shutdown cooling
- All fuel handling activities in Containment and Fuel Building have been completed
- ADHR is not available due to signature testing of the suction valves
- LPCS is now Operable following STP run.
- All other equipment status is unchanged from last shift

Initiating Cue(s):

Complete the remaining entries of SOPP Status Sheet to show the Overall Risk (Plant Safety Level) per OSP-0037, Shutdown Operations Protection Plan.

Give this page to the applicant

SHUTDOWN OPERATIONS PROTECTION PLAN (SOPP) Status Sheet

Shutdown EOOS Safety Index	<u>9.4 - GREEN</u>
1. Shutdown Cooling	_____
2. Inventory Control	_____
3. AC Power	<u>GREEN</u>
4. Fuel Pool Cooling	<u>GREEN</u>
5. Containment Control	<u>GREEN</u>
6. Fuel Building	_____
7. Reactivity Control	<u>GREEN</u>
8. Fire	<u>GREEN</u>
OVERALL RISK	_____

2018 A8

River Bend Nuclear Station

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-A8JPM Title: Evaluate and Administer Potassium Iodide to Individual Following Airborne ExposureFacility Number: N/A
(If Bank or Modified from Bank)**JPM Attributes:**

<input checked="" type="checkbox"/> New	<input type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 10 min

Prepared By:	Rich Bolduc	5-4-2018
		Date
Ops Review:	Rob Melton	5-4-2018
		Date
Facility Review:	Rick Northrup	5-4-2018
		Date
Approved By:	Gabe Kimich	5-4-2018
	Project Lead or Exam Team Lead	Date

Evaluate and Administer Potassium Iodide to Individual Following Airborne Exposure

<u>Setting:</u>	Classroom
<u>Type:</u>	SRO Only
<u>K&A:</u>	Generic 2.3.4 (3.7)
<u>Safety Function:</u>	Generic – Radiation Control
<u>PRA Applicability:</u>	No
<u>10CFR 55.45(a):</u>	(10)
<u>Performance:</u>	Perform
<u>Reference(s):</u>	EIP-2-012 Rev 21 Radiation Exposure Controls EN-FAP-EP-009 Rev 1 Use of KI for the Emergency Response Organization
<u>Handout(s):</u>	EIP-2-012 Rev 21 Radiation Exposure Controls EN-FAP-EP-009 Rev 1 Use of KI for the Emergency Response Organization EIP-2-012 Rev 21 Attachment Three – Potassium Iodide Administration Form
<u># Manipulations:</u>	N/A
<u># Critical Steps:</u>	2

ADMINISTRATIVE JPM

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None

Evaluate and Administer Potassium Iodide To Individual Following Airborne Exposure

Task Overview:

The JPM assesses an SRO candidate's knowledge for evaluating whether an individual airborne exposure to iodine 131 will exceed 5 REM CEDE and to follow Emergency Plan Implementing Procedures to administer potassium iodide to the individual.

The conditions presented to the SRO candidate are that a plant transient has occurred resulting in a gross fuel failure; following the plant scram, a steam leak develops in the containment building. An individual in the containment building was exposed to high airborne concentrations of iodine 131. The emergency plan has been implemented; however, emergency response facilities have not yet been activated. Based on the iodine 131 concentration and the time that the individual was exposed, the SRO candidate acting as Emergency Director evaluates using a graph whether or not the exposure result in greater than 5 REM CEDE to administer potassium iodide. The SRO candidate will determine that potassium iodide is indicated and will follow emergency plan procedures to administer potassium iodide to the affected individual.

Notes to Evaluator: REVIEW PRIOR TO ADMINISTRATION OF JPM

- This JPM will be performed in the classroom.
- Critical steps are marked with a * and shaded. If some elements of the Standard are non-critical, only the critical elements of the Standard are marked with a * and shaded.
- Provide the applicant with the following references after providing the Initiating Cue:

EIP-2-012 Rev 21 Radiation Exposure Controls

EN-FAP-EP-009 Rev 1 Use of KI for the Emergency Response Organization

DO NOT GIVE APPLICANT PARTIALLY COMPLETED KI FORM UNTIL HE DETERMINES THAT KI IS REQUIRED AND REQUESTS JPM EVALUATOR TO COMPLETE THE FORM.

- The Start Time is when the candidate acknowledges the Initiating Cue.
- Grading of the JPM is done in accordance with NUREG 1021.
- The steps of JPM can be done in any order.
- When the applicant begins the JPM, he will review the provided references for guidance on criteria and methodology for administering potassium iodide. The first verifiable action will be the interpretation of the Time to 5 REM CDE Verses I-131 Concentration Guideline Graph. The graph is located in Attachment 2 of EIP-2-012, Radiation Exposure Controls and Attachment 7.1 of EN-FAP-EP-009, Use of KI for the Emergency Response Organization.

Name: _____ Time Start: _____ Time Stop: _____

ATTENTION: DO NOT GIVE APPLICANT PARTIALLY COMPLETED KI FORM UNTIL HE DETERMINES THAT KI IS REQUIRED AND HE REQUESTS JPM EVALUATOR TO COMPLETE THE FORM.

Initial Condition(s):

- A plant transient has occurred resulting in a gross fuel failure.
- Following the plant scram, a steam leak developed in the containment building.
- An individual was directly exposed to the steam environment in the containment building for approximately 15 minutes prior to evacuating.
- The estimated I-131 airborne concentration at the time of the exposure was 1.00E-04 uCi/cc
- The emergency plan has been implemented; however, emergency response facilities have not yet been activated.

Initiating Cue(s):

As Emergency Director, determine whether or not the individual exposed to the radioactive steam leak in the containment building should receive potassium iodide based on 5 REM CDE Guideline.

If administering potassium iodide is required, have the individual (your JPM evaluator) complete a Potassium Iodide Administration Form.

RECORD START TIME _____

Tasks: Critical steps are shaded, bolded, italicized, and denoted by an (*)

Action:

- ☐ * *Determine if potassium iodide should be administered using Time to 5 REM
CDE I-131 Concentration Guideline Graph*

Standard: *Plots 1.00E-4 on the horizontal axis and interpolates 15 minutes on the vertical axis as slightly above 1.00E+1. Determines that the plotted point is located to the right and above the line indicating that thyroid CDE is greater than 5 REM*

SAT / UNSAT

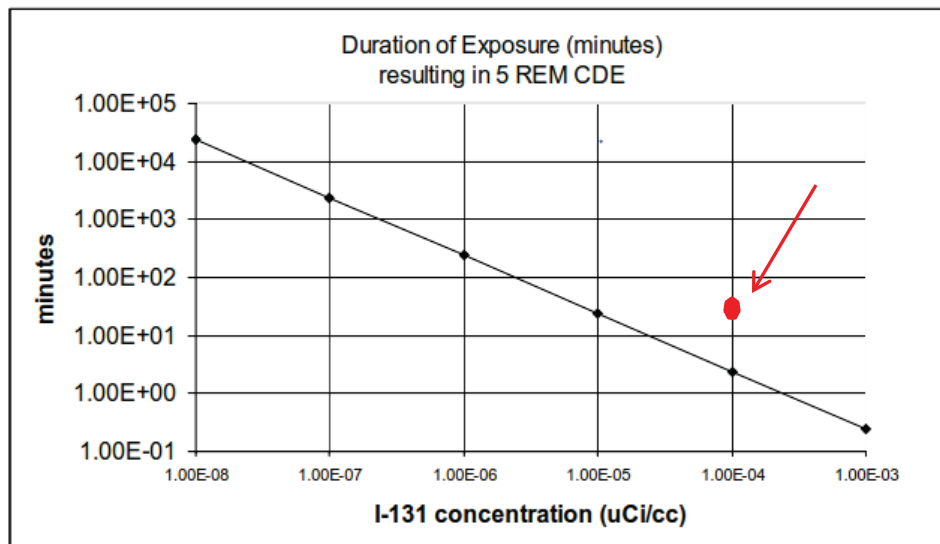
Evaluator Cue:

Evaluator Note: See graph below for plotted point based on data provided

Performance Comments:

ATTENTION: DO NOT GIVE APPLICANT PARTIALLY COMPLETED KI FORM UNTIL HE DETERMINES THAT KI IS REQUIRED AND HE REQUESTS JPM EVALUATOR TO COMPLETE THE FORM.

Time to 5 REM CDE verses I-131 concentration guideline



Action:

☐ * *Complete and approve a Potassium Iodide (KI) Administration Form*

Standard: *Potassium Iodide (KI) Administration Form box with ≥ 5 Rem checked and applicant has signed and dated the form.*

SAT / UNSAT

Evaluator Cue: When asked by the applicant to complete the top portion of the Potassium Iodide (KI) Administration Form, provide the applicant with the partially completed Potassium Iodide (KI) Administration Form handout.

Evaluator Cue: After applicant has completed the Potassium Iodide (KI) Administration Form, or at the discretion of the evaluator, state, "That completes the JPM" and then record Stop Time

Evaluator Note: See Potassium Iodide (KI) Administration Form Answer Key for details

Performance Comments:

TIME STOP: _____

Task Standard(s):

Determines that thyroid CDE is greater than 5 REM requiring administering potassium iodide.
Completes the Potassium Iodide (KI) Administration Form box with ≥ 5 Rem checked, signed and dated the form.

SAT / UNSAT

KI FORM ANSWER KEY

ATTACHMENT 3
PAGE 1 OF 1

POTASSIUM IODIDE (KI) ADMINISTRATION FORM

Name: Newman / Randy / Thomas 005-98-1895
Last First Middle SSN

- Yes ☒ No Have you any known allergies? If so, please describe major severity of allergy and medications taken if any.
- Yes ☒ No When eating seafood or shellfish, do you suffer from symptoms of stomach or bowel upset or skin eruption? If so, explain.
- Yes ☒ No Has any physician told you that you have a sensitivity to iodine?
- Yes ☒ No If you have ever had a gallbladder dye test, kidney x-ray requiring dye injection, thyroid isotope scan, did you have any reactions?

Please explain any Yes answers:

* Known Iodide Allergy/Previous Allergic Reaction: (Mark One) ☐ Yes ☒ No

I verify that I have read and understand the precaution leaflet. I understand that taking thyroid blocking agent (KI) is strictly voluntary.

I (Mark One) ☒ Do ☐ Do Not choose to take KI when approved.

RT Newman Today's Date
Signature of Individual Date

Duration of Exposure: 15 (minutes) I-131 Concentration: 1.00E-4 (μCi/cc in air)
Estimated Thyroid Dose Commitment: (Mark one) ☐ < 5 Rem ☒ ≥ 5 Rem
Respiratory Protection Worn During Exposure: (Mark One) ☐ Yes ☒ No
Respiratory Protection Factor: 1 Date of Exposure: Today's Date

CAUTION

If the above allergic reaction statement * is marked 'Yes', then do not administer KI.

Approved: Applicant Signature Todays date&time ☐ Mark if telecon/radio approval
ED/EPM Date/Time

Individual notified KI is approved for use: (Date/Time) Todays date&time

KI taken (Date/Time) _____/_____

Notes:

Yellow highlighted items are critical

Evaluate and Administer Potassium Iodide To Individual Following Airborne Exposure

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

EIP-2-012 REV - 21 PAGE 14 OF 14

THIS PAGE INTENTIONALLY LEFT BLANK

**ATTENTION: DO NOT GIVE APPLICANT PARTIALLY
COMPLETED KI FORM ON THE PREVIOUS PAGE UNTIL HE
DETERMINES THAT KI IS REQUIRED AND HE REQUESTS
JPM EVALUATOR TO COMPLETE THE FORM.**

Give this page to the applicant**Initial Condition(s):**

- A plant transient has occurred resulting in a gross fuel failure.
- Following the plant scram, a steam leak developed in the containment building.
- An individual was directly exposed to the steam environment in the containment building for approximately 15 minutes prior to evacuating.
- The estimated I-131 airborne concentration at the time of the exposure was 1.00E-04 uCi/cc
- The emergency plan has been implemented; however, emergency response facilities have not yet been activated.

Initiating Cue(s):

As Emergency Director, determine whether or not the individual exposed to the radioactive steam leak in the containment building should receive potassium iodide based on 5 REM CDE Guideline.

If administering potassium iodide is required, have the individual (your JPM evaluator) complete a Potassium Iodide Administration Form.

Name: _____ / _____ / _____ _____
Last First Middle SSN

Yes	No	If you have ever had a gallbladder dye test, kidney x-ray requiring dye injection, thyroid isotope scan, did you have any reactions?

I (Mark One) ☐ Do ☐ Do Not choose to take KI when approved.

Signature of Individual

Date

Respiratory Protection Factor: _____ Date of Exposure: _____

If the above allergic reaction statement * is marked 'Yes', then do not administer KI.

KI taken (Date/Time) _____/_____/_____

2018 A9

River Bend Nuclear Station

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-A9JPM Title: NRC Notification RequirementsFacility Number: N/A

(If Bank or Modified from Bank)

JPM Attributes:

<input checked="" type="checkbox"/> New	<input type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 15 min

Prepared By:	Rich Bolduc	5-4-2018
		Date
Ops Review:	Rob Melton	5-4-2018
		Date
Facility Review:	Rick Northrup	5-4-2018
		Date
Approved By:	Gabe Kimich	5-4-2018
	Project Lead or Exam Team Lead	Date

NRC Notification Requirements

<u>Setting:</u>	Classroom
<u>Type:</u>	SRO Only
<u>K&A:</u>	Generic 2.4.30 (4.1)
<u>Safety Function:</u>	Generic - Emergency Procedures/Plan
<u>PRA Applicability:</u>	No
<u>10CFR 55.45(a):</u>	(11)
<u>Performance:</u>	Perform
<u>Reference(s):</u>	EN-LI-108 Rev 15 Event Notification and Reporting NUREG 1022 Rev 3, Event Reporting Guidelines 10CFR50.72 and 50.73 Rev 3 Supp1 NRC Form 361 Event Notification Worksheet
<u>Handout(s):</u>	EN-LI-108 Rev 15 Event Notification and Reporting NUREG 1022 Rev 3, Event Reporting Guidelines 10CFR50.72 and 50.73 NRC Form 361 Event Notification Worksheet
<u># Manipulations:</u>	N/A
<u># Critical Steps:</u>	8

ADMINISTRATIVE JPM

Simulator Setup/Required Plant Conditions:

- None

Safety Concerns:

- None

NRC Notification Requirements

Task Overview:

This JPM assesses an SRO applicant's knowledge associated with NRC notification requirements in accordance with 10 CFR 50.72.

The applicant is given conditions associated with the transient that includes a manual scram, automatic HPCS and RCIC initiations, and containment isolations. The applicant is directed to determine the applicable 10 CFR 50.72 reportability requirements, the reason that they apply, and the associated time limits for reporting under that category. The applicant is informed REAP is not available for use (REAP - Reportability Evaluation Assistance Program). The applicant records his results on a JPM Answer Sheet.

Notes to Evaluator: REVIEW PRIOR TO ADMINISTRATION OF JPM

- This JPM will be performed in the classroom.
- Critical steps are marked with a * and shaded. If some elements of the Standard are non-critical, only the critical elements of the Standard are marked with a * and shaded.
- Provide the applicant with the following references after providing the Initiating Cue.
 - EN-LI-108 Rev 15 Event Notification and Reporting
 - NUREG 1022 Rev 3, Event Reporting Guidelines 10CFR50.72 and 50.73
 - NRC Form 361 Event Notification Worksheet
 - JPM Answer Sheet for Examinee Use
- The Start Time is when the candidate acknowledges the Initiating Cue.
- Grading of the JPM is done in accordance with NUREG 1021.
- The steps of JPM can be done in any order.
- When the applicant begins the JPM, it is expected that he will begin by reviewing EN-LI-108 Step [2] General Information and Step [3] Immediate Reports. Step [3](e) provides direction for notifying site management, the resident inspector, etc. The applicant should skip over doing this because it is not part of the assigned task. He will also see the step (f) which concerns filling out NRC form 361, but he should not fill out this form because it is not part of the assigned task, but he can use the form as a guide. It is expected that the applicant will then refer to Attachment 9.1, Event Notification Reporting and refer to the 50.72 listings of conditions. The applicant will then refer to NUREG 1022 for clarification of the 50.72 reporting requirement. After this review of references, the applicant will complete his first verifiable action by identifying one of the 50.72 reporting requirements and associated time limit for reporting. Therefore, the JPM begins with identification of one of the 50.72 reporting requirements.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Plant was operating at 50 percent power with no equipment out of service.
- A complete loss of feedwater occurred
- Operators inserted a manual reactor scram.
- All control rods inserted.
- Reactor water level reached a low level of -45" before recovering to the normal band.
- HPCS and RCIC auto-initiated and injected.
- Level 2 isolations and initiations have been verified.

Initiating Cue(s):

- Identify each applicable 10 CFR 50.72 reportable event subsection designation, associated condition, and time limit for reporting
- Record your findings on the JPM ANSWER SHEET provided.
- REAP is not available. (REAP - Reportability Evaluation Assistance Program)

RECORD START TIME _____

Tasks: Critical steps are shaded, bolded, italicized, and denoted by an (*)**Action:**

- ☐ * *Locate and identify applicability of 10 CFR 50.72(b)(2)(iv)(B) for reactor scram.*

Standard: *Documents at a minimum 10 CFR 50.72(b)(2)(iv)B for reactor scram (or RPS actuation) on the JPM ANSWER SHEET.*

SAT / UNSAT

Evaluator Cue: None

Evaluator Note: 50.72(b)(3)(iv)A includes RPS actuation from list given in 50.72(b)(3)(iv)B, “(1) Reactor protection system (RPS) including: reactor scram and reactor trip.⁵ Annotation ⁵ states, “ Actuation of the RPS when the reactor is critical is reportable under paragraph (b)(2)(iv) of this section.

The examinee may identify an additional 4 hour report for making an off-site notification under 10 CFR 50.72(b) (2)(xi). This reporting criteria is applicable; however, it is bounded by the above notification. Therefore, it is not included in the grading criteria.

Performance Comments:**Action:**

- ☐ * *Determine required reporting time for 10 CFR 50.72(b)(2)(iv)(B) is immediately but no later than four hours.*

Standard: *Documents that the reporting time limit is no later than (or within) four hours on the JPM ANSWER SHEET.*

SAT / UNSAT

Evaluator Cue: None**Evaluator Note:****Performance Comments:**

Action:

- ☐ * *Locate and identify applicability of 10 CFR 50.72(b)(2)(iv)(A) for HPCS injection.*

Standard: *Documents at a minimum 10 CFR 50.72(b)(2)(iv)A for HPCS injection (or ECCS injection) on the JPM ANSWER SHEET.*

SAT / UNSAT

Evaluator Cue: None

Evaluator Note:

Performance Comments:

Action:

- ☐ * *Determine required reporting time for 10 CFR 50.72(b)(2)(iv)(A) is immediately but no later than four hours.*

Standard: *Documents that the reporting time limit is no later than (or within) four hours on the JPM ANSWER SHEET.*

SAT / UNSAT

Evaluator Cue: None

Evaluator Note: None

Performance Comments:

Action:

- ☐ * *Locate and identify applicability of 10 CFR 50.72(b)(3)(iv)(A) for valid actuation of HPCS/RCIC and containment isolation signals.*

Standard: *Documents at a minimum 10 CFR 50.72(b)(3)(iv)A for either HPCS/RCIC or containment isolation signals on the JPM ANSWER SHEET. May alternately refer to 10CFR 50.72(b)(3)(iv)(B)(2, 4 and 5) for these reportability requirements.*

SAT / UNSAT

Evaluator Cue: None

Evaluator Note: 10 CFR 50.72(b)(3)(iv)(A) references systems listed in (b)(3)(iv)(B). (b)(3)(iv)(B) includes (2) for general containment isolation signals, 4 for HPCS, and (5) is for RCIC

Performance Comments:

Action:

- ☐ * *Determine required reporting time for 10 CFR 50.72(b)(3)(iv)(A) is immediately but no later than eight hours.*

Standard: *Documents that the reporting time limit is no later than (or within) eight hours on the JPM ANSWER SHEET.*

SAT / UNSAT

Evaluator Cue: After applicant has finished filling out the JPM ANSWER SHEET or at the discretion of the evaluator, state, "That completes the JPM" and then record Stop Time

Performance Comments:

TIME STOP: _____

Task Standard(s):

Correctly document each applicable 10 CFR 50.72 subsection designation, associated condition, and time limit for reporting in accordance with the minimum requirements specified on the attached JPM ANSWER SHEET.

SAT / UNSAT

JPM ANSWER KEY

Document each applicable 10 CFR 50.72 subsection designation, associated condition, and time limit for reporting		
50.72 Subsection Designation	Associated Condition	Time Limit
10 CFR 50.72(b)(2)(iv)B	reactor scram (or RPS actuation)	four hours
10 CFR 50.72(b)(2)(iv)A	for HPCS injection (or ECCS injection)	four hours
10 CFR 50.72(b)(3)(iv)A <u>OR</u>	Minimum of either HPCS/RCIC Containment Isolation Signals	eight hours
(The applicant may also or instead identify 10CFR 50.72(b)(3)(iv)(B) (2, 4 & 5) for this reportability requirements.)		

Evaluator Info for NRC Form 361

NRC FORM 361 (12-2000)				U.S. NUCLEAR REGULATORY COMMISSION OPERATIONS CENTER			
REACTOR PLANT EVENT NOTIFICATION WORKSHEET							
EN # XXXXXXXXXX							
NRC OPERATION TELEPHONE NUMBER: PRIMARY -- 301-816-5100 or 800-532-3469*, BACKUPS -- [1st] 301-951-0550 or 800-449-3694*, [2nd] 301-415-0550 and [3rd] 301-415-0553 *Licensees who maintain their own ETS are provided these telephone numbers.							
NOTIFICATION TIME XXXXXXX	FACILITY OR ORGANIZATION XXXXXXXXXXXXX	UNIT 1	NAME OF CALLER XXXXXXXXXXXXX			CALL BACK # XXXXXXXXXXXXX	
EVENT TIME & ZONE XXXXXXX	EVENT DATE XXXXXX	POWER/MODE BEFORE XXXXXXXXXXXXX			POWER/MODE AFTER XXXXXXXXXXXXX		
EVENT CLASSIFICATIONS				1-Hr. Non-Emergency 10 CFR 50.72(b)(1)			
<input type="checkbox"/> GENERAL EMERGENCY	GEN/AAEC	<input type="checkbox"/>	TS Deviation		ADEV	<input type="checkbox"/> (v)(A) Safe S/D Capability	AINA
<input type="checkbox"/> SITE AREA EMERGENCY	SIT/AAEC	<input type="checkbox"/>	4-Hr. Non-Emergency 10 CFR 50.72(b)(2)			<input type="checkbox"/> (v)(B) RHR Capability	AINB
<input type="checkbox"/> ALERT	ALE/AAEC	<input type="checkbox"/> (i)	TS Required S/D		ASHU	<input type="checkbox"/> (v)(C) Control of Rad Release	AINC
<input type="checkbox"/> UNUSUAL EVENT	UNU/AAEC	<input checked="" type="checkbox"/> (iv)(A)	ECCS Discharge to RCS		ACCS	<input type="checkbox"/> (v)(D) Accident Mitigation	AIND
<input type="checkbox"/> 50.72 NON-EMERGENCY (see next columns)		<input checked="" type="checkbox"/> (iv)(B)	RPS Actuation (scram)		ARPS	<input type="checkbox"/> (xii) Offsite Medical	AMED
<input type="checkbox"/> PHYSICAL SECURITY (73.71)	DDDD	<input type="checkbox"/> (xi)	Offsite Notification		APRE	<input type="checkbox"/> (xiii) Loss Comm/Asmt/Resp	ACOM
<input type="checkbox"/> MATERIAL/EXPOSURE	B???	<input type="checkbox"/>	8-Hr. Non-Emergency 10 CFR 50.72(b)(3)			60-Day Optional 10 CFR 50.73(a)(1)	
<input type="checkbox"/> FITNESS FOR DUTY	HFIT	<input type="checkbox"/> (ii)(A)	Degraded Condition		ADEG	<input type="checkbox"/> Invalid Specified System Actuation	AINV
<input type="checkbox"/> OTHER UNSPECIFIED REQMT. (see last column)		<input type="checkbox"/> (ii)(B)	Unanalyzed Condition		AUNA	Other Unspecified Requirement (Identify)	
<input type="checkbox"/> INFORMATION ONLY	NINF	<input checked="" type="checkbox"/> (iv)(A)	Specified System Actuation		AESF	<input type="checkbox"/>	NONR
DESCRIPTION							
Include: Systems affected, actuations and their initiating signals, causes, effect of event on plant, actions taken or planned, etc. (Continue on back)							
<p>RBS JPM RJPM-NRC18-A9 USE ONLY</p> <p>(IF NRC FORM 361 WAS USED IN JPM RJPM-NRC18-A9, IT WOULD BE COMPLETED AS SHOWN)</p> <p>Plant was operating at 50 percent power with no equipment out of service.</p> <p>A complete loss of feedwater occurred</p> <p>Operators inserted a manual reactor scram.</p> <p>All control rods inserted.</p> <p>Reactor water level reached a low level of -45" before recovering to the normal band.</p> <p>HPCS and RCIC auto-initiated and injected before injection was manually stopped.</p> <p>Level 2 isolations and initiations have been verified.</p>							
NOTIFICATIONS	YES	NO	WILL BE	ANYTHING UNUSUAL OR NOT UNDERSTOOD?			
NRC RESIDENT	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> YES (Explain above) <input checked="" type="checkbox"/> NO			
STATE(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> DID ALL SYSTEMS FUNCTION AS REQUIRED? <input type="checkbox"/> YES <input type="checkbox"/> NO (Explain above)			
LOCAL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
OTHER GOV AGENCIES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
MEDIA/PRESS RELEASE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MODE OF OPERATION UNTIL CORRECTED: ESTIMATED RESTART DATE: (MM/DD/YYYY)			
				ADDITIONAL INFO ON BACK <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			

NRC Notification Requirements

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant

Initial Condition(s):

- Plant was operating at 50 percent power with no equipment out of service.
- A complete loss of feedwater occurred
- Operators inserted a manual reactor scram.
- All control rods inserted.
- Reactor water level reached a low level of -45" before recovering to the normal band.
- HPCS and RCIC auto-initiated and injected.
- Level 2 isolations and initiations have been verified.

Initiating Cue(s):

- Identify each applicable 10 CFR 50.72 reportable event subsection designation, associated condition, and time limit for reporting
- Record your findings on the JPM ANSWER SHEET provided.
- REAP is not available. (REAP - Reportability Evaluation Assistance Program)

JPM Answer Sheet for Examinee Use

Document each applicable 10 CFR 50.72 subsection designation, associated condition, and time limit		
50.72 Subsection Designation	Associated Condition	Time Limit
		.

2018 S1

RBS

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-S1

JPM Title: Fully Withdrawn Control Rod Insertion Operability Check

Bank: RJPM-OPS-052-06

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input checked="" type="checkbox"/> Alternate Path	Validation Time: 20 min

Prepared By:	John Hedgepeth	5-4-2018
		Date
Ops Review:	Rob Melton	5-4-2018
		Date
Facility Review:	Rick Northrup	5-4-2018
		Date
Approved By:	Gabe Kimich	5-4-2018
		Date

Fully Withdrawn Control Rod Insertion Operability Check

<u>Setting:</u>	Simulator
<u>Type:</u>	RO/SRO
<u>K&A:</u>	201003
	K4.02 3.8/3.9 A3.01 3.7/3.6
	K5.07 3.3/3.6 A1.01 3.7/3.8
	A2.02 3.7/3.8
<u>Safety Function:</u>	1 – Reactivity Control
<u>PRA Applicability:</u>	N/A
<u>10CFR 55.45(a)</u>	(3); (4); (7)
<u>Reference(s):</u>	STP-052-0101 Rev 17 Fully Withdrawn Control Rod Insertion Operability Check SOP-0071 Rev 35 Rod Control and Information System ARP-P680/07A/C02 Control Rod Overtravel
<u>Handout(s):</u>	STP-052-0101 Rev 17 Fully Withdrawn Control Rod Insertion Operability Check SOP-0071 Rev 35 Rod Control and Information System OD-7 for rod positions
<u># Manipulations:</u>	7
<u># Critical Steps:</u>	7
<u>Low Power:</u>	No
<u>Emergency/Abnormal:</u>	No
<u>RCA entry:</u>	No
<u>Engineered Safety Function:</u>	No

Simulator Setup/Required Plant Conditions:

Reset to IC 166

Complete Prerequisites (Step 6) of STP

Insert: Malfunction/Rod/CRDM1629/UNCOUPLED/insert

Event: Event code AN:8007A(18) on t3

Insert: Malfunction/Rod/CRDM1629/UNCOUPLED/ on t3 Delete in 00:00:05

This deletes Rod uncoupled 5 sec after receive Rod Over travel; rod will not re-couple until driven IN.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

Reactor is at 100% power, steady state conditions.

Initiating Cue(s):

The CRS has directed you to perform control rod operability check on control rod 16-29 in accordance with STP-052-0101 Fully Withdrawn Control Rod Insertion Operability Check.

Prerequisites (Step 6) are complete with the exception of step 6.2.

Fully Withdrawn Control Rod Insertion Operability Check

Notes to Evaluator:

- Unless otherwise stated, all control manipulations will be at panel P680.

Task Overview: Applicant will perform Control Rod Operability on control rod 16-29 in accordance with STP-052-0101. When a coupling check is performed on the control rod, the control rod will indicate uncoupled and the applicant will take actions to re-couple the control rod.

RECORD START TIME _____

Critical steps are shaded, bolded, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is critical unless otherwise noted.

STP-052-0101, 7.1 Printout an OD-7 or equivalent of initial control rod positions.	
<u>Standard:</u>	N/A. Given as part of initial conditions.
<u>Cue:</u>	None
<u>Notes:</u>	
	SAT / UNSAT

STP-052-0101, 7.2 IF any control rod is not fully withdrawn to position 48 or is inoperable, THEN record NA for that control rod on Data Sheet 1, Control Rod Operability Data Sheet.	
<u>Standard:</u>	N/A.
<u>Cue:</u>	None
<u>Notes:</u>	
	SAT / UNSAT

NOTE

The control rods may be selected in any order as long as every fully withdrawn operable control rod is tested.

Ensuring initial drive water d/p of 250 psid minimizes the potential for double-notching. If a control rod does not move at 250 psid, it is acceptable to adjust drive water d/p per SOP-0071, Rod Control and Information System.

If a control rod is difficult to move or problems are encountered with position indications, applicable data should be recorded on a Control Rod Deficiency Report attachment

from SOP-0071. A separate Deficiency Report should be used for each problem control rod.

*** STP-052-0101, 7.3 Perform Data Sheet 1, Control Rod Operability Data Sheet for notch movement of each fully withdrawn control rod.**

CONTROL ROD OPERABILITY DATA SHEET

1. Select Control Rod

Standard: Control rod 16-29 selected and displays on control panel.

Cue: None

Notes:

SAT / UNSAT

***STP-052-0101, 7.3 Perform Data Sheet 1, Control Rod Operability Data Sheet for notch movement of each fully withdrawn control rod.**

CONTROL ROD OPERABILITY DATA SHEET

2. Insert Control Rod to position 46 and verify position indication changes.

Standard: Control rod 16-29 inserted one (1) notch and position indication change verified at position 46.

Cue: None

Notes:

SAT / UNSAT

****STP-052-0101, 7.3 Perform Data Sheet 1, Control Rod Operability Data Sheet for notch movement of each fully withdrawn control rod.***

CONTROL ROD OPERABILITY DATA SHEET

3. Withdraw Control Rod to position 48 and verify position indication changes.

Standard: Control rod 16-29 withdrawn to original position and verify position indication change to 48.

Cue: None

Notes:

SAT / UNSAT

STP-052-0101, 7.3 Perform Data Sheet 1, Control Rod Operability Data Sheet for notch movement of each fully withdrawn control rod.

CONTROL ROD OPERABILITY DATA SHEET

4. Perform coupling check

Standard: N/A

Cue: None

Notes: No verifiable action

SAT / UNSAT

****SOP-0071, 5.4 Performing Control Rod Coupling Check (Note: This Section is Reference Use.)***

5.4.1. At H13-P680, on the ROD SELECT MODULE, select the rod to be checked.

Standard: Control rod 16-29 selected and position 48 displays on control panel.

Cue: None

Notes:

SAT / UNSAT

SOP-0071, 5.4 Performing Control Rod Coupling Check (Note: This Section is Reference Use.)

5.4.2. Check that a Control Rod is at position 48.

Standard: Control Rod 16-29 indicates position 48.

Cue: None

Notes:

SAT / UNSAT

SOP-0071, 5.4 Performing Control Rod Coupling Check (Note: This Section is Reference Use.)

5.4.3. Check that a Rod Withdrawal Block or Inhibit does not exist.

Standard: Verifies Rod Withdrawal Block or Inhibit lights are not lit.

Cue: None

Notes:

SAT / UNSAT

****SOP-0071, 5.4 Performing Control Rod Coupling Check (Note: This Section is Reference Use.)***

5.4.4. On H13-P680, attempt to withdraw control rod past 48 by depressing the C11A-S334, WITHDRAW Pushbutton.

Standard: Depresses the C11A-S334, WITHDRAW Pushbutton.

Cue: None

Notes:

SAT / UNSAT

SOP-0071, 5.4 Performing Control Rod Coupling Check (Note: This Section is Reference Use.)

5.4.5. Each fully withdrawn control rod has been demonstrated coupled to its drive mechanism as required by Tech Spec SR 3.1.3.5 by verifying the control rod drive does not go to the over-travel position. This is demonstrated if all of the following are met:

Annunciator, P680-07A-C02, CONTROL ROD OVERTRAVEL does not alarm.

The Red light next to the position indicator on the Full Core Display on the P680 panel is lit.

The position indicator on the Full Core Display on the P680 panel displays "48".

Standard: Recognizes and reports alarm P680/7A/C02, Control Rod Overtravel received.

Cue: None

Notes:

SAT / UNSAT

ALTERNATE PATH BEGINS WITH THE NEXT STEP

ALTERNATE PATH

H13-P680/07A/C02, CONTROL ROD OVERTRAVEL, 1. Determine uncoupled rod by depressing the ROD UNCOUPLED pushbutton and observe red lights.	
<u>Standard:</u>	ROD UNCOUPLED depressed and red light observed for rod 16-29.
<u>Cue:</u>	None
<u>Notes:</u>	
SAT / UNSAT	

<i>*H13-P680/07A/C02, CONTROL ROD OVERTRAVEL, 2. Attempt to recouple rod by driving in to Position 46 and withdrawing to Position 48.</i>	
<u>Standard:</u>	<i>Control rod 16-29 inserted to Position 46 and then withdrawn to position 48.</i>
<u>Cue:</u>	None
<u>Notes:</u>	
SAT / UNSAT	

****SOP-0071, 5.4 Performing Control Rod Coupling Check (Note: This Section is Reference Use.)***

5.4.4. On H13-P680, attempt to withdraw control rod past 48 by depressing the C11A-S334, WITHDRAW Pushbutton.

Standard: Control rod 16-29 received a withdraw signal, but remained at position 48.

Cue: None

Notes:

SAT / UNSAT

SOP-0071, 5.4 Performing Control Rod Coupling Check (Note: This Section is Reference Use.)

5.4.5. Each fully withdrawn control rod has been demonstrated coupled to its drive mechanism as required by Tech Spec SR 3.1.3.5 by verifying the control rod drive does not go to the over-travel position. This is demonstrated if all of the following are met:

Annunciator, P680-07A-C02, CONTROL ROD OVERTRAVEL does not alarm.

The Red light next to the position indicator on the Full Core Display on the P680 panel is lit.

The position indicator on the Full Core Display on the P680 panel displays "48".

Standard: Applicant verified control rod is coupled by verified indications.

Cue: None

Notes:

SAT / UNSAT

Terminating Cue: Applicant determines that the control rod has re-coupled.
This completes this JPM.

STOP TIME: _____

Task Standard(s):

Applicant performs control rod operability test on control rod 16-29 without any unrecovered errors. Applicant responds to uncoupled control rod and re-couples the rod by inserting one notch and performing another coupling check to verify the control rod is coupled.

SAT / UNSAT*Remember to record stop time*

Fully Withdrawn Control Rod Insertion Operability Check

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant

Initial Condition(s):

- Reactor is at 100% power, steady state conditions.

Initiating Cue(s):

The CRS has directed you to perform control rod operability check on control rod 16-29 in accordance with STP-052-0101 Fully Withdrawn Control Rod Insertion Operability Check.

Prerequisites (Step 6) are complete with the exception of step 6.2

2018 S2

RBS

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-S2

JPM Title: Startup Third Condensate Pump

Bank: RJPM-OPS-104-01

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input checked="" type="checkbox"/> Alternate Path	Validation Time: 10 min

Prepared By:	John Hedgepeth	5-4-2018
		Date
Ops Review:	Rob Melton	5-4-2018
		Date
Facility Review:	Rick Northrup	5-4-2018
		Date
Approved By:	Gabe Kimich	5-4-2018
		Date

Startup Third Condensate Pump

<u>Setting:</u>	Simulator
<u>Type:</u>	RO/SRO
<u>K&A:</u>	256000
	A4.01 3.3/3.3 A2.03 2.8/2.9
	A3.01 2.7/2.7
<u>Safety Function:</u>	2 – Reactor Water Inventory Control
<u>PRA Applicability:</u>	N/A
<u>10CFR 55.45(a)</u>	2, 3, 5, 5, 6, 8
<u>Reference(s):</u>	SOP-7 Rev 311 Condensate System
	ARP H13-P680 / 03A / B03 RX FW PUMPS LOW SUCTION PRESS
<u>Handout(s):</u>	SOP-7 Rev 311 Condensate System
	ARP H13-P680 / 03A / B03 RX FW PUMPS LOW SUCTION PRESS
<u># Manipulations:</u>	4
<u># Critical Steps:</u>	3
<u>Low Power:</u>	No
<u>Emergency/Abnormal:</u>	No
<u>RCA entry:</u>	No
<u>Engineered Safety Function:</u>	No

Simulator Setup/Required Plant Conditions:

Reset to IC 156

DI_CNM-HA114-CAM f=MANUAL

AO_CNM-HA114-COM f=72.84 r609

(Include an auto delete for the override)

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

Reactor is at 90% power, steady state conditions.

Initiating Cue(s):

The CRS has directed you place Condensate Pump A in service in accordance with SOP-0007, Condensate System, section 5.1.

Condensate pump A is ready to be placed in service after maintenance repairs.

Adequate condensate filters and demins are in service to support flow increase due to starting the condensate pump.

Startup Third Condensate Pump

Notes to Evaluator:

- Unless otherwise stated, all control manipulations will be at panel P680.

Task Overview: Applicant will place Condensate Pump A in service in accordance with SOP-0007, Condensate System, section 5.1.

RECORD START TIME _____

Critical steps are shaded, bolded, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is critical unless otherwise noted.

Verify Condensate System is filled and vented and at least one Condensate Pump is in service.	
<u>Standard:</u>	Verified two condensate pumps in service by observation of pump motor breaker status lights and motor amps
<u>Cue:</u>	None
<u>Notes:</u>	SAT / UNSAT

NOTE: This is on the P870. Open CNM AOV43A, PUMP 1A DISCH VENT for the pump to be started.	
<u>Standard:</u>	CNM AOV43A, PUMP 1A DISCH VENT, control switch rotated clockwise to OPEN, green light OFF, red light ON.
<u>Cue:</u>	None
<u>Notes:</u>	SAT / UNSAT

*** Start CNM P1A, CNDS PUMP 1A.**

Standard: *CNM P1ACNDS PUMP 1A control switch start pushbutton depressed, green light OFF, red light ON.*

Cue: None

Notes:

SAT / UNSAT

Verify CCS MOV67A, CNDS PMP 1A MOT CLR and CCS MOV68A, CNDS PMP 1ABRG CLR are open for the pump started.

Standard: Verified CCS MOV67A, CNDS PMP 1A MOT CLR and CCS MOV68A, CNDS PMP 1A BRG CLR are open for Condensate Pump A, green light OFF, red light ON.

Cue: None

Notes:

SAT / UNSAT

*** Open associated CNM MOV3A, CNDS PUMP 1A DISCH.**

Standard: *CNM MOV3A, CNDS PUMP 1A DISCH control switch open pushbutton depressed, green light OFF, red light ON.*

Cue: None

Notes:

SAT / UNSAT

WHEN CNM MOV3A, CNDS PUMP 1A DISCH is full open, THEN depress the STOP pushbutton.	
<u>Standard:</u>	WHEN CNM MOV3A, CNDS PUMP 1A DISCH was full open, depressed the STOP pushbutton.
<u>Cue:</u>	None
<u>Notes:</u>	
	SAT / UNSAT

ALTERNATE PATH BEGINS WITH THE NEXT STEP

<i>* Recognize and respond to low Reactor Feedwater Pump Suction pressure per ARP-P680-03A/B03. Verify proper operation of CNM-FV114, CNDS MIN RECIRC is closed. IF necessary, THEN place the CNM-H/A114, MAIN CONDENSER RECIRC in MANUAL and adjust flow per SOP-0007 Condensate System.</i>	
<u>Standard:</u>	<i>Applicant placed CNM-H/A114, MAIN CONDENSER RECIRC, in MANUAL and closed valve to return condensate pressure to normal prior to any Reactor Feedwater Pumps tripping.</i>
<u>Cue:</u>	JPM is complete when CNM-FV114 is placed in manual and closed.
<u>Notes:</u>	CNM-FV114, CNDS MIN RECIRC valve failed open causing low Reactor Feedwater Pump suction pressure.
	SAT / UNSAT

Terminating Cue: Applicant placed CNM-H/A114, MAIN CONDENSER RECIRC in MANUAL and closed valve.

This completes this JPM.

STOP TIME: _____

Task Standard(s):

Applicant starts Condensate Pump A in accordance with SOP-0007 section 5.1 without any unrecovered errors. Applicant places CNM-H/A114, MAIN CONDENSER RECIRC in MANUAL and closes valve.

SAT / UNSAT*Remember to record stop time*

Startup Third Condensate Pump

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant

Initial Condition(s):

Reactor is at 90% power, steady state conditions.

Initiating Cue(s):

The CRS has directed you place Condensate Pump A in service in accordance with SOP-0007, Condensate System, section 5.1.

Condensate pump A is ready to be placed in service after maintenance repairs.

Adequate condensate filters and demins are in service to support flow increase due to starting the condensate pump.

2018 S3

RBS

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-S3

JPM Title: Main Stop Valve Testing

Bank: N/A

JPM Attributes:

<input checked="" type="checkbox"/> New	<input type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 10 min

Prepared By:	John Hedgepeth	5-4-2018
		Date
Ops Review:	Rob Melton	5-4-2018
		Date
Facility Review:	Rick Northrup	5-4-2018
		Date
Approved By:	Gabe Kimich	5-4-2018
		Date

Main Stop Valve Testing

<u>Setting:</u>	Simulator
<u>Type:</u>	RO/SRO
<u>K&A:</u>	241000 A4.07 (3.5/3.4)
<u>Safety Function:</u>	3 – Reactor Pressure Control
<u>PRA Applicability:</u>	N/A
<u>10CFR 55.45(a)</u>	(5); (6);
<u>Performance:</u>	Perform
<u>Reference(s):</u>	OSP-102 Rev 322 Turbine Valve Testing
<u>Handout(s):</u>	OSP-102 Rev 322 Turbine Valve Testing
<u># Manipulations:</u>	4
<u># Critical Steps:</u>	2
<u>Low Power:</u>	No
<u>Emergency/Abnormal:</u>	No
<u>RCA entry:</u>	No
<u>Engineered Safety Function:</u>	No

Simulator Setup/Required Plant Conditions:

Reset to IC 154

Reduce reactor power to approximately 85%

Note: OSP requires Generator online and less than 2750 MWth (~88% power)

Complete Prerequisites (Section 4 and Section 5.2.1 of OSP)

Safety Concerns: None.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

Reactor power has been reduced for conducting main turbine stop valve testing

Initiating Cue(s):

The CRS has directed you to perform MSV-1 Testing per OSP-102 Turbine Valve Testing, Section 5.2.2.

Prerequisites for performing the test are complete (Section 4 and Section 5.2.1 are complete).

Another operator will be standing by to perform step 10 c. to verify relays at P691 and P692.

Main Stop Valve Testing

Notes to Evaluator:

- Unless otherwise stated, all control manipulations will be at panel P680.

Task Overview: (Detailed description of task)

Applicant will perform MSV-1 Testing per OSP-102, Turbine Valve Testing, Section 5.2.2 on the new digital EHC system.

RECORD START TIME _____

Critical steps are shaded, bolded, italicized, and denoted by an (*)**NOTE: The sequence of the following steps is critical unless otherwise noted.**

NOTES

(MSV-1, 3, 4 Non-Modulating Valves Only)

One valve is selected for testing and, upon confirmation to start the test; the valve will begin to close by energizing the test solenoid valve (TSV). The valve will close at a rate determined by the valve's mechanical arrangement. Once the valve position reaches 10 percent open (configurable), the fast-acting solenoid (FAS) is energized and the valve moves to the fully closed position. At the fully closed position, the TSVs are held ON for 30 seconds (configurable) to confirm valve closure. After the closed time has expired, the test solenoid outputs are removed, and the valve reopens at a rate determined by the valve's mechanical configuration.

****OSP-102, Turbine Valve Testing******5.2.2 MSV-1 Testing******1. On HMI Screen 5542, Valve Test, MSV/CV Tests, SELECT MSV-1.*****Standard:** ***Depressed MSV-1 button.*****Cue:** N/A**Notes:****SAT / UNSAT**

2. CHECK the following
MSV-1 button is cornsilk and enabled.
START button is gray and enabled.

Standard: MSV-1 button is cornsilk and enabled.
START button is gray and enabled.**Cue:** N/A**Notes:****SAT / UNSAT**

3. DEPRESS OPEN TREND button on Stop Valve #1 Test graphic.

Standard: Stop Valve #1 Test graphic trend is opened.

Cue: N/A

Notes: This graphic may be opened on computer screen on desktop next to P680.

SAT / UNSAT

4. CHECK the following points in trend to establish a trend of test parameters

- ☐ TCS_MS V1 POS: MS V1 POSITION
- ☐ TCS_MS V1 TSDMD: MS V1 TEST DEMAND
- ☐ TCSTMS V1 TSTACT: MS V1 TEST IN PROGRESS
- ☐ TCSTMS V1 HLDACT: MS V1 TEST HOLD ACTIVE
- ☐ TCSTMS V1 TSTOK: MS V1 TEST PASSED
- ☐ TCSHMS V1 TSV: MS V1 TEST SOLENOID
- ☐ TCSTMS V1 FAS: MS V1 FAST ACTING SOLENOID TEST
- ☐ TCSTMS V1 FASDET: MS V1 TEST FAS DETECTED
- ☐ TCSTMS V1 TSTCAN: MS V1 TEST CANCELLED

Standard: Verified points in trend.

Cue: N/A

Notes:

SAT / UNSAT

5. On HMI Screen 5542, Valve Test, MSV/CV Tests, DEPRESS START button*Standard:** *Depressed START button.***Cue:** N/A**Notes:****SAT / UNSAT****6. CHECK the following:**

- a. "CLOSING" message is highlighted in red.
- b. MSV-1 POSITION ramps smoothly in close direction.
- c. When MSV-1 reaches 10% closed, the associated Fast Acting Solenoid operates properly as indicated by the appearance of "FASV" and "FASV DETECTED" messages.
- d. MSV-1 indicates closed on HMI Screen display and Ovation Trend screen.
- e. On H13-P870, DTM-AOVSPDV4, MS CONT AFTER SEAT DR opens, if applicable.

Standard: Verified indications.**Cue:** N/A**Notes:****SAT / UNSAT**

7. WHEN MSV-1 has been closed for approximately 30 seconds, THEN CHECK the following

- a. "OPENING" message is highlighted on VALVE TEST SELECTION HMI.
- b. MSV-1 POSITION ramps smoothly to 100%.
- c. DTM-AOVSPDV4 closes, if applicable.

Standard: Verified indications.

Cue: N/A

Notes:

SAT / UNSAT

8. DESELECT MSV-1 by depressing MSV-1 pushbutton.

Standard: Depressed MSV-1 button.

Cue: N/A

Notes:

SAT / UNSAT

9. CHECK the following

- ☐ START button is gray and disabled.
- ☐ MSV-1 button is gray and enabled.

Standard: Verified indications.

Cue: N/A

Notes:

SAT / UNSAT

CAUTION

Failure of MSV limit switches to reenergize RPS could result in a reactor scram. Do not continue testing unless the applicable channels are verified as RESET by checking the Process Computer Sequence of Events Log OR on applicable C71A relays.

10. PERFORM one of the following:

a. CHECK TSV CLOSURE channels RESET as shown on Process Computer Sequence of Events Log

OR

b. CHECK Process computer points C71NC013, TSV CLOSURE CH A and C71NC014, TSV CLOSURE CH B indicate STATE: 0 = RESET.

OR

c. CHECK the following relays energized as follows:

At H13-P691, Bay B, 2F05, C71A-AT3-1, CHECK relay C71A-K10A is energized by ensuring approximately 0 VDC between TB6 terminal 16 and chassis ground.

At H13-P692, Bay B, 2F05, C71A-AT7-1, CHECK relay C71A-K10B is energized by ensuring approximately 0 VDC between TB6 terminal 16 and chassis ground.

Standard: Per initiating cue, another operator is standing by to verify the relays at panel P691 and P692. Contacted the operator standing by to verify relays are energized.

Cue: Step 10.c. is complete. Relays at P691 and P692 are energized.

Notes:

SAT / UNSAT

11. IF Step 5.2.2.10.a OR 5.2.2.10.b was performed, THEN ENSURE Independent Verification has been completed.	
<u>Standard:</u>	N/A. 10.c was completed by another operator.
<u>Cue:</u>	N/A.
<u>Notes:</u>	
SAT / UNSAT	

Terminating Cue: Applicant requests independent verification.
This completes this JPM.

STOP TIME: _____

<p><u>Task Standard(s):</u></p> <p>Applicant will perform MSV-1 Testing per OSP-102, Turbine Valve Testing, Section 5.2.2 on the new digital EHC system without any unrecovered errors.</p> <p style="text-align: right;">SAT / UNSAT</p> <p><i>Remember to record stop time</i></p>

Main Stop Valve Testing

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant

Initial Condition(s):

Reactor power has been reduced for conducting main turbine stop valve testing

Initiating Cue(s):

The CRS has directed you to perform MSV-1 Testing per OSP-102 Turbine Valve Testing, Section 5.2.2 on the new digital EHC system.

Prerequisites for performing the test are complete (Section 4 and Section 5.2.1 are complete).

Another operator will be standing by to perform step 10 c. to verify relays at P691 and P692.

2018 S4

RBS

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-S4

JPM Title: Align LPCS to maintain RPV water level

Bank: RJPM-OPS-052-06

JPM Attributes:

<input checked="" type="checkbox"/> New	<input type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input checked="" type="checkbox"/> Alternate Path	Validation Time: 10 min

Prepared By:	John Hedgepeth	5-4-2018
		Date
Ops Review:	Rob Melton	5-4-2018
		Date
Facility Review:	Rick Northrup	5-4-2018
		Date
Approved By:	Gabe Kimich	5-4-2018
		Date

Align LPCS to maintain RPV water level

<u>Setting:</u>	Simulator
<u>Type:</u>	RO/SRO
<u>K&A:</u>	209001 A1.03 (3.8/3.9) A2.02 (3.2/3.2) 209002 A1.03 (3.7/3.7)
<u>Safety Function:</u>	2 – Reactor Water Inventory Control
<u>PRA Applicability:</u>	N/A
<u>10CFR 55.45(a)</u>	3; 5; 6; 7; 8
<u>Performance:</u>	Perform
<u>Reference(s):</u>	OSP-53, Attachment 9, INJECTING WITH LPCS
<u>Handouts:</u>	OSP-53, Attachment 9, INJECTING WITH LPCS
<u># Manipulations:</u>	6
<u># Critical Steps:</u>	4
<u>Low Power:</u>	YES
<u>Emergency/Abnormal:</u>	YES
<u>RCA entry:</u>	No
<u>Engineered Safety Function:</u>	No

Simulator Setup/Required Plant Conditions:

Reset to IC 157

Establish simulator conditions with the reactor shutdown with reactor pressure less than 250 psig and reactor level approximately -100 inches (to accommodate injection from LPCS and HPCS)

When conditions have been established, put the simulator in freeze until the JPM starts.

Prepare a trigger to trip the LPCS pump when HPCS injection valve is closed..

Safety Concerns: None.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- A post transient condition exists with reactor level low.
- HPCS is currently recovering reactor level to the normal reactor level band.

Initiating Cue(s):

The CRS has directed you to swap injection sources from HPCS to LPCS and establish a reactor level band of -20 inches to 51 inches per OSP-53, Attachment 9 INJECTING WITH LPCS.

Align LPCS to maintain RPV water level

Notes to Evaluator:

- Unless otherwise stated, all control manipulations will be at panel P601.

Task Overview: (Detailed description of task)

Applicant will be required to align LPCS to maintain RPV water level with throttleable injection. When the HPCS injection valve is closed, the LPCS pump will trip off. The applicant will be required to manually open the HPCS injection valve to maintain RPV water level.

RECORD START TIME _____

Critical steps are shaded, bolded, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is critical unless otherwise noted.

OSP-53, Attachment 9, INJECTING WITH LPCS	
1 Verify Annunciator P601-21A-C07, LPCS INJECTION LINE PRESSUREHI/LOW, is not lit.	
<u>Standard:</u>	Applicant verified Annunciator P601-21A-C07, LPCS INJECTION LINE PRESSUREHI/LOW, is off.
<u>Cue:</u>	N/A
<u>Notes:</u>	
SAT / UNSAT	

* 2 Start LPCS PUMP.	
<u>Standard:</u> Turned control switch for LPCS pump clockwise to START position.	
<u>Cue:</u>	N/A
<u>Notes:</u>	
SAT / UNSAT	

*** 3 IF LPCS injection is required, THEN perform the following:**

3.1 WHEN RPV pressure is below 487 psig, THEN Open E21-F005, LPCS INJECT ISOL VALVE.

3.2 Verify LPCS injection flow.

Standard: Applicant rotated the LPCS INJECT ISOL VALVE hand switch clockwise, red light on, and green light on (Throttle valve).

Cue: N/A

Notes:

SAT / UNSAT

3.3 Verify E21-F011, LPCS MIN FLOW VLV TO SUPPRESSION POOL, Closes.

Standard: WHEN flow rose above 875 gpm, the E21-F011, LPCS MIN FLOW VLV TO SUPPRESSION POOL should have closed. Applicant recognized the E21-F011 failed to close. Rotated E21-F011 hand switch counter clockwise to CLOSE, red light off, green light on.

Cue: N/A

Notes:

SAT / UNSAT

***Per OSP-53, Attachment 5, TERMINATING AND PREVENTING INJECTION FROM HPCS.**

1 Override Injection / Initiate HPCS

Standard: *Turned the E22-MOVF004, HPCS Injection Valve, counter clockwise to CLOSE position.*

Cue: *N/A*

Notes: *When the green light is lit for the E22-MOVF004, the LPCS pump will trip.*

SAT / UNSAT

ALTERNATE PATH BEGINS WITH THE NEXT STEP

*** Recognizes LPCS pump trip and opens E22-MOVF004, HPCS Injection Valve.**

Standard: *Once the E22—MOVF004 stroked closed, the applicant rotated the hand switch clockwise to the OPEN position.*

Cue: *N/A*

Notes: *HPCS injection valve cannot be re-opened until it strokes fully closed. Then the hand switch must be turned to OPEN. The applicant may attempt to close the injection valve prior to stroking fully closed, but the valve will continue to stroke closed.*

SAT / UNSAT

Verify HPCS flow and RPV water level rising.

Standard: *Verified HPCS flow rising, RPV water level stopped lowering, and was rising.*

Cue: *N/A*

Notes:

SAT / UNSAT

Close E21-F005, LPCS INJECT ISOL VALVE.

Standard: Rotated E21-F005, LPCS INJECT ISOL VALVE, hand switch counterclockwise to CLOSE position, red light off, green light on.

Cue: N/A

Notes:

SAT / UNSAT

Notes:

SAT / UNSAT

Terminating Cue: When HPCS flow is restored and reactor water level is rising.
This completes this JPM.

STOP TIME: _____

Task Standard(s):

Applicant completes the following with no unrecovered errors:
 Starts and injects with LPCS and stops the HPCS injection by closing the injection valve. Then responds to LPCS pump trip by restoring HPCS injection to restore reactor water level.

SAT / UNSAT

Remember to record stop time

Align LPCS to Maintain RPV Water Level

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant

Initial Condition(s):

- A post transient condition exists with reactor level low.
- HPCS is currently recovering reactor level to the normal reactor level band.

Initiating Cue(s):

The CRS has directed you to swap injection sources from HPCS to LPCS and establish a reactor level band of -20 inches to 51 inches per OSP-53, Attachment 9 INJECTING WITH LPCS.

2018 S5

RBS

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-S5

JPM Title: Makeup to the Suppression Pool with HPCS

Bank: RJPM-AUD-M14-S (March 2014 Audit)

JPM Attributes:

<input type="checkbox"/> New	<input checked="" type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 10 min

Prepared By:	John Hedgepeth	5-4-2018
		Date
Ops Review:	Rob Melton	5-4-2018
		Date
Facility Review:	Rick Northrup	5-4-2018
		Date
Approved By:	Gabe Kimich	5-4-2018
		Date

Makeup to the Suppression Pool with HPCS

<u>Setting:</u>	Simulator
<u>Type:</u>	RO/SRO
<u>K&A:</u>	223001 A1.08 (3.2/3.6) 295030 EA1.03 (3.4/3.4)
<u>Safety Function:</u>	5 – Containment Integrity
<u>PRA Applicability:</u>	N/A
<u>10CFR 55.45(a)</u>	(5); (6);
<u>Performance:</u>	Perform
<u>Reference(s):</u>	SOP-30 Rev 33 High Pressure Core Spray EOP 5 Rev 321 Emergency Operating and Severe Accident Procedures Enclosures Enclosure 30
<u>Handouts:</u>	SOP-30 Rev 33 High Pressure Core Spray, Section 5.3.2 EOP 5 Rev 321 Emergency Operating and Severe Accident Procedures Enclosures Enclosure 30
<u># Manipulations:</u>	6
<u># Critical Steps:</u>	3
<u>Low Power:</u>	No
<u>Emergency/Abnormal:</u>	Yes
<u>RCA entry:</u>	No
<u>Engineered Safety Function:</u>	Yes

Simulator Setup/Required Plant Conditions:

1. Reset to IC 156
2. Suppression Pool Level < 19'5". (lowered with Malf MSC005, S.P. Leak into LPCS)
3. RHR A in Suppression Pool Cooling
4. HPCS suction aligned to suppression pool.
5. Override HPCS min flow valve so it will not auto open, but can be manually opened.

Safety Concerns: None.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

The reactor is at 90%.

EOP-0002, Primary Containment Control has been entered because of low Suppression Pool level due to a leak in the LPCS room.

Leak located in the LPCS room was isolated.

RHS-AOV62 and RHS-AOV63, SPC Suction Valves are tagged out.

CNS-V281, Condensate Transfer Line to Suppression Pool Supply Valve is unavailable due to a broken valve stem.

HPCS suction is aligned to suppression pool.

Initiating Cue(s):

The CRS directs you to raise Suppression Pool Level to greater than 19 feet, 7 inches by maximizing HPCS makeup in accordance with EOP Enclosure 30.

Makeup to the Suppression Pool with HPCS

Notes to Evaluator:

- Unless otherwise stated, all control manipulations will be at panel P601.

Task Overview:

The reactor is operating at 90% power. Suppression Pool level has fallen below 19 feet, 6 inches, requiring entry into EOP-0002, Primary Containment Control. The applicant is directed to add water to the suppression pool with HPCS using EOP-Enclosure 30.

RECORD START TIME _____

Critical steps are shaded, bolded, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is critical unless otherwise noted.

***ENCLOSURE 30, SUPPRESSION POOL MAKEUP**

3.1 Add water to the suppression pool by one OR more of the following methods:

• **Suppression pool makeup using HPCS.**

1. VERIFY HPCS pump suction is aligned to the CST.

Per SOP-30, 5.3.2 Swap from Suppression Pool to CST:

1. Close E22-F015, HPCS PUMP SUP PL SUCTION VALVE.

2. WHEN E22-F015 indicates dual indication, THEN open E22-F001, HPCSPUMP CST SUCTION VALVE.

3. Verify both valves fully stroke to prevent adding excessive amounts of water to the Suppression Pool.

Standard: *Applicant turned E22-F015 hand switch counter clockwise to CLOSE. When the red and green lights are on, then turned E22-F001 hand switch clockwise to open. Verified E22-F015 red light is off and E22-F001 green light is off.*

Cue: N/A

Notes:

SAT / UNSAT

***2. START the HPCS pump. (H13-P601)**

Standard: *Started the HPCS pump by turning the breaker switch clockwise and observing the red light ON and green light OFF.*

Cue: N/A

Notes:

SAT / UNSAT

1) VERIFY HPCS pump motor current is less than or equal to 350 amps.

Standard: Verified motor amps less than or equal to 350 amps.

Cue: N/A

Notes:

SAT / UNSAT

2) VERIFY OPEN E22-F012, HPCS MIN FLOW VALVE TO SUPPRESSION POOL.

Standard: Applicant recognized E22-F012, HPCS MIN FLOW VALVE TO SUPPRESSION POOL failed to automatically open. Applicant manually opened E22-F012, HPCS MIN FLOW VALVE TO SUPPRESSION POOL using the hand switch.

Cue: N/A

Notes:

SAT / UNSAT

***3. IF additional makeup is required,
THEN OPEN E22-F023, HPCS TEST RETURN VLV TO SUPPRESSION POOL.
(H13-P601)**

Standard: Rotated E22-F023 hand switch clockwise to OPEN.

Cue: N/A

Notes:

SAT / UNSAT

4. WHEN the desired suppression pool water level is reached, THEN
 1) CLOSE E22-F023, HPCS TEST RETURN VLV TO SUPPRESSION POOL. (H13-P601).

Standard: Rotated HPCS TEST RETURN VLV TO SUPPRESSION POOL counterclockwise when suppression pool level is greater than 19 feet, 7 inches.

Cue: N/A

Notes:

SAT / UNSAT

2) SECURE the HPCS pump.

Standard: Rotated HPCS Supply breaker hand switch counter clockwise when suppression pool level was greater than 19 feet, 7 inches.

Cue: N/A

Notes:

SAT / UNSAT

3) VERIFY closed E22-F012, HPCS MIN FLOW VALVE TO SUPPRESSION POOL.

Standard: Applicant verifies the red light off and green light on.

Cue: N/A

Notes:

SAT / UNSAT

Terminating Cue: Applicant raised suppression pool level greater than 19 feet 7 inches.

This completes this JPM.

STOP TIME: _____

Task Standard(s):

Applicant raised suppression pool level to greater than 19 feet 7 inches.

SAT / UNSAT

Remember to record stop time

MAKEUP TO THE SUPPRESSION POOL WITH HPCS

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant

Initial Condition(s):

The reactor is at 90%.

EOP-0002, Primary Containment Control has been entered because of low Suppression Pool level due to a leak in the LPCS room.

Leak located in the LPCS room was isolated.

RHS-AOV62 and RHS-AOV63, SPC Suction Valves are tagged out.

CNS-V281, Condensate Transfer Line to Suppression Pool Supply Valve is unavailable due to a broken valve stem.

Initiating Cue(s):

The CRS directs you to raise Suppression Pool Level to greater than 19 feet, 7 inches by maximizing HPCS makeup in accordance with EOP Enclosure 30.

2018 S6

RBS

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-S6

JPM Title: Div 1 Manual Scram Pushbuttons in Accordance with STP-508-0201

Bank: RJPM-AUD-A16-S7 (2016 Audit)

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 10 min

Prepared By:	John Hedgepeth	5-4-2018
		Date
Ops Review:	Rob Melton	5-4-2018
		Date
Facility Review:	Rick Northrup	5-4-2018
		Date
Approved By:	Gabe Kimich	5-4-2018
		Date

Div 1 Manual Scram Pushbuttons in Accordance with STP-508-0201

<u>Setting:</u>	Simulator
<u>Type:</u>	RO/SRO
<u>K&A:</u>	212000 A4.01 (4.6/4.6)
<u>Safety Function:</u>	7 – Instrumentation
<u>PRA Applicability:</u>	RPS – Top 10 Risk System
<u>10CFR 55.45(a)</u>	(2), (4), (5); (6); (8)
<u>Performance:</u>	Perform
<u>Reference(s):</u>	STP-508-0201 Rev 15 Manual Scram Channel Functional Test and LSFT
<u>Handout(s):</u>	STP-508-0201 Rev 15 Manual Scram Channel Functional Test and LSFT OD-7 Printout
<u># Manipulations:</u>	4
<u># Critical Steps:</u>	3
<u>Low Power:</u>	No
<u>Emergency/Abnormal:</u>	No
<u>RCA entry:</u>	No
<u>Engineered Safety Function:</u>	No

Simulator Setup/Required Plant Conditions:

Reset the simulator to IC 101.

Complete Prerequisites for the STP. (STP-508-0201 Section 6)

Safety Concerns: None.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

The plant is operating at 100% power, steady state.

Initiating Cue(s):

The CRS has directed you to perform the monthly functional test of the Manual Scram Pushbuttons in accordance with STP-508-0201 (Section 7, Division 1 only).

All prerequisites have been completed. (STP-508-0201 Section 6)

NOTE: The independent verification will be simulated complete when required.

Perform the monthly functional test of the Manual Scram Pushbuttons

Notes to Evaluator:

- Unless otherwise stated, all control manipulations will be at panel P680.

Task Overview:

Perform the monthly functional test of the Division 1 Manual Scram Pushbuttons in accordance with STP-508-0201 (Section 7). Applicant will arm and depress the manual pushbutton and verify all indications are correct and then reset the half scram.

RECORD START TIME _____

Critical steps are shaded, bolded, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is critical unless otherwise noted.

STP-508-0201, Manual Scram Channel Functional Test and LSFT 6.1 Division 1 Manual Scram Switch Functional Test and LSFT 1. NOTIFY NCO commencing surveillance testing of RPS Channel A.	
<u>Standard:</u>	Operator notified NCO of commencement of testing.
<u>Cue:</u>	Acknowledge commencement of testing.
<u>Notes:</u>	
SAT / UNSAT	

*2. PLACE C71A-S3A, DIV 1 MANUAL SCRAM collar in ARM	
<u>Standard:</u>	<i>Operator rotated collar clockwise to arm C71A S3A, DIV 1 MANUAL SCRAM pushbutton.</i>
<u>Cue:</u>	N/A
<u>Notes:</u>	
SAT / UNSAT	

3. CHECK Annunciator P680-05A-B07, MANUAL SCRAM SWITCH PERMISSIVE, is alarmed.	
<u>Standard:</u>	Verified annunciator P680 05A B07, MANUAL SCRAM SWITCH PERMISSIVE, was lit.
<u>Cue:</u>	N/A
<u>Notes:</u>	
SAT / UNSAT	

NOTE

Annunciator P680-05A-A08, MANUAL SCRAM will clear when C71A-S3A, DIV 1 MANUAL SCRAM is released.

*** 4. DEPRESS C71A-S3A, DIV 1 MANUAL SCRAM.**

Standard: C71A S3A, DIV 1 MANUAL SCRAM pushbutton is depressed.

Cue: N/A

Notes:

SAT / UNSAT

NOTE

Steps 6.1.5.a through 6.1.5.g may be performed in any order.

5. CHECK the following:

- a. Annunciator, P680-05A-A08, MANUAL SCRAM is alarmed.
- b. Annunciator, P680-05A-A09, RPS TRIP LOGIC A OR C ACTIVATED is alarmed.
- c. Status Light H13-P680-11E1, RPS DIV 1 SCRAM SOV VALVES OPEN - CR 1A is off.
- d. Status Light H13-P680-11E1, RPS DIV 3 SCRAM SOV VALVES OPEN - CR 3A is off.
- e. Status Light H13-P680-11E1, RPS DIV 2 SCRAM SOV VALVES OPEN - CR 2A is off
- f. Status Light H13-P680-11E1, RPS DIV 4 SCRAM SOV VALVES OPEN - CR 4A is off
- g. At H13-P691, Indicating Light RPS LOGIC A ENERGIZED is off.

Standard: Applicant verified control panel indications.

Cue: When requested state, "At H13-P691, the RPS LOGIC A ENERGIZED light is off."

Notes:

SAT / UNSAT

*** 6.2 Division 1 Restoration**

1. RESET scram by placing C71A-S5A, SCRAM RESET LOGIC A to RESET and allowing it to spring return to NORM.

Standard: Operator rotated C71A S5A, SCRAM RESET LOGIC A clockwise to RESET and allowed it to spring return to NORM.

Cue: N/A

Notes:

SAT / UNSAT

NOTE

Steps 6.2.2.a through 6.2.2.h may be performed in any order.

2. CHECK the following:

- a. Annunciator P680-05A-A08, MANUAL SCRAM is clear
- b. Annunciator P680-05A-A09, RPS TRIP LOGIC A OR C ACTIVATED is clear.
- c. Status Light H13-P680-11E1, RPS DIV 1 SCRAM SOV VALVES OPEN - CR 1A is on.
- d. Status Light H13-P680-11E1, RPS DIV 3 SCRAM SOV VALVES OPEN - CR 3A is on.
- e. Status Light H13-P680-11E1, RPS DIV 2 SCRAM SOV VALVES OPEN - CR 2A is on.
- f. Status Light H13-P680-11E1, RPS DIV 4 SCRAM SOV VALVES OPEN - CR 4A is on.
- g. At H13-P691, Indicating Light RPS LOGIC A ENERGIZED is on.
- h. No individual rod scrammed.

Standard: Applicant verified indications.

Cue: When requested state, "At H13-P691, the RPS LOGIC A ENERGIZED light is on."

Notes:

SAT / UNSAT

3. PLACE C71A-S3A, DIV 1 MANUAL SCRAM collar in DISARM	
<u>Standard:</u>	Operator rotated C71A S3A, DIV 1 MANUAL SCRAM collar counterclockwise to disarm.
<u>Cue:</u>	N/A
<u>Notes:</u>	SAT / UNSAT

4. CHECK Annunciator P680-05A-B07, MANUAL SCRAM SWITCH PERMISSIVE, is clear.	
<u>Standard:</u>	Verified annunciator P680 05A B07, MANUAL SCRAM SWITCH PERMISSIVE is not lit (or flashing).
<u>Cue:</u>	N/A
<u>Notes:</u>	SAT / UNSAT

5. PERFORM the following Independent Verifications:

Annunciator P680-05A-A08, MANUAL SCRAM is clear.

Annunciator P680-05A-A09, RPS TRIP LOGIC A OR C ACTIVATED is clear.

Status Light H13-P680-11E1, RPS DIV 1 SCRAM SOV VALVES OPEN - CR 1A is on

Status Light H13-P680-11E1, RPS DIV 3 SCRAM SOV VALVES OPEN - CR 3A is on.

Status Light H13-P680-11E1, RPS DIV 2 SCRAM SOV VALVES OPEN - CR 2A is on

Status Light H13-P680-11E1, RPS DIV 4 SCRAM SOV VALVES OPEN - CR 4A is on

At H13-P691, Indicating Light RPS LOGIC A ENERGIZED is on.

No individual rod scrammed.

C71A-S3A, DIV 1 MANUAL SCRAM collar is in DISARM.

Annunciator P680-05A-B07, MANUAL SCRAM SWITCH PERMISSIVE, is clear.

Standard: N/A

Cue: When requested, "At H13-P691, indicating Light RPS LOGIC A ENERGIZED is on."

Notes:

SAT / UNSAT

6. NOTIFY NCO RPS Channel A has been restored.

Standard: Operator notifies NCO of channel A testing complete and restored.

Cue: Acknowledge completion of channel A testing.

Notes:

SAT / UNSAT

Terminating Cue: Applicant notifies NCO of channel A testing complete and restored.
This completes this JPM.

STOP TIME: _____

Task Standard(s):

Applicant completes the Division 1 monthly functional test of the Manual Scram Pushbuttons with no unrecovered errors.

SAT / UNSAT

Remember to record stop time

PERFORM THE MONTHLY FUNCTIONAL TEST
OF THE MANUAL SCRAM PUSHBUTTONS

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant**Initial Condition(s):**

The plant is operating at 100% power, steady state.

Initiating Cue(s):

The CRS has directed you to perform the monthly functional test of the Manual Scram Pushbuttons in accordance with STP-508-0201 (Section 6, Division 1 only).

All prerequisites have been completed. (STP-508-0201 Section 5)

NOTE: The independent verification will be simulated complete when required.

2018 S7

RBS

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-S7

JPM Title: Emergency Operation of Containment Coolers with Service Water

Bank: RJPM-NRC-M14-S6 Rev 1 (March 2014 NRC)

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input checked="" type="checkbox"/> Alternate Path	Validation Time: 10 min

Prepared By:	John Hedgepeth	5-4-2018
		Date
Ops Review:	Rob Melton	5-4-2018
		Date
Facility Review:	Rick Northrup	5-4-2018
		Date
Approved By:	Gabe Kimich	5-4-2018
		Date

Emergency Operation of Containment Coolers with Service Water

<u>Setting:</u>	Simulator
<u>Type:</u>	RO/SRO
<u>K&A:</u>	223001 A2.01 (4.4/4.4) 223001 A2.13 (3.3/3.4)
<u>Safety Function:</u>	8 – Plant Service Systems
<u>PRA Applicability:</u>	N/A
<u>10CFR 55.45(a)</u>	(3), (6), (7)
<u>Performance:</u>	Perform
<u>Reference(s):</u>	SOP-0059, Rev 037, Section 5.14
<u>Handout(s):</u>	SOP-0059, Rev 037, Section 5.14
<u># Manipulations:</u>	8
<u># Critical Steps:</u>	8
<u>Low Power:</u>	No
<u>Emergency/Abnormal:</u>	Yes
<u>RCA entry:</u>	No
<u>Engineered Safety Function:</u>	No

Simulator Setup/Required Plant Conditions:

1. Reset to IC 166
2. Required Power: ATWS, with RPV level stable between Level 1 and Level 2
3. Reactor water level should be stable such that HVN has isolated (except for one failed valve) but service water has not automatically valved in requiring manual action per SOP-0059 Section 5.14
4. HVN-MOV129 should have failed to isolate on Level 2 but be capable of manual isolation.
5. Override: HVN-MOV129P to 100%
6. T1 LO_HVN-MOV129-G override ON
7. T1 LO_HVN-MOV129-R override OFF delay 30 seconds
8. Event T1 - zdi2(308)

Safety Concerns: None.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

A plant transient has occurred resulting in entry into the Emergency Operating Procedures. EOP-0002 directs maximizing containment cooling. The containment unit coolers have no cooling water flow due to the isolation of HVN.

Initiating Cue(s):

The CRS has directed you to conduct Emergency Operation of Containment Unit Coolers with Service Water in accordance with SOP-0059, Section 5.14 for BOTH Containment Unit Coolers.

Place SFC-P1 B in Service on the Upper Pools

Notes to Evaluator:

- Unless otherwise stated, all control manipulations will be at panel P870.

Task Overview:

This task will align service water to the containment unit coolers and start a second safety related unit cooler.

START TIME: _____

Critical steps are shaded, bolded, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is critical unless otherwise noted.

NOTE:

This section is only to be used in emergencies. If it is desired to use Service Water at other times, refer to SOP-0116, Turbine and Radwaste Building HVAC Chilled Water System.

5.14.1 Verify the following valves are closed • HVN MOV127, CHW SPLY OUTBD ISOL	
<u>Standard:</u>	Applicant verified HVN MOV127 closed by checking the GREEN indicating light ON and RED indicating light OFF.
<u>Cue:</u>	N/A
<u>Notes:</u>	
SAT / UNSAT	

5.14.1 Verify the following valves are closed • HVN-MOV128, CHW RTN OUTBD ISOL	
<u>Standard:</u>	Applicant verified HVN-MOV128 closed by checking the GREEN indicating light ON and RED indicating light OFF.
<u>Cue:</u>	N/A
<u>Notes:</u>	
SAT / UNSAT	

*5.14.1 Verify the following valves are closed • HVN-MOV129, CHW SPLY SHUTOFF VLV	
<u>Standard:</u>	<i>Applicant recognized HVN-MOV129 failed to isolate by checking the RED indicating light ON and GREEN indicating light OFF.</i> <i>Applicant rotated the HVN-MOV129 control switch counterclockwise to the CLOSE position and verified the GREEN indicating light ON and RED indicating light OFF.</i>
<u>Cue:</u>	N/A
<u>Notes:</u>	
SAT / UNSAT	

5.14.1 Verify the following valves are closed

• HVN-MOV130, CHW RTN SHUTOFF VLV

are closed

- HVN-MOV130, CHW RTN SHUTOFF VLV

Standard: Applicant verified HVN-MOV130 closed by checking the GREEN indicating light ON and RED indicating light OFF

Cue: N/A

Notes:

SAT / UNSAT

ALTERNATE PATH BEGINS ON NEXT STEP

***5.14.1 Verify the following valves are closed**

- **HVN-MOV102, CHW RTN INBD ISOL**

Standard: Applicant recognized HVN-MOV102 failed to isolate by checking the RED indicating light ON and GREEN indicating light OFF.

Applicant rotated HVN-MOV102 control switch counterclockwise to the CLOSE position and verified the GREEN indicating light ON and RED indicating light OFF.

Cue: N/A

Notes:

SAT / UNSAT

***5.14.1 Verify the following valves are closed**

- **HVN-MOV22A, CONTMT UC1A DISCH**

Standard: Applicant rotated HVN-MOV22A control switch counterclockwise to the CLOSE position and checked the GREEN indicating light ON and RED indicating light OFF.

Cue: N/A

Notes:

SAT / UNSAT

***5.14.1 Verify the following valves are closed**
• HVN-MOV22B, CONTMT UC1B DISCH

Standard: *Applicant rotated HVN-MOV22B control switch counterclockwise to the CLOSE position and checked the GREEN indicating light ON and RED indicating light OFF.*

Cue: *N/A*

Notes:

SAT / UNSAT

***5.14.2 At H13-P870, open the following valves:**
1. SWP-MOV502A, CONTAINMENT UC SUPPLY

Standard: *Applicant rotated SWP-MOV502A control switch clockwise to the OPEN position and checked the GREEN indicating light OFF and the RED indicating light ON.*

Cue: *N/A*

Notes: *Opening of SWP-MOV502A & B are NOT sequence dependent. Since BOTH Unit Coolers require service water, all 4 valves will be opened.*

SAT / UNSAT

***5.14.2 At H13-P870, open the following valves:**
1. SWP-MOV502B, CONTAINMENT UC SUPPLY

Standard: *Applicant rotated SWP-MOV502B control switch clockwise to the OPEN position and checked the GREEN indicating light OFF and the RED indicating light ON.*

Cue: *N/A*

Notes: *Opening of SWP-MOV502A & B are NOT sequence dependent. Step 9 is a continuation of the step 8 bullet. Both the 502A and B valves should be opened for this condition.*

SAT / UNSAT

*5.14.2 At H13-P870, open the following valves: 2) SWP-MOV503A, CONTAINMENT UC RETURN	
<u>Standard:</u>	<i>Applicant rotated SWP-MOV503A control switch clockwise to the OPEN position and checked the GREEN indicating light OFF and the RED indicating light ON.</i>
<u>Cue:</u>	<i>N/A</i>
<u>Notes:</u>	<i>Opening of SWP-MOV503A & B are NOT sequence dependent.</i>
SAT / UNSAT	

*5.14.2 At H13-P870, open the following valves: 2) SWP-MOV503B, CONTAINMENT UC RETURN	
<u>Standard:</u>	<i>Applicant rotated SWP-MOV503B control switch clockwise to the OPEN position and checked the GREEN indicating light OFF and the RED indicating light ON.</i>
<u>Cue:</u>	<i>N/A</i>
<u>Notes:</u>	<i>Opening of SWP-MOV503A & B are NOT sequence dependent. Step 11 is a continuation of the step 10 bullet. Both the 503A and B valves should be opened for this condition.</i>
SAT / UNSAT	

5.14.3 Verify HVR-UC1A(B), CONTMT UNIT CLR A(B) is running	
<u>Standard:</u>	<i>Applicant recognized HVR unit coolers A and B were running by checking the RED indicating light ON and GREEN indicating light OFF</i>
<u>Cue:</u>	<i>N/A</i>
<u>Notes:</u>	
SAT / UNSAT	

Terminating Cue: HVR-UC1A and HVR-UC1B are running with service water providing cooling water flow and all HVN valves are isolated

This completes this JPM.

STOP TIME: _____

Task Standard(s):

Both HVR-UC1A and UC1B running with service water providing cooling and all HVN valves isolated.

SAT / UNSAT

Remember to record stop time

Place SFC-P1 B in Service on the Upper Pools

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant

Initial Condition(s):

A plant transient has occurred resulting in entry into the Emergency Operating Procedures. EOP-0002 directs maximizing containment cooling. The containment unit coolers have no cooling water flow due to the isolation of HVN.

Initiating Cue(s):

The CRS has directed you to conduct Emergency Operation of Containment Unit Coolers with Service Water in accordance with SOP-0059, Section 5.14 for BOTH Containment Unit Coolers.

2018 S8

RBS

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-S8

JPM Title: Place SFC-P1B in Service on the Upper Pools

Bank: N/A

JPM Attributes:

<input checked="" type="checkbox"/> New	<input type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input checked="" type="checkbox"/> Alternate Path	Validation Time: 10 min

Prepared By:	John Hedgepeth	5-4-2018
		Date
Ops Review:	Rob Melton	5-4-2018
		Date
Facility Review:	Rick Northrup	5-4-2018
		Date
Approved By:	Gabe Kimich	5-4-2018
		Date

Place SFC-P1 B in Service on the Upper Pools

<u>Setting:</u>	Simulator
<u>Type:</u>	RO/SRO
<u>K&A:</u>	233000 A4.04 (2.9/3.1)
<u>Safety Function:</u>	9 – Radioactivity Release
<u>PRA Applicability:</u>	N/A
<u>10CFR 55.45(a)</u>	(3); (4); (7)
<u>Performance:</u>	Perform
<u>Reference(s):</u>	SOP-91 Rev 56 Fuel Pool Cooling and Cleanup Sys
<u>Handout(s):</u>	SOP-91 Rev 56 Fuel Pool Cooling and Cleanup Sys, Section 4.4
<u># Manipulations:</u>	4
<u># Critical Steps:</u>	5
<u>Low Power:</u>	No
<u>Emergency/Abnormal:</u>	No
<u>RCA entry:</u>	No
<u>Engineered Safety Function:</u>	No

Simulator Setup/Required Plant Conditions:

IC 154

Reduce reactor power to approximately 85% (for companion JPM)

JPM starts on step 4.4.10.5 to open SFC-MOV120

Mark up procedure to indicate completion up to 4.4.10.5

Override RHS-AOV62, SPC SUCTION VALVE, RHS-AOV63, SPC SUCTION VALVE and RHS-AOV64, SPC DISCHARGE VALVE to prevent valves from automatically closing on low pool level.

Safety Concerns: None.

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

Reactor is at 85% power, steady state conditions.

Initiating Cue(s):

The CRS has directed you to place SFC-P1B, FUEL POOL CLG PUMP 1B in Service on the Upper Pools per SOP-91, Section 4.4.

Steps 4.4.1 – 4.4.10.4 is complete. Start at step 4.4.10.5

Place SFC-P1 B in Service on the Upper Pools

Notes to Evaluator:

- Unless otherwise stated, all control manipulations will be at panel P870.

Task Overview:

Applicant will place SFC-P1B, FUEL POOL CLG PUMP 1B in Service on the Upper Pools. Once the system is aligned a leak will occur in the reactor building storage pool. The low level will cause H13-P870/56A/H03 to alarm and RHS-AOV62, SPC SUCTION VALVE, RHS-AOV63, SPC SUCTION VALVE and RHS-AOV64, SPC DISCHARGE VALVE fail to close at low level setpoint. Applicant must manually close them using control switches.

RECORD START TIME _____

Critical steps are shaded, bolded, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is critical unless otherwise noted.

*4.4.10. Open the following:	
5. At H13-P870, SFC-MOV120, FPC PMP INBD ISOL	
<u>Standard:</u>	<i>SFC-MOV120, FPC PMP INBD ISOL, hand switch turned clockwise to OPEN position. Observed red light on, green light off.</i>
<u>Cue:</u>	None
<u>Notes:</u>	
SAT / UNSAT	

*4.4.10. Open the following:	
6. At H13-P870, SFC-MOV122, FPC PUMP OUTBD ISOL	
<u>Standard:</u>	<i>SFC-MOV122, FPC PUMP OUTBD ISOL, hand switch turned clockwise to OPEN position. Observed red light on, green light off.</i>
<u>Cue:</u>	None
<u>Notes:</u>	
SAT / UNSAT	

4.4.11. Throttle two turns open SFC-V52, FPC PUMP B DISCH ISOL VALVE.

Standard: Dispatched building operator to throttle two turns open SFC-V52, FPC PUMP B DISCH ISOL VALVE.

Cue: Acknowledge request to throttle open valve and report valve is throttled open two turns.

Notes:

SAT / UNSAT

***4.4.12. At H13-P870, start SFC-P1B, FUEL POOL CLG PUMP 1B.**

Standard: SFC-P1B, FUEL POOL CLG PUMP 1B, start pushbutton depressed. Observed red light on, green light off.

Cue: None

Notes:

When the pump is started SFC-LI11A(B), fuel pool level will start lowering and P870-56A-H03 will alarm.

SAT / UNSAT

***4.4.13. Open slowly SFC-V52, FPC PUMP B DISCH ISOL VALVE while monitoring pool levels.**

Standard: Dispatched building operator to slowly open SFC-V52, FPC PUMP B DISCH ISOL VALVE

Cue: Acknowledge request and report that SFC-V52, FPC PUMP B DISCH ISOL VALVE is open.

Notes: ***When the pump is started SFC-LI11A(B), fuel pool level will start lowering and P870-56A-H03 will alarm. This may not be performed if alarm for low level is received.***

SAT / UNSAT

ALTERNATE PATH BEGINS WITH THE NEXT STEP

H13-P870 / 56A / H03, RX BLDG STORAGE POOL LEVEL HIGH/LOW

OPERATOR ACTIONS:

1. Check SFC-LI11A(11B), FP STORAGE WTR HIGH/LOW LEVEL on H13-P870 to determine if a high or low level exists.
2. Refer to AOP-0003, Automatic Isolations and verify automatic actions have occurred.

Standard: Recognize low storage water level and take actions per H13-P870 / 56A / H03, RX BLDG STORAGE POOL LEVEL HIGH/LOW.

Cue: If requested, acknowledge and report that SFC-V52, FPC PUMP B DISCH ISOL VALVE is closed.

Notes:

Applicant may direct building operator to close SFC-V52, FPC PUMP B DISCH ISOL VALVE and secure SFC-P1B, FUEL POOL CLG PUMP 1B.

SAT / UNSAT

NOTE: Valves are located on P601.

***H13-P870 / 56A / H03, RX BLDG STORAGE POOL LEVEL HIGH/LOW
AUTOMATIC ACTIONS:**

- 1. RHS-AOV63, SPC SUCTION VALVE and RHS-AOV64, SPC DISCHARGE VALVE close at low level setpoint. (SFC-LT11A)**
- 2. RHS-AOV62, SPC SUCTION VALVE, closes at low level setpoint.**

Standard: RHS-AOV62, SPC SUCTION VALVE, RHS-AOV63, SPC SUCTION VALVE and RHS-AOV64, SPC DISCHARGE VALVE hand switches rotated counterclockwise to CLOSE. Observed red light off, green light on.

Cue: None

Notes:

SAT / UNSAT

Terminating Cue: *Applicant has closed RHS-AOV62, RHS-AOV63 and RHS-AOV64.*

This completes this JPM.

STOP TIME:

Task Standard(s):

Applicant places SFC-P1 B in Service on the Upper Pools without any unrecovered errors and responds to upper pool leak by closing RHS-AOV62, RHS-AOV63, and RHS-AOV64.

SAT / UNSAT

Remember to record stop time

Place SFC-P1 B in Service on the Upper Pools

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant

Initial Condition(s):

Reactor is at 85% power, steady state conditions.

Initiating Cue(s):

The CRS has directed you to place SFC-P1B, FUEL POOL CLG PUMP 1B in Service on the Upper Pools per SOP-91, Section 4.4.

Steps 4.4.1 – 4.4.10.4 is complete. Start at step 4.4.10.5

2018 P1

RBS

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-P1

JPM Title: Manually Startup RHR "B" In Suppression Pool Cooling From The Remote Shutdown Panel

Bank: RJPM-NRC-D10-P3

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 12 min

Prepared By:	John Hedgepeth	5-4-2018
		Date
Ops Review:	Rob Melton	5-4-2018
		Date
Facility Review:	Rick Northrup	5-4-2018
		Date
Approved By:	Gabe Kimich	5-4-2018
		Date

Manually Startup RHR “B” In Suppression Pool Cooling From The Remote Shutdown Panel

Setting: Plant
Type: RO/SRO
K&A: 219000
A1.02 3.5/3.5
295016
AA2.04 3.9/4.1

Safety Function: 5 – Containment Integrity

PRA Applicability: N/A

10CFR 55.45(a) (5); (6), (7), (8), (13)

Reference(s): AOP-0031 Rev 331 Shutdown From Outside the Main Control Room

Handout(s): AOP-0031 Rev 331 Shutdown From Outside the Main Control Room
Excerpt

Manipulations: 4

Critical Steps: 4

Low Power: No

Emergency/Abnormal: Yes

RCA entry: No

Engineered Safety Function: No

Simulator Setup/Required Plant Conditions:

NONE: This JPM is performed in the plant

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

The Control Room has been evacuated. The Reactor is in Hot Shutdown and control has been established at the Remote Shutdown Panel. There has been no fire. Reactor pressure is under control with SRV's.

Initiating Cue(s):

The CRS has directed you to place RHR "B" in Suppression Pool Cooling using AOP-0031, Shutdown From Outside the Main Control Room, Step 5.12. Standby Service water pumps B and D are in service.

A building operator is standing by to perform 5.12.4.

Manually Startup RHR “B” In Suppression Pool Cooling From The Remote Shutdown Panel

Notes to Evaluator:

If in the Plant or the Control Room, Caution the operator NOT to MANIPULATE the controls, but to make clear what they would do if this were not a simulated situation.

Task Overview: Applicant simulates startup RHR B in suppression pool cooling from the RSP.

RECORD START TIME _____

Critical steps are shaded, bolded, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is critical unless otherwise noted.

5.12.1 Verify the RHR Heat Exchangers are being supplied by either Normal or Standby Service Water	
<u>Standard:</u>	N/A. Given as part of initial conditions.
<u>Cue:</u>	RHR Heat Exchangers are being supplied by Standby Service Water per cue sheet.
<u>Notes:</u>	
	SAT / UNSAT

5.12.2 <i>Throttle E12-F068B, RHR HX B SVCE WTR RTN open to establish required flow not to exceed 5800 gpm as indicated on SWP-FI64B, SSW RHR HX B FLOW.</i>	
<u>Standard:</u>	<i>E12-F068B, RHR HX A SVCE WTR RTN rotated clockwise and released to spring return to auto.</i>
<u>Cue:</u>	RHR “B” HX flow is 5500 gpm RED light ON GREEN light ON
<u>Notes:</u>	
	SAT / UNSAT

*** 5.12.3****Start E12-C002B, RHR PUMP B and perform the following:****Standard:** *E12-C002B, RHR PUMP B hand switch rotated clockwise to START.***Cue:** RED light ON
GREEN light OFF**Notes:****SAT / UNSAT*****5.12.3.1****Open E12-F024B, RHR PUMP B TEST RTN TO SUP PL.****Standard:** *Control switch for E12-F024B, RHR PUMP B TEST RTN TO SUP PL rotated clockwise to the open position.***Cue:** RED light ON
GREEN light OFF**Notes:****SAT / UNSAT****5.12.3.2****At ENS-SWG01B, check pump running amps are less than or equal to 91 amps****Standard:** At ENS-SWG01B, verified RHR Pump B amps less than or equal to 91 amps**Cue:** RHR B running amps are 80 amps**Notes:****SAT / UNSAT**

5.12.4

Perform the following:

1. On EHS-MCC2E open the following breakers:

- Bkr 6A, E12-F073A HEAT EXCH A VENT SUPPR POOL VALVE
- Bkr 6B, E12-F074A HEAT EXCH A VENT SUPPR POOL VALVE

2. Verify the following valves are closed:

1) In AUX Bldg 95' NW crescent area, E12-MOVF073A, RHR A HX DN STREAM VENT VALVE

Standard: Contacted operator standing by to perform step per initiating cue.

Cue: When requested, report step 5.12.4 is complete.

Notes:

SAT / UNSAT

***5.12.5**

WHEN RHR flow exceeds 1100 gpm, THEN close E12-F064B, RHR PUMP B MIN FLOW TO SUP PL.

Standard: Rotated E12-F064B hand switch counterclockwise to CLOSE position.

***Cue: RHR flow is 5000 gpm
RED light OFF
GREEN light ON***

Notes:

SAT / UNSAT

5.12.6

Throttle E12-F048B, RHR HX B BYPASS VALVE closed to obtain the desired cooling.

Standard: Control switch for E12-F048B, RHR HX B BYPASS VALVE rotated counterclockwise to the closed position.

Cue: RED light ON and GREEN light ON (while throttling valve closed).

Notes:

SAT / UNSAT

5.12.7

Record data on Attachment 3, Suppression Pool Water Temperature/Level Data

Standard: N/A

Cue: Another operator is recording Data

Notes:

SAT / UNSAT

Terminating Cue: Suppression pool cooling in service.

This completes this JPM.

STOP TIME: _____

Task Standard(s):

Applicant places RHR B in suppression cooling in accordance with standards without any unrecovered errors.

SAT / UNSAT

Remember to record stop time

Manually Startup RHR “B” In Suppression Pool Cooling From The Remote Shutdown Panel

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant

Initial Condition(s):

The Control Room has been evacuated. The Reactor is in Hot Shutdown and control has been established at the Remote Shutdown Panel. There has been no fire. Reactor pressure is under control with SRV's.

Initiating Cue(s):

The CRS has directed you to place RHR "B" in Suppression Pool Cooling using AOP-0031, Shutdown From Outside the Main Control Room, Step 5.12. Standby Service water pumps B and D are in service.

A building operator is standing by to perform 5.12.4.

2018 P2

RBS

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-P2

JPM Title: Transfer RCIC Steam Supply Isolation Valve To Alternate Power Per AOP-0031

Bank: RJPM-NRC12-P1 Rev 3-D10-P3

JPM Attributes:

<input type="checkbox"/> New	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> Direct from bank
<input checked="" type="checkbox"/> Time Critical	<input type="checkbox"/> Alternate Path	Validation Time: 10 min

Prepared By:	John Hedgepeth	5-4-2018
		Date
Ops Review:	Rob Melton	5-4-2018
		Date
Facility Review:	Rick Northrup	5-4-2018
		Date
Approved By:	Gabe Kimich	5-4-2018
		Date

Transfer RCIC Steam Supply Isolation Valve To Alternate Power Per AOP-0031

Setting: Plant
Type: RO/SRO
K&A: 217000
A2.04 (A.C. power loss) 2.3*/2.3*
A2.12 3.0/3.0
295016
AA1.04 3.1/3.2
Safety Function: 4 - Heat Removal From the Core
PRA Applicability: N/A
10CFR 55.45(a) (6)
Reference(s): AOP-0031 Rev 331 Shutdown From Outside the Main Control Room
Attachment 14
Handout(s): AOP-0031 Rev 331 Shutdown From Outside the Main Control Room
Excerpt with Attachment 14
Manipulations: 5
Critical Steps: 5
Low Power: No
Emergency/Abnormal: No
RCA entry: Yes
Engineered Safety Function: Yes

Simulator Setup/Required Plant Conditions:

NONE: This JPM is performed in the plant

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

While operating at 100 percent power a fire was discovered in the Main Control Room. Initial actions to extinguish the fire have been unsuccessful. AOP-0031, SHUTDOWN FROM OUTSIDE THE CONTROL ROOM has been entered and Control Room abandonment is in progress.

Initiating Cue(s):

The CRS has directed you to perform Attachment 14, Section 1.1 of AOP-0031, SHUTDOWN FROM OUTSIDE THE CONTROL ROOM, to transfer E51-MOVF063 to Division 1 alternate power.

This is a time critical JPM.

Start time to commence after entering Radiologically Controlled Area (RCA).

Transfer RCIC Steam Supply Isolation Valve To Alternate Power Per AOP-0031

Notes to Evaluator:

If in the Plant or the Control Room, Caution the operator NOT to MANIPULATE the controls, but to make clear what they would do if this were not a simulated situation.

Below are Notes and a Warning contained at the beginning of Attachment 14.

Task Overview: Applicant simulates transferring RCIC Steam Supply Isolation valve to alternate power per AOP-0031.

NOTE

Upon arrival at the EHS-MCC2L on Aux Bldg 141' west side or Div I RSS Room the Reactor Building Operator obtains and when directed completes the appropriate steps in this attachment. Upon completion, he remains at the Div I RSS Room and conducts operations as directed by the CRS.

The Div I Remote Shutdown Room number is 2903.

The COS Portable Intercom Jack System (blue headsets) is available for communications with the Div I Remote Shutdown Room. Headset and cord are located in the red tool box next to the SRV cart.

WARNING

Due to extreme differential pressure, 123 ft el access doors into the Aux Bldg may be a personnel hazard. When operation conditions permit, Aux Bldg access should be from the 95 ft el or 67 ft el.

- 1.1 WHEN directed by the CRS, THEN perform Steps 1.1.1 through 1.1.6.

NOTE

Steps 1.1.1 through 1.1.6, in addition to the RCIC lineup steps performed by the ATC operator at the Div I RSS panel, are required to be completed within 10 minutes of scrambling the reactor due to a Main Control Room fire. These actions are performed at EHS-MCC2L, west side and EHS-MCC2D, east side of Aux Bldg, 141' el.

RECORD START TIME _____

Critical steps are shaded, bolded, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is critical unless otherwise noted.

Action:	
1.1.1	
* Close EHS-MCC2L BKR 6AT, E51-SW63 BRKR 1 ALT DIV I PWR E51 MOVF063	
<u>Standard:</u>	<i>Applicant located/identified EHS-MCC2L BKR 6AT and simulated placing the breaker handle in the ON position.</i>
<u>Cue:</u>	Breaker handle is pointing to the left position.
<u>Notes:</u>	
	SAT / UNSAT

Action:	
1.1.2	
*Close EHS-MCC2L BKR 6AB, E51-SW63 BRKR 2 ALT DIV I PWR E51 MOVF063	
<u>Standard:</u>	<i>Applicant located/identified EHS-MCC2L BKR 6AB and simulated placing the breaker handle in the ON position.</i>
<u>Cue:</u>	Breaker handle is pointing to the left position.
<u>Notes:</u>	
	SAT / UNSAT

Action:**1.1.3*****Open EHS MCC2D BKR 3C, E51-MOVF063 RCIC & RHR STEAM SUPPLY VALVE.*****Standard:** *Applicant has located/identified EHS MCC2D BKR 3C and simulated placing the breaker handle in the OFF position.***Cue:** Breaker handle is pointing to the right position.**Notes:****SAT / UNSAT****Action:****1.1.4******On wall to right side of EHS-MCC2D, close E51-SW63, DIV I ALT PWR SUPPLY E51-MOVF063.*****Standard:** *Applicant located/identified E51-SW63 and simulated placing the switch in the ON position.***Cue:** E51-SW63 is in the UP position.**Notes:****SAT / UNSAT**

Action:**1.1.5**

*** On right side of EHS-MCC2D, place 43-1ICSA02, CONTROL XFER E51 MOVF063 in ALTERNATE and check the following:**

Standard: Applicant simulated placing CONTROL XFER E51 MOVF063 in ALTERNATE.

Cue: Switch is turned clockwise to the right.

Notes:

When the applicant has turned the switch to ALTERNATE, record the time; the time critical portion of the JPM is complete.

TIME CRITICAL COMPLETION TIME: _____

SAT / UNSAT

Action:**1.1.5**

W2 1ICSA02, DIV I ALT CONTROL POWER E51 MOVF063 is illuminated.

Standard: Applicant located/identified W2 1ICSA02 and verified light is illuminated.

Cue: Light with the red label is ON.

Notes:

SAT / UNSAT

Action: 1.1.5 W1-1ICSA02 NORMAL CONTROL POWER E51-MOVF063 is extinguished	
<u>Standard:</u>	Applicant located/identified W1-1ICSA02 and verified light is extinguished.
<u>Cue:</u>	Light with the blue label is OFF.
<u>Notes:</u>	SAT / UNSAT

Action: 1.1.6 Inform ATC Operator that E51 MOVF063 has been transferred to the Div I Alternate Power.	
<u>Standard:</u>	Applicant notified the ATC operator that E51 MOVF063 has been transferred to the Div I Alternate Power.
<u>Cue:</u>	Acknowledge report regarding transfer of E51-MOVF063 to alternate power.
<u>Notes:</u>	SAT / UNSAT

Terminating Cue: After report to ATC Operator.
This completes this JPM.

STOP TIME: _____

<u>Task Standard(s):</u> E51-MOVF063 has been transferred to alternate power per AOP-0031 within 10 minutes.	SAT / UNSAT
<i>Remember to record stop time</i>	

Transfer RCIC Steam Supply Isolation Valve
To Alternate Power Per AOP-0031

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant

Initial Condition(s):

While operating at 100 percent power a fire was discovered in the Main Control Room. Initial actions to extinguish the fire have been unsuccessful. AOP-0031, SHUTDOWN FROM OUTSIDE THE CONTROL ROOM has been entered and Control Room abandonment is in progress.

Initiating Cue(s):

The CRS has directed you to perform Attachment 14, Section 1.1 of AOP-0031, SHUTDOWN FROM OUTSIDE THE CONTROL ROOM, to transfer E51-MOVF063 to Division 1 alternate power.

This is a time critical JPM.

Start time to commence after entering Radiologically Controlled Area (RCA).

2018 P3

RBS

2018 NRC Operating Test

Job Performance Measure

JPM Number: RJPM-NRC18-P3

JPM Title: Manual Start HPCS Diesel Generator

Bank: N/A

JPM Attributes:

<input checked="" type="checkbox"/> New	<input type="checkbox"/> Modified	<input type="checkbox"/> Direct from bank
<input type="checkbox"/> Time Critical	<input checked="" type="checkbox"/> Alternate Path	Validation Time: 15 min

Prepared By:	John Hedgepeth	5-4-2018
		Date
Ops Review:	Rob Melton	5-4-2018
		Date
Facility Review:	Rick Northrup	5-4-2018
		Date
Approved By:	Gabe Kimich	5-4-2018
		Date

Manual Start HPCS Diesel Generator

<u>Setting:</u>	Plant
<u>Type:</u>	RO/SRO
<u>K&A:</u>	264000 A4.04 3.7/3.7
<u>Safety Function:</u>	6 - Electrical
<u>PRA Applicability:</u>	#4 Operator Actions, Recover a DG within 1 hour
<u>10CFR 55.45(a)</u>	(3), (4), (5), (6), and (8)
<u>Reference(s):</u>	SOP-0052 Rev 57 HPCS Diesel Generator ARP-E22-PNLS00 Rev 10 HPCS Diesel Alarm Response
<u>Handout(s):</u>	SOP-0052 Rev 57 HPCS Diesel Generator ARP-E22-PNLS00 Rev 10 HPCS Diesel Alarm Response
<u># Manipulations:</u>	3
<u># Critical Steps:</u>	3
<u>Low Power:</u>	No
<u>Emergency/Abnormal:</u>	No
<u>RCA entry:</u>	No
<u>Engineered Safety Function:</u>	Yes

Simulator Setup/Required Plant Conditions:

NONE: This JPM is performed in the plant

Name: _____ Time Start: _____ Time Stop: _____

Initial Condition(s):

- Communications with a Main Control Room Operator will be simulated with evaluator.
- Section 4.2, Pre-Start Checks are completed satisfactorily.
- Steps 4.4.1 – 4.4.3 are complete.
- HPCS bus is energized.

Initiating Cue(s):

The CRS has directed you to manually start the HPCS DG IAW SOP-0052, Section 4.4.

Manual Start HPCS Diesel Generator

Notes to Evaluator:

If in the Plant or the Control Room, Caution the operator NOT to MANIPULATE the controls, but to make clear what they would do if this were not a simulated situation.

Task Overview: Operator manually starts HPCS DG IAW SOP-0052, Section 4.4 and manually trips the HPCS DG upon indications of the diesel overspeed condition IAW E22-PNLS001/A2, OVERSPEED.

RECORD START TIME _____

Critical steps are shaded, bolded, italicized, and denoted by an (*)

NOTE: The sequence of the following steps is critical unless otherwise noted.

4.4.4.	
<i>Depress the manual fuel prime pushbutton on the Diesel Engine skid mounted panel for greater than 3 seconds and less than 5 seconds.</i>	
<u>Standard:</u> <i>Operator depressed the manual fuel prime pushbutton for 3-5 seconds.</i>	
<u>Cue:</u>	When the operator simulates pressing the pushbutton state “Pushbutton is depressed”; when the operator simulates releasing pushbutton state “Pushbutton is released”.
<u>Notes:</u>	
SAT / UNSAT	

4.4.5. At Engine Control Panel E22 PNLS001, momentarily depress the MANUAL START (S4) pushbutton.	
<u>Standard:</u> <i>Operator depressed the MANUAL START pushbutton.</i>	
<u>Cue:</u>	<i>You hear the diesel engine start (very loud). After 15 seconds of observing Engine Control Panel E22 PNLS001 indications, cue loud alarming condition and point E22-PNLS001/A2, OVERSPEED is lit. If applicant is in diesel room, cue applicant of alarming sound.</i>
<u>Notes:</u>	<i>If</i>
SAT / UNSAT	

4.4.6.

Verify Diesel Engine starts and comes to at least 882 RPM, as indicated on CSH SI267, ENGINE TACHOMETER.

Standard: Operator verified the engine came up to at least 882 RPM and recognized the engine is operating at an overspeed condition. This may also be accomplished by recognizing alarming condition in previous step.

Cue: Use pointer for diesel engine speed pegged max RPM.

Notes:

SAT / UNSAT

ALTERNATE PATH

E22-PNLS001/A2, OVERSPEED, OPERATOR ACTIONS:

Verify the diesel generator has tripped.

Standard: ***Operator depressed the S3, MANUAL STOP pushbutton.***

Cue: Diesel engine is slowing down.

Notes:

SAT / UNSAT

Terminating Cue: After HPCS D/G is tripped.
This completes this JPM.

STOP TIME: _____

Task Standard(s):

Manually start HPCS DG and then manually trip upon indications of overspeed condition.

SAT / UNSAT

Remember to record stop time

Manual Start HPCS Diesel Generator

Operator: _____

License (Circle one): RO / SRO

Evaluator: _____

Time to complete JPM: _____ minutes

Follow-up Questions:

Follow-up Question Response:

Comments / Feedback:

RESULT: Satisfactory / Unsatisfactory

Note: An "Unsatisfactory" requires comments.

Evaluator's Signature: _____

Date: _____

Give this page to the applicant

Initial Condition(s):

- | |
|---|
| <ul style="list-style-type: none">• Communications with a Main Control Room Operator will be simulated with evaluator.• Section 4.2, Pre-Start Checks are completed satisfactorily.• Steps 4.4.1 – 4.4.3 are complete.• HPCS bus is energized. |
|---|

Initiating Cue(s):

<p>The CRS has directed you to manually start the HPCS DG IAW SOP-0052, Section 4.4.</p>
--

2018 NRC Scenario 1

Facility: <u>River Bend Nuclear Station</u> Scenario No.: <u>1</u> Op-Test No.: <u>2018-07</u>			
Examiners: _____ _____ _____		Operators: _____ _____ _____	
Initial Conditions: 100% Power. RHR A is in suppression pool cooling. Containment Purge is in service. Inoperable Equipment: None Turnover: Slow roll RCIC per SOP-35 for retest after governor oil replacement.			
Event No.	Malfunction No.	Event Type †	Event Description
1	RCIC009	C (BOP/CRS) TS (CRS) A (ALL)	RCIC started/H13-P601/21A/C01 DIV I RCIC ISOL MN STM SPLY LINE DIFF PRESS HIGH alarms / Division 1 isolation with failed MOV, TS 3.5.3 Condition A, TS 3.3.6.1 Condition A
2	LPRMUP0615D	I (ATC/CRS) A (ALL)	LPRM 06-15D fails upscale / half scram
3	CNM004B	C (ATC/CRS) A (ALL)	CNM-P1B trips / power reduction
4	ED003A	C (BOP/CRS) A(CREW) TS (CRS)	E22-S004 Division 3 bus fault /Division 3 DG starts/secure unloaded DG, TS 3.5.1 Condition B, TS 3.7.1 Condition E
5	CNM001A-K	M (ALL)	Loss of all condensate/scram
6	RCS007	M (ALL)	Reactor coolant leak / loss of RPV water level CT-1
7	RHR009A LPCS005	C (BOP/CRS)	Division 1 ECCS fails to auto initiate/ manually initiated. CT-2
8	RHR001B RHR001C	C (ATC/CRS)	RHR B and C injection valves fail to auto open, but can be manually opened. CT-2
† (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (A)bnormal (TS) Tech Spec * Critical Task (As defined in NUREG 1021 Appendix D)			

2018 NRC Scenario 1

Quantitative Attributes Table			
Attribute	E3-301-4 Target	Actual	Description
Malfunctions after EOP entry	1-2	2	<ul style="list-style-type: none"> Div 1 ECCS Fails to auto initiate manual action works RHR B and C injection valves fail closed. Injection valves can be manually opened.
Abnormal Events	2-4	4	<ul style="list-style-type: none"> RCIC started/H13-P601/21A/C01DIV I RCIC ISOL MN STM SPLY LINE DIFF PRESS HIGH alarms / Division 1 isolation with failed MOV, TS 3.5.3 Condition A, TS 3.3.6.1 Condition A LPRM 06-15D fails upscale / half scram CNM-P1B trips / power reduction E22-S004 (Division 3 electrical bus) fault
Major Transients	1-2	2	<ul style="list-style-type: none"> All condensate demineralizers and filters clog resulting in a complete loss of feed. Crew will manually scram. (EOP-1, AOP-1) Reactor coolant leak in the drywell causes a loss of RPV water level. (EOP-1)
EOP entries requiring substantive action	1-2	1	<ul style="list-style-type: none"> Reactor coolant leak in the drywell causes a loss of RPV water level. (EOP-1)
Entry into a contingency EOP with substantive actions	≥ 1	1	<ul style="list-style-type: none"> Reactor coolant leak in the drywell causes a loss of RPV water level. (EOP-1) Crew must perform Emergency Depressurization due to low reactor water level.
Preidentified critical tasks	2-3	2	<ul style="list-style-type: none"> CT-1: Open 7 ADS/SRVs for Emergency Depressurization with at least one injection source lined up for injection when level cannot be restored and maintained above -187", within 15 minutes. CT-2: Restore reactor water level prior to exiting EOP-1, RPV Control, and entering the SAPs.

2018 NRC Scenario 1

SCENARIO ACTIVITIES:

Initial Conditions

Initial Conditions: 100% Power. RHR A is in suppression pool cooling. Containment Purge is in service.

Inoperable Equipment: None

Turnover: Slow roll RCIC per SOP-35 for retest after governor oil replacement.

These are done:

4.3.2. Place RHR into Suppression Pool Cooling mode per SOP-0031, Residual Heat Removal.

4.3.3. Place Containment Purge in service per SOP-0059, Containment HVAC System.

Event 1 – (Initial Setup - Automatic)

RCIC is manually started for retest after oil in governor replaced. When RCIC is up to normal speed (>2500 rpm), H13-P601/21A/C01DIV I RCIC ISOL MN STM SPLY LINE DIFF PRESS HIGH, alarms requiring Division 1 RCIC system isolation. Per AOP-3, Automatic Isolations, E51-F064, RCIC STEAM SUPPLY OUTBD ISOL VALVE, fails to auto close and must be manually closed.

Tech Spec 3.3.6.1. Primary Containment and Drywell Isolation Instrumentation, Condition F entered.

Tech Spec 3.5.3. RCIC System Condition A entered.

Event 2 – (Triggered by Lead Examiner)

A failure of LPRM 06-15D upscale will cause a half scram on RPS B. Crew should implement ARP-680-06A-A03 and C03. Bypass APRM F and reset RPS half scram. Review Tech Specs 3.3.1.1 and TR 3.3.2.1 for APRM operability (no LCO entered). Bypass LPRM 06-15D and restore APRM F to service.

Event 3 – (Triggered by Lead Examiner)

One the three operating condensate pumps (CNM-P1B) trips resulting in AOP-0006 entry and required power reduction to 90% with recirculation flow.

Event 4 – (Triggered by Lead Examiner)

E22-S004 (Division 3 electrical bus) fault. Alarm H13-P601/16A/B03, DIV III 4KV BUS AUTO TRIP, indicates bus fault. Division 3 Diesel Generator starts and does not pick up the bus due to fault. Crew must secure the diesel generator.

Tech Spec 3.5.1, ECCS –Operating, condition B entered.

Tech Spec 3.7.1, Standby Service Water (SSW) System and Ultimate Heat Sink (UHS), Condition E entered.

2018 NRC Scenario 1

Event 5 – (Triggered by Lead Examiner)

All condensate demineralizers and filters are clogged resulting in a complete loss of condensate and feed. Crew will manually scram. (This will prevent all feed and condensate availability for the rest of the scenario.) (EOP-1, AOP-1)

Event 6 – (Initial Setup - Automatic)

Reactor coolant leak in the drywell with no high pressure injection sources available will cause a loss of RPV water level. (EOP-1) RPV level will slowly lower due to loss of all high pressure injection systems. The crew will emergency depressurization to restore RPV water level with Low Pressure ECCS.

Event 7 – (Initial Setup - Automatic)

Division 1 ECCS fails to auto initiate, but can be manually initiated. Division 1 ECCS should initiate on low RPV level or high drywell pressure. The pump should start prior to Emergency Depressurization. Crew should recognize and manually initiate/align Division 1 ECCS systems.

Event 8 – (Initial Setup - Automatic)

RHR B and C injection valves fail to auto open, but can be manually opened. The injection valves should open on low RPV pressure to allow injection of low pressure system. The crew should recognize this after emergency depressurization performed and manually open the injection valves as needed to restore RPV level.

2018 NRC Scenario 1

	CT-1	CT-2
Critical Task	Open 7 ADS/SRVs for Emergency Depressurization with at least one injection source lined up for injection when level cannot be restored and maintained above -187", within 15 minutes.	Restore reactor water level above TAF (-162 inches) prior to exiting EOP-1, RPV Control, and entering the SAPs.
EVENT	6	7&8
Safety Significance	<p>Per EOP-1, ALC-7, 8, and 11, Emergency RPV depressurization (signaled by Step ALC-11) permits injection from low head systems, maximizes the total injection flow, and minimizes the flow through any primary system break.</p> <p>If an injection source is available, emergency depressurization should be delayed at least until RPV level reaches the top of the active fuel, but may be performed anytime RPV level is between the top of the active fuel and the Minimum Steam Cooling RPV Water Level (MSCRWL).</p> <p>If it is believed that available injection sources are capable of restoring and maintaining RPV water level above the Minimum Steam Cooling RPV Water Level following RPV depressurization, the blowdown may be performed as soon as RPV level reaches the top of the active fuel. (For example, all low pressure ECCS are running but cannot inject until RPV pressure decreases below their shutoff heads.)</p>	<p>Per EOP-1, ALC-12, the contingent of Step ALC-12 provides one last opportunity for restoring adequate core cooling before the requirement for containment flooding occurs. Adequate core cooling is ensured following emergency depressurization as long as one of two conditions exists:</p> <ul style="list-style-type: none"> • Steam Cooling with Injection: RPV water level can be restored and maintained above the Minimum Steam Cooling RPV Water Level (MSCRWL). The core is then cooled by a combination of submergence and steam cooling even with no core spray flow. • Spray Cooling: Design core spray flow requirements are satisfied and RPV level can be restored and maintained at or above the elevation of the jet pump suctions.
Cueing	The ADS/SRVs will indicate open using red lights, steam flow, and acoustic monitoring. Reactor pressure will lower.	RPV level will rise and system flow will be indicated after emergency depressurization, when a low pressure ECCS system is aligned for injection.

*** If an operator or the crew significantly deviates from, or fails to, follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review (NUREG 1021, Appendix D)**

2018 NRC Scenario 1

Top 10 systems and operator actions important to risk that are tested:

Scenario 1
Event 3
Loss of FW/Cond – #7 Internal Events
Event 4
EJS 480VAC Power – #5 Risk Significant System
NPS-13.2kV - #10 Risk Significant System
Event 5
Loss of FW/Cond – #7 Internal Events
Event 5
Reactor Trip/Turbine Trip -#6 Internal Events
Event 6
SRV Depressurization - #3 Risk Significant System
Manual depressurization of reactor vessel – #1 Operator Actions
Start maximized CRD injection - #10 Operator Actions

Simulator Setup:

IC: 116

RHR placed into Suppression Pool Cooling mode per SOP-0031, Residual Heat Removal.

Containment Purge in service per SOP-0059, Containment HVAC System.

2018 NRC Scenario 1

SCENARIO ACTIVITIES:

- Start SBT report and any other required recording devices.

Event No: <u>1</u>		
Event Description: RCIC started/DIV I RCIC ISOL STM SPLY PRESS LOW alarms / Division 1 isolation with failed MOV		
Initial Setup – Automatic		
TIME	Position	Applicant's Actions or Behavior
	CRS	Direct BOP to perform SOP-35, RCIC, Section 4.3 RCIC Slow Roll Startup. Recognize and when the RCIC Trip throttle valve is closed per step 4.3.6, Tech Spec 3.5.3. RCIC System should be entered. Condition A. RCIC System inoperable. A.1 Verify by administrative means High Pressure Core Spray System is OPERABLE. 1 hour AND A.2 Restore RCIC System to OPERABLE status. 14 days.

2018 NRC Scenario 1

	BOP	<p>4.3 RCIC Slow Roll Startup</p> <p style="text-align: center;">CAUTION</p> <p>If RCIC is running in support of testing the Technical Specifications require average suppression pool temperature monitoring per STP-057-0700, Suppression Pool Average Water Temperature Verification During Testing That Adds Heat To The Suppression Pool.</p> <p style="text-align: center;">NOTE</p> <p>Section 4.3 can be performed if a slow turbine start is required. If Section 4.3 is performed, it is desirable to place RCIC in standby condition for 12 hours to allow system cooldown to ambient temperature. This recommended cooldown period is not applicable when performing surveillance testing per Notes of Tech Spec SRs 3.5.3.3 and 3.5.3.4.</p> <p>4.3.1. Notify Radiation Protection prior to running RCIC.</p> <p>4.3.2. Place RHR into Suppression Pool Cooling mode per SOP-0031, Residual Heat Removal.</p> <p>4.3.3. Place Containment Purge in service per SOP-0059, Containment HVAC System.</p> <p>4.3.4. IF RCIC is running in support of testing, THEN begin monitoring the suppression pool average temperature per STP-057-0700, Suppression Pool Average Water Temperature Verification During Testing That Adds Heat To The Suppression Pool.</p> <p>4.3.5. Start E51-C002C, GLAND SEAL COMPRESSOR.</p>
--	-----	---

2018 NRC Scenario 1

		<p style="text-align: center;">NOTE</p> <p>Closing E51-C002, RCIC TRIP & THROTTLE VALVE OPERATOR will INOP the RCIC System and requires entry into an LCO until the system has been restored to its standby lineup.</p> <p>H13-P601/21A/G03 RCIC SYSTEM INOPERATIVE will alarm when E51-C002, RCIC TRIP & THROTTLE VALVE OPERATOR is closed.</p> <p>4.3.6. Close E51-C002, RCIC TRIP & THROTTLE VALVE OPERATOR.</p> <p style="text-align: center;">NOTE</p> <p>H13-P601/21A/A03 RCIC PUMP DISCHARGE FLOW LOW and H13-P601/21A/E04 RCIC TURBINE BRG OIL PRESS LOW will alarm until RCIC turbine is up to speed.</p> <p>4.3.7. Open E51-F045, RCIC STEAM SUPPLY TURBINE STOP VALVE.</p> <p>4.3.8. Verify the following valves are closed:</p> <ul style="list-style-type: none"> · E51-F025 RCIC STM SPLY DR POT UP STREAM ISOL VALVE · E51-F026 RCIC STM SUPPLY DR POT DN STREAM ISOL VALVE · E51-F004 RCIC TURB EXH DR POT UP STREAM ISOL VALVE · E51-F005 RCIC TURB EXH DR POT DN STREAM ISOL VALVE <p style="text-align: center;">CAUTION</p> <p>Operation below 2300 rpm may cause turbine exhaust check valve damage due valve chattering. Therefore minimize operation below 2300 rpm. Ref 7.13</p> <p style="text-align: center;">NOTE</p> <p>E51-MOVF019, RCIC MIN FLOW VLV TO SUPPRESSION POOL will cycle until the trip throttle valve positions indicate dual position (not full closed).</p> <p style="text-align: center;">CRITICAL STEP</p> <p>4.3.9. Throttle E51-MOVC002, RCIC TRIP & THROTTLE VALVE open and bring turbine speed up to 2500 to 3500 rpm, as indicated on E51-C002-1, RCIC TURB SPEED.</p>
	BOP	<p>Recognize and respond to the following alarms:</p> <p>H13-P601/21A/C01DIV I RCIC ISOL MN STM SPLY LINE DIFF PRESS HIGH,</p> <p>H13-P601/21A/E04, RCIC TURBINE BRG OIL PRESS LOW</p> <p>Alarms require Division 1 RCIC system isolation</p>

2018 NRC Scenario 1

	CRS	Direct RCIC trip and isolation per H13-P601/21A/C01DIV I RCIC ISOL MN STM SPLY LINE DIFF PRESS HIGH and AOP-0003, Automatic Isolations.
	BOP	Secure RCIC per SOP 35, RCIC, Section 6.1 RCIC System Shutdown. 6.1.1. Depress E51A-S17, RCIC TURBINE TRIP Pushbutton. 6.1.2. Verify E51-MOVC002, RCIC TRIP & THROTTLE VALVE POSITION indicates closed. 6.1.3. Verify RCIC speed lowering as indicated on E51-C002-1, RCIC TURB SPEED.
H13-P601/21A/A01, DIV I RCIC ISOL STM SPLY PRESS LOW		
	BOP	1. Verify Automatic Actions occur and Refer To AOP-0003, Automatic Isolations. 1. RCIC System auto isolation (Division 1): a. RCIC Turbine trips. b. E51-F064, RCIC STEAM SUPPLY OUTBD ISOL VALVE closes. c. E51-F013, RCIC INJECT ISOL VALVE closes. d. E51-F031, RCIC PUMP SUP PL SUCTION VALVE closes. e. E51-F019, RCIC MIN FLOW VLV TO SUPPRESSION POOL closes.
	BOOTH	If back panel indications requested, E31-ESN684A (Steam supply pressure low) failed upscale.

2018 NRC Scenario 1

	CRS	<p>Enter Tech Spec 3.3.6.1. Primary Containment and Drywell Isolation Instrumentation,</p> <p>Condition A. One or more required channels inoperable.</p> <p>A.1 Place channel in trip.</p> <p>12 hours for Functions 2.b, 5.b, 5.d, and 5.e</p> <p>AND</p> <p>24 hours for Functions other than Functions 2.b, 5.b, 5.d, and 5.e</p> <p>Table 3.3.6.1-1 (page 2 of 5)</p> <p>Primary Containment and Drywell Isolation Instrumentation</p> <p>3. Reactor Core Isolation Cooling (RCIC) System Isolation</p> <p>c. RCIC Steam Supply Line PressureLow</p>
--	-----	--

Event No: <u>2</u>		
Event Description: LPRM 06-15D fails upscale / half scram		
Triggered by Lead Examiner		
TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Recognize and report LPRM 06-15D failed upscale per:</p> <p>H13-P680/06A/A03, APRM B OR F UPSCALE TRIP OR INOP</p> <p>H13-P680/06A/C03, LPRM UPSCALE</p> <p>The division 2 RPS lights will be out, below the full core display.</p>
	BOP	Identify and report failed LPRM 06-15D.
	SRO	<p>Direct implementation of ARP P680-06A-A03 and C03.</p> <p>Direct APRM bypass and RPS half scram reset.</p> <p>Contact WMC, direct I&C/RE to investigate LPRM 06-15D upscale.</p> <p>Review Tech Specs 3.3.1.1 and TR 3.3.2.1 for APRM operability (no LCO).</p> <p>Direct LPRM bypass and direct restoration of APRM F to service.</p>

2018 NRC Scenario 1

	ATC	<p>Implement ARP-680-06A-A03 and ARP-680-06A-C03.</p> <ul style="list-style-type: none"> • When directed, bypass APRM F and reset half scram. • When directed after LPRM 06-15D bypassed, restore APRM F to service <p>Verify no single rod scram</p>
	BOOTH	<p>ROLE PLAY: As back panel, no other LPRMs are in an upscale condition.</p> <p>ROLE PLAY: As WMC SRO, report that I&C or FIN are putting together a work package to investigate LPRM 06-15D upscale.</p> <p>ROLE PLAY: As Reactor Engineer, report that you will come to the MCR to assist in the bypassing of LPRM 06-15D per REP-0037. (Note: no role play in the MCR will be needed because the next event will be inserted before RE gets to the MCR)</p> <p>Trigger 11, bypasses LPRM 06-15D</p>
<p style="text-align: center;">Event No: <u> 3 </u></p> <p>Event Description: CNM-P1B trips / power reduction</p> <p>Triggered by Lead Examiner</p>		
TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Recognize and report Condensate Pump P1B trip</p> <p style="padding-left: 40px;">P680-2A-A03, Condensate Pump Auto Trip</p> <p style="padding-left: 40px;">P680-3A-B03, RX Feed Pumps Low Suction Press</p> <p style="padding-left: 40px;">P680-2A-C03, Condensate Pump P1B Overload</p> <p style="padding-left: 40px;">P680-02A-A03, CONDENSATE PUMP AUTO TRIP</p> <p>Indications:</p> <p style="padding-left: 40px;">Condensate Pump B amps = 0</p> <p style="padding-left: 40px;">Condensate Pump B disch pressure lowering / feed pump suction pressure alarm</p> <p style="padding-left: 40px;">RPV Water Level lowering</p>

2018 NRC Scenario 1

	CRS	<p>Acknowledge trip of condensate pump B.</p> <p>Recognize and enter GOP-5, Power Maneuvering.</p> <p>Direct power reduction to 90% (with Recirc flow) per OSP-53 Trigger Point</p> <p>Recognize and enter AOP-6, CONDENSATE/FEEDWATER FAILURES.</p> <p>Recognize and enter AOP-24, Thermal Hydraulics Stability Controls.</p> <p>Notify WMC / FIN / Maintenance to investigate / repair condensate pump B issue.</p>
	ATC	<p>Implement AOP-0006, CONDENSATE/FEEDWATER FAILURES</p> <p>Per OSP-53, Lower reactor power to 90% with recirc flow to mitigate the level transient</p> <ul style="list-style-type: none"> • Possible Reactor High water level annunciator P680-03A-B08 <p>Respond to CNM-P1B trip per ARP-680-02A-A03, CONDENSATE PUMP AUTO TRIP</p> <ul style="list-style-type: none"> • Reduce Reactor power as necessary to stay within capability of number of running condensate pumps • Dispatch personnel to determine cause of trip and notify OSM/CRS

2018 NRC Scenario 1

	BOOTH	<p>As WMC / FIN / maintenance, accept request to investigate / repair condensate pump B issue</p> <p>As the turbine building operator, accept the direction to investigate the trip of the condensate pump, Call back in 5 minutes to report that there is smell of burnt insulation coming from the pump motor.</p> <p>As the control building operator, accept the direction to investigate the trip of the condensate pump, Call back in 5 minutes to report that there is an 86 lockout and over current trips at the breaker.</p> <p>BACK PANEL: If feed pump A and C temperatures and vibration readings are requested, report slightly elevated temperatures and vibrations.</p>
--	-------	---

2018 NRC Scenario 1

Event No: <u>4</u>		
Event Description: E22-S004 Division 3 bus fault /Division 3 DG starts/secure unloaded DG		
Triggered by Lead Examiner		
TIME	Position	Applicant's Actions or Behavior
	BOP	<p>Recognize and report E22-S004 (Division 3 electrical bus) fault per: H13-P601/16A/B02, DIV III 4KV BUS UNDERVOLTAGE H13-P601/16A/B03, DIV III 4KV BUS AUTO TRIP H13-P601/16A/C02, DIV III D/G ENGINE RUNNING H13-P601/16A/D01, DIV III D/G FUEL TRANSFER SYSTEM INOPERATIVE</p> <p>Recognize and report Division 3 Diesel Generator starts and does not pickup the bus due to fault (no white light lit for the diesel output breaker). Crew must secure the diesel generator.</p>
	CRS	<p>Direct BOP to secure Division 3 Diesel Generator per SOP52, HPCS Diesel Generator, Section 6.5 Engine Shutdown from the Main Control Room.</p>
	BOP	<p>Secures the Division 3 Diesel Generator per SOP52, HPCS Diesel Generator Section 6.5 Engine Shutdown from the Main Control Room.</p> <p>6.5.1. Verify the following key switches on H13-P601 are in REMOTE: E22B-S8, HPCS DSL ENG CONTROL REMOTE/LOCAL SELECT E22B-S12, HPCS D/G VR & GOV CONT REMOTE/LOCAL SELECT</p> <p>6.5.2. WHEN the Diesel Engine has run not loaded for at least 4 minutes but less than 10 minutes, THEN continue in this procedure.</p> <p>6.5.3. Place the E22B-S5, HPCS DSL ENG CONTROL switch to STOP.</p>

2018 NRC Scenario 1

	CRS	<p>Enter Tech Spec 3.5.1, ECCS –Operating, Condition B. High Pressure Core Spray (HPCS) System inoperable. B.1 Verify by administrative means RCIC System is OPERABLE when RCIC is required to be OPERABLE. 1 hour</p> <p>After 1 hour Condition D will be entered. D. Required Action and associated Completion Time of Condition A, B, or C not met. D. 1 Be in MODE 3. 12 hours.</p> <p>Enter Tech Spec 3.7.1 Standby Service Water (SSW) System and Ultimate Heat Sink (UHS) Condition E. One SSW subsystem with one pump inoperable. E.1 Restore pump to OPERABLE status. 30 days.</p> <p>Tech Spec 3.8.9 is not required if 3.5.1 and 3.7.1 are entered. Enter Tech Spec 3.8.9, Distribution Systems–Operating, NOTE: Division III electrical power distribution subsystems are not required to be OPERABLE when High Pressure Core Spray System and Standby Service Water pump 2C are inoperable. Condition E. One or more Division III AC or DC electrical power distribution subsystems inoperable. E.1 Declare High Pressure Core Spray System and Standby Service Water System pump 2C inoperable. Immediately</p>
--	-----	---

2018 NRC Scenario 1

Event No: <u>5</u>		
Event Description: Loss of all condensate/scram		
Triggered by Lead Examiner		
TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Recognize and report condensate demineralizer and filter failures. H13-P680/01A/E06, LOCAL PANEL FILTER/DEMIN TROUBLE H13-P680 / 02A / A04, COND FILTRATION SYS HIGH DP H13-P680 / 02A / B02, CONDENSER HOTWELL LEVEL HIGH/LOW</p> <p>Initiate a manual Scram. Provide a Scram Report.</p> <p>Recognize and report no high pressure feed.</p> <p>Perform actions of AOP-1 (Reactor Scram) and AOP-2(Main Turbine and Generator Trips).</p>
	SRO	<p>Enter EOP-1 (RPV Control) and direct EOP-1 actions: ATC stabilize pressure <1090 psig, then give a pressure band of 500-1090 psig w/ bypass valves and drains Direct entry into AOP-0001 (Reactor Scram), AOP-2(Main Turbine and Generator Trips), and AOP-6(Condensate/Feedwater Failures).</p>
	ATC	Maintain pressure band of 500-1090 psig with bypass valves and drains.
	BOOTH	ROLE PLAY: As Aux Control Room, accept request to investigate condensate filter/demineralizer high D/P.

2018 NRC Scenario 1

Event No: <u>6</u>		
Event Description: Reactor coolant leak / loss of RPV water level		
Critical Task: Open 7 ADS/SRVs for Emergency Depressurization with at least one injection source lined up for injection when level cannot be restored and maintained above -187", within 15 minutes.		
Initial Setup – Automatic		
TIME	Position	Applicant's Actions or Behavior
	CRS	<p>Per EOP-1, RPV Control, RL-3, Alternate level control entered.</p> <p>Per EOP-1, ALC-2, Direct RO to inhibit ADS.</p> <p>Per EOP-1, ALC-3, Use Table L-2 Alternate Injection Subsystems if necessary. Per table L-1 and L-2 systems direct RO to :</p> <p>Maximize CRD</p> <p>Inject SLC</p>
	BOP	<p>Per EOP-1, ALC-2, Inhibit ADS</p> <p>Places ADS INHIBIT switches to the INHIBIT position.</p>

2018 NRC Scenario 1

	CRS	<p>Per OSP-53, ATTACHMENT 1D - LEAKAGE STRATEGIES, direct the following:</p> <p>Trip Reactor Recirc pumps</p> <p>Verify ECCS initiations and isolations</p> <p>Enclosure 20 for Drywell cooling (if DW temperature < 200 degrees)</p> <p>Attempt to identify and isolate the leak</p>
	ATC	<p>Trip Recirc pumps:</p> <p>Depress the STOP pushbutton for B33-C001A(B) RECIRC PUMP A(B) MOTOR BREAKER 5A(B).</p> <p>Verify B33-C001A(B) RECIRC PUMP A(B) MOTOR BREAKER 5A(B) opens and pump coasts down to 0% speed.</p> <p>Open NJS-ACB305(029) by depressing the TRIP pushbutton for B33-S001A(B) LFMG A(B) MOT BRKR 1A(B).</p>
	BOP	<p>Recognize and report LPCS fails to initiate (see event 7).</p>

2018 NRC Scenario 1

	BOP	<p>Per OSP-53, ATTACHMENT 14 - MAXIMIZING CRD,</p> <p>1 Start any available, non-running CRD pump as follows:</p> <p>1.1 Start C11-C001AP(BP), CRD AUX OIL PUMP A(B).</p> <p>1.2 Verify C11-C001A(B), CRD PUMP A(B), white control power available light on.</p> <p>1.3 Start C11-C001A(B), CRD PUMP A(B).</p> <p>2 Place CRD HYDRAULICS FLOW CONTROLLER, in MANUAL and raise signal to 100%.</p> <p>3 Fully Open C11-F003, CRD DRIVE WATER PRESS CONTROL VALVE.</p> <p>4 Verify IAS-MOV106 is Open.</p> <p>4.1 IF IAS-MOV106 is not open, AND an ATWS condition exists, THEN notify the CRS that EOP Enclosure 16 is required.</p>
	ATC	<p>Per OSP-53, ATTACHMENT 13 - INITIATING STANDBY LIQUID CONTROL,</p> <p>1. Place SLC PUMP A(B) (NOT BOTH), control switch to RUN.</p> <p>2. Perform the following:</p> <p style="padding-left: 20px;">Verify the following:</p> <p style="padding-left: 40px;">1. SQUIB CONTINUITY A(B), light goes Off.</p> <p style="padding-left: 40px;">2. C41-F001A(B), SLC PUMP A(B) SUCT VLV, Opens.</p> <p style="padding-left: 40px;">3. C41-C001A(B), SLC PUMP A(B), Starts.</p>
	CRS	<p>Recognize and enter EOP-2, Primary Containment Control:</p> <p>Drywell Temperature >145°F</p> <p>Containment Temperature >90°F</p> <p>Suppression pool level below 19 feet 6 inches</p>
	CRS	<p>Direct RO to maintain RPV pressure 800-1090 psig using bypass valves and drains. Establish 25°F/hr cooldown rate.</p> <p>Switch to SRVs when MSIVs close on level 1</p>
	RO	<p>Maintain RPV pressure 800-1090 psig using bypass valves and drains. Establish 25°F/hr cooldown rate.</p> <p>Switch to SRVs when MSIVs close on level 1</p>

2018 NRC Scenario 1

	CRS	<p>Direct Enclosure 16 to be installed. (See Event 9)</p> <p>Direct Enclosure 20 to be installed. (See Event 10)</p> <p>Direct Enclosure 32 to be installed for RHR B. (See Event 11)</p>
	CRS	<p>Per EOP-1, Step ACC-8, When RPV level cannot be restored and maintained above -187 inches, enter Emergency Depressurization.</p> <p>Per EOP-1, Step ED-5, direct RO to open 7 ADS/SRVs.</p> <p>Critical Task: Open 7 ADS/SRVs for Emergency Depressurization with at least one injection source lined up for injection when level cannot be restored and maintained above -187", within 15 minutes.</p>
	RO	<p>Per EOP-1, Step ED-5, open 7 ADS/SRVs.</p> <p>Critical Task: Open 7 ADS/SRVs for Emergency Depressurization with at least one injection source lined up for injection when level cannot be restored and maintained above -187", within 15 minutes.</p>
	RO	<p>Manually open RHR B/C min flow valves (Reference Event 8) as required to establish RHR B/C flow path after automatic initiations.</p>
	CRS	<p>Direct RO to maintain RPV level band -20 to 51 inches.</p> <p>Restore reactor water level above TAF (-162 inches) prior to exiting EOP-1, RPV Control, and entering the SAPs.</p>
	RO	<p>Maintained RPV level band -20 to 51 inches.</p> <p>Restore reactor water level above TAF (-162 inches) prior to exiting EOP-1, RPV Control, and entering the SAPs.</p>
	CRS	<p>Recognize and enter AOP-3 (Automatic Isolations), on RPV Level 1, 2, 3 and Drywell Pressure 1.68 psid.</p> <p>Direct RO to verify isolations per AOP-3.</p>
	RO	<p>Verified isolations per AOP-3.</p>

2018 NRC Scenario 1

<p style="text-align: center;">Event No: <u>7</u></p> <p>Event Description: Division 1 ECCS fails to auto initiate/ manually initiated.</p> <p>Critical Task: Restore reactor water level above TAF (-162 inches) prior to exiting EOP-1, RPV Control, and entering the SAPs.</p> <p>Initial Setup - Automatic</p>		
TIME	Position	Applicant's Actions or Behavior
	BOP	Recognize and report LPCS fails to auto initiate.
	CRS	<p>Recognize and direct LPCS initiation per OSP-53, ATTACHMENT 9 - INJECTING WITH LPCS.</p> <p>Critical Task: Restore reactor water level above TAF (-162 inches) prior to exiting EOP-1, RPV Control, and entering the SAPs.</p>
	BOP	<p>Per OSP-53, ATTACHMENT 9 - INJECTING WITH LPCS</p> <p>1 Verify Annunciator P601-21A-C07, LPCS INJECTION LINE PRESSUREHI/LOW, is not lit.</p> <p>2 Start LPCS PUMP.</p> <p>3 IF LPCS injection is required, THEN perform the following:</p> <p style="padding-left: 40px;">3.1 WHEN RPV pressure is below 487 psig, THEN Open E21-F005, LPCS INJECT ISOL VALVE.</p> <p style="padding-left: 40px;">3.2 Verify LPCS injection flow.</p> <p style="padding-left: 40px;">3.3 Verify E21-F011, LPCS MIN FLOW VLV TO SUPPRESSION POOL, Closes.</p> <p>Critical Task: Restore reactor water level above TAF (-162 inches) prior to exiting EOP-1, RPV Control, and entering the SAPs.</p>

2018 NRC Scenario 1

Event No: 8

Event Description: RHR B and C injection valves fail to auto open, but can be manually opened.

Critical Task: Restore reactor water level above TAF (-162 inches) prior to exiting EOP-1, RPV Control, and entering the SAPs.

Initial Setup - Automatic

TIME	Position	Applicant's Actions or Behavior
	RO	Recognize and report RHR B and C injection valves fail to auto open.
	CRS	<p>Recognize and direct RHR B and C injection valves manual operation per OSP-53, ATTACHMENT 11 - INJECTING WITH LPCI (RHR) B OR C.</p> <p>Critical Task: Restore reactor water level above TAF (-162 inches) prior to exiting EOP-1, RPV Control, and entering the SAPs.</p>

2018 NRC Scenario 1

	RO	<p>Per OSP-53, ATTACHMENT 11 - INJECTING WITH LPCI (RHR) B OR C.</p> <p>1 RHR B</p> <p>1.1 Verify Annunciator P601-17A-C01, RHR PUMP B DISCH PRESSURE HI/LOW, is not lit.</p> <p>1.2 Start RHR PUMP B.</p> <p>1.3 IF RHR B injection is required, THEN perform the following:</p> <p>1.3.1. WHEN RPV pressure is below 487 psig, THEN Open E12-F042B, RHR PUMP B LPCI INJECT ISOL VALVE.</p> <p>1.3.2. Verify RHR B LOOP injection flow.</p> <p>1.3.3. Verify E12-F064B, RHR PUMP B MIN FLOW TO SUP PL, Closes.</p> <p>2 RHR C</p> <p>2.1 Verify Annunciator P601-17A-C02, RHR PUMP C DISCH PRESSURE HI/LOW, is not lit.</p> <p>2.2 Start RHR PUMP C.</p> <p>2.3 IF RHR C injection is required, THEN perform the following:</p> <p>2.3.1. WHEN RPV pressure is below 487 psig, THEN Open E12-F042C, RHR PUMP C LPCI INJECT ISOL VALVE.</p> <p>2.3.2. Verify RHR C LOOP injection flow.</p> <p>2.3.3. Verify E12-F064C, RHR PUMP C MIN FLOW TO SUP PL, Closes.</p> <p>Critical Task: Restore reactor water level above TAF (-162 inches) prior to exiting EOP-1, RPV Control, and entering the SAPs.</p>
--	----	---

2018 NRC Scenario 1

Event No: 9						
Event Description: Enclosure 16, DEFEATING CONTAINMENT INSTRUMENT AIR ISOLATION INTERLOCKS						
TIME	Position	Applicant's Actions or Behavior				
	CRS	Direct installation of Enclosure 16, DEFEATING CONTAINMENT INSTRUMENT AIR ISOLATION INTERLOCKS.				
	ATC	<p>Per ENCLOSURE 16, DEFEATING CONTAINMENT INSTRUMENT AIR ISOLATION INTERLOCKS</p> <p>3.1 VERIFY Instrument Air Header Pressure on IAS-PI105 (H13-P870) is greater than Containment pressure on CMS-PR2A(B). (H13-P808)</p> <p>3.2 OBTAIN EOP-0005 ENCL 16 key, one (1)</p> <p>3.3 PLACE the following switch in the EMERGENCY position AND VERIFY the red light illuminates:</p> <table><tr><td>Switch Name</td><td>Panel No.</td></tr><tr><td>3.3.1 CONTMT INST AIR ISOL INTLK BYP</td><td>H13-P851</td></tr></table> <p>3.4 VERIFY open IAS-MOV106, INST AIR OUTBD ISOL. (H13-P870)</p>	Switch Name	Panel No.	3.3.1 CONTMT INST AIR ISOL INTLK BYP	H13-P851
Switch Name	Panel No.					
3.3.1 CONTMT INST AIR ISOL INTLK BYP	H13-P851					

2018 NRC Scenario 1

Event No: <u>10</u>								
Event Description: ENCLOSURE 20, DEFEATING DRYWELL COOLING ISOLATION INTERLOCKS								
TIME	Position	Applicant's Actions or Behavior						
	CRS	Direct installation of ENCLOSURE 20, DEFEATING DRYWELL COOLING ISOLATION INTERLOCKS using all available drywell unit coolers.						
	BOP	<p>Per ENCLOSURE 20, DEFEATING DRYWELL COOLING ISOLATION INTERLOCKS</p> <p>3.1 OBTAIN EOP-0005 ENCL 20 keys (2)</p> <p>3.2 VERIFY Normal Service Water pressure on SWP-PI124, SVCE SPLY HDR PRESSURE (H13-P870) OR Standby Service Water pressure on SWP-PR50A(B), STBY CLG TOWER LVL & PUMP DISCH PRESS RECORDER (H13-P870) as applicable is greater than Containment AND Drywell pressure on CMS-PR2A(B), DRYWELL PRESSURE (H13-P808)</p> <p>3.3 PLACE Control Switches for all tripped Drywell Unit Coolers to OFF. (H13-P863)</p> <p>3.4 PLACE the following keylock switches in the EMERGENCY position AND VERIFY the red lights illuminate.</p> <table><tr><td>Switch Name</td><td>Panel No.</td></tr><tr><td>DW CLG ISOL INTLK BYP</td><td>H13-P851</td></tr><tr><td>DW CLG ISOL INTLK BYP</td><td>H13-P852</td></tr></table> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">DIV I AND II H2 Analyzers will no longer auto start.</p> <p>3.5 START DIV I AND II H2 Analyzers. (H13-P808)</p> <p>3.5.1 Verify START of DIV I AND II H2 recorders 1CMS*AR25A(B)</p> <p>3.6 IF any drywell temperature on CMS-TR41A or B, DRYWELL ATMOS TEMP (H13-P808) is or has been greater than 200°F, THEN notify the CRS/OSM that this enclosure cannot be completed.</p>	Switch Name	Panel No.	DW CLG ISOL INTLK BYP	H13-P851	DW CLG ISOL INTLK BYP	H13-P852
Switch Name	Panel No.							
DW CLG ISOL INTLK BYP	H13-P851							
DW CLG ISOL INTLK BYP	H13-P852							

2018 NRC Scenario 1

	RO	<p style="text-align: center;">CAUTION</p> <p>Restoration of Service Water to Drywell unit coolers following isolation, if any drywell temperature on CMS-TR41A or B is or has been greater than 200 °F, can result in piping failure due to voiding and subsequent water hammer. Drywell UC Supply and Return Valves should NOT be reopened if any drywell temperature on CMS-TR41A or B is or has been greater than 200 °F.</p> <p style="text-align: center;">NOTE</p> <p>Service Water should only be aligned and Drywell Unit Coolers started if a minimum of two (2) units can run. (Ref. CR-RBS-2011-00346)</p> <p>3.7 IF a minimum of two (2) Drywell Unit Coolers can be started, THEN perform the following:</p> <p>OPEN the following valves: (H13-P870)</p> <ul style="list-style-type: none"> • SWP-MOV4A DRYWELL UC SUPPLY • SWP-MOV5A DRYWELL UC RETURN • SWP-MOV4B DRYWELL UC SUPPLY • SWP-MOV5B DRYWELL UC RETURN <p>VERIFY closed the following: (H13-P877)</p> <ul style="list-style-type: none"> • EJS*ACB25 NHS-MCC102A SPLY BRKR • EJS*ACB66 NHS-MCC102B SPLY BRKR <p>3.8 IF a minimum of two (2) Drywell Unit Coolers can be started, THEN START Drywell Unit Coolers as directed by the CRS. (Should start A, B, C, D, E, and F Drywell Unit coolers).</p>
--	----	--

2018 NRC Scenario 1

Event No: <u>11</u>		
Event Description: Enclosure 32 for RHR B		
TIME	Position	Applicant's Actions or Behavior
	CRS	Direct installation of ENCLOSURE 32, DEFEATING SDC INJECTION VALVES ISOLATION INTERLOCKS for RHR B.
	BOP	<p>Per ENCLOSURE 32, DEFEATING SDC INJECTION VALVES ISOLATION INTERLOCKS for RHR B.</p> <p>3.1 OBTAIN EOP-0005 ENCL 32 jumper kit from the Control Room Emergency Locker.</p> <p>3.1.1 INSPECT kit for 2 jumpers.</p> <p style="text-align: center;">NOTE</p> <p>Perform either Section 3.2 or 3.3 OR both Sections as required. Both sections may be performed concurrently OR in any order. The steps within the Sections shall be performed as written.</p> <p>3.2 Location: H13-P618 Bay B</p> <p>Affected Relay: E12A-K111B (3rd row of agastat relays from top, 5th relay from left)</p> <p>3.2.1 REMOVE relay E12A-K111B</p> <p>3.2.2 Jumper No. 1</p> <p>JUMPER Terminal M3 on relay block E12A-K111B</p> <p>to</p> <p>Terminal R3 on relay block E12A-K111B</p> <p>3.2.3 OPEN E12-F053B, RHR PUMP B SDC INJECTION VALVE as directed by the CRS.</p>

2018 NRC Scenario 1

END OF SCENARIO

When directed by the Lead Examiner, place the simulator in freeze and tell the crew to stop operating.

Notes

2018 NRC Scenario 1

Offgoing OSM:	Oncoming OSM:	Off-Going Shift
_____ (Print)	_____ (Print)	<div style="display: flex; justify-content: space-around;"> <div>N <input type="checkbox"/></div> <div>D <input type="checkbox"/></div> </div> <div>Date</div>
PART I - TO BE REVIEWED PRIOR TO ASSUMING THE SHIFT		
UNIT STATUS <u>MODE</u> 1 <u>RX POWER</u> 100%		
EVOLUTIONS (COMPLETED / IN PROGRESS / PLANNED);		
Slow roll RCIC per SOP-35 for retest after governor oil replacement. Another operator will perform STP-057-0700, SUPPRESSION POOL AVERAGE WATER TEMPERATURE VERIFICATION DURING TESTING THAT ADDS HEAT TO THE SUPPRESSION POOL.		
Completed on previous shift: RHR placed into Suppression Pool Cooling mode per SOP-0031, Residual Heat Removal. Containment Purge in service per SOP-0059, Containment HVAC System.		
SIGNIFICANT LCO STATUS		
EQUIPMENT STATUS		

☐ Night Orders

☐ Standing Orders

☐ Board Walkdown

☐ Temp Alts

(Signature: Oncoming OSM Review Completed)

KCN

2018 NRC Scenario 2

Facility: <u>River Bend Nuclear Station</u> Scenario No.: <u>2</u> Op-Test No.: <u>2018-07</u>			
Examiners: _____ _____ _____		Operators: _____ _____ _____	
Initial Conditions: 100% Power. Normal operating conditions.			
Event No.	Malf. No.	Event Type †	Event Description
1	P601_16a:h-5 LO_E22-D2-A	I (BOP/CRS) TS (CRS) A (BOP/CRS)	HPCS CST instrument fails low / manual swap to suppression pool, TS 3.3.5.1 Condition A, D
2	CNM001 (7.6)	C(ATC/CRS) A (ALL)	Main Condenser vacuum degrades/ reduce power to maintain vacuum
3	RMS013A, 1.0 E-1	C (BOP/CRS) A (ALL)	RMS-RE13A fails upscale, automatic start of control room filter train/ HVC-AOD51A fails to isolate, manually isolated
4	N/A	TS (CRS)	Lube oil level below the 367 gallons for Division 1 Diesel Generator. T S 3.8.3 Condition B
5	B21001A	I (ATC/CRS) A (ALL)	RPV level transmitter A fails / swap feedwater level control signals
6	CNM001	C (ALL) A (ALL)	Vacuum continues to degrades / manual scram
7	RPS001A	M (ALL)	ATWS / lower RPV level / insert rods EOP-1A CT-1
8	CNM001	C (ALL)	MSIVs to close / manually close MSIVs. CT-2
9	DI_C41-C001A DI_C41-C001B	C (ALL)	C41-S1A(B), SLC PUMP A(B) fails to inject / start second SLC pump. CT-3
†	(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (A)bnormal (TS) Tech Spec		
*	Critical Task (As defined in NUREG 1021 Appendix D)		

ALL notation for Abnormal (A) and Major (M) events denotes ATC, BOP, and CRS are credited.

2018 NRC Scenario 2

Quantitative Attributes Table			
Attribute	E3-301-4 Target	Actual	Description
Malfunctions after EOP entry	1-2	2	<ul style="list-style-type: none"> MSIVs fail to close on low vacuum 1st SLC pump start fails – key switch broken
Abnormal Events	2-4	4	<ul style="list-style-type: none"> HPCS CST instrument fails low Main Condenser vacuum degrades RMS-RE13A fails upscale RPV level transmitter A fails
Major Transients	1-2	1	<ul style="list-style-type: none"> ATWS (fail to deenergize all RPS relays). EOP-1A, RPV Control – ATWS
EOP entries requiring substantive action	1-2	1	<ul style="list-style-type: none"> EOP-1A, RPV Control ATWS
Entry into a contingency EOP with substantive actions	≥1	1	<ul style="list-style-type: none"> EOP-1A, ATWS Level/Power Control
Preidentified critical tasks	2-3	2	<ul style="list-style-type: none"> Terminate and prevent all injection into the RPV except boron injection, CRD, and RCIC to lower RPV level to <-56 inches prior to meeting Level/Power Conditions. Inject SLC to shutdown reactor, prior to exceeding Suppression Pool temperature (110°F).

2018 NRC Scenario 2

SCENARIO ACTIVITIES:

Initial Conditions

100% Power. Normal operating conditions.

Inoperable Equipment: None

Turnover: Continue to operate at normal rated power.

Event 1 – (Triggered by Lead Examiner)

HPCS CST instrument E22-LISN654C CST level transmitter fails low and suction sources should swap automatically but do not require manual swap per ARP-601-16A-H05. Enter Tech Spec 3.3.5.1 Condition A1, Immediately enter Condition D. Enter Tech Spec 3.3.5.1 Condition D.1, Declare HPCS INOP within 1 hour. Enter Tech Spec 3.3.5.1 Condition D.2.2, Align HPCS pump suction to the suppression pool within 24 hours.

Event 2 – (Triggered by Lead Examiner)

Main Condenser vacuum degrades due to condenser air in leakage. Crew must reduce power to maintain vacuum. AOP-5, Loss of Main Condenser Vacuum, Trip of Circulating Water Pump entered.

Event 3 – (Triggered by Lead Examiner)

RMS-RE13A, Control Room local air intake rad monitor, fails upscale resulting in an automatic start of the Division 1 control room charcoal filter train. HVC-AOD51A, CR TOILET DN STREAM ISOL, fails to isolate but can be manually isolated per AOP-3, Automatic Isolations.

Event 4 – (Triggered by Lead Examiner)

Control building operator reports current lube oil level is below the 367 gallons dip stick mark for Division 1 Diesel Generator. Tech Spec 3.8.3 Condition B should be entered due to <367 gal.

Event 5 – (Triggered by Lead Examiner)

RPV level transmitter A fails upscale (slowly ramps up to give time to respond). Crew should recognize transmitter failure per H13-P680 / 03A / C08, RX FW LEVEL CONTROL SIGNAL FAILURE, and alternate feedwater level control signals per SOP-9, Feedwater System, Section 5.1.

2018 NRC Scenario 2

Event 6 – (Triggered by Lead Examiner)

Main Condenser vacuum continues to degrade. Crew must manually scram per AOP-5, Loss of Main Condenser Vacuum, Trip of Circulating Water Pump

Event 7 – (Initial Setup - Automatic)

ATWS (fail to deenergize: all RPS relays will need to be deenergized to insert control rods by pulling fuses). EOP-1A, RPV Control – ATWS

Event 8 – (Initial Setup - Automatic)

MSIVs fail to close on low vacuum. Crew must manually close MSIVs (8.5 inches Hg vacuum).

Event 9 – (Initial Setup - Automatic)

1st C41-S1A(B), SLC PUMP A(B) attempted fails to start. Crew must start second SLC pump. The failure malfunction is initially on both pumps to ensure either pump that is started first fails. When the first pump is attempted the malfunction is deleted from the second pump.

2018 NRC Scenario 2

Critical Task	CT-1	CT-2
	<p>Terminate and prevent all injection into the RPV except boron injection, CRD, and RCIC to lower RPV level to <-56 inches prior to meeting Level/Power Conditions.</p> <p>All of the following must be met:</p> <ul style="list-style-type: none"> • Reactor power above 5% or cannot be determined • SP temperature above 110°F • Any SRV open or DW pressure above 1.68 psid • RPV level above -100 in. 	<p>Inject SLC to shutdown reactor, prior to exceeding Suppression Pool temperature (110°F).</p> <p>NOTE: Crew may take action to inject SLC but due to fault SLC may not be injecting before 110°F.</p>
EVENT	5	8
Safety Significance	<p>Per EOP-1A, RLA-13, With RPV injection terminated and prevented, RPV water level and reactor power decrease at the maximum possible rate allowed by boil off. Failure to completely stop RPV injection flow (with the exception of CRD, RCIC, and SLC) would delay the reduction in core inlet sub-cooling, thus increasing the potential for flux oscillations.</p>	<p>Per EOP-1A, per RQA-4&5, A scram failure event with reactor power above 5% coupled with an MSIV isolation, however, may result in rapid heat up of the suppression pool due to the steam discharged from the RPV via SRVs. The challenge to containment thus becomes the limiting factor which defines the second of the two possible conditions requiring initiation of boron injection.</p>
Cueing	<p>Feed, condensate, and HPCS injection is terminated. RPV level is lowering.</p>	<p>The first SLC pump will fail to start, but the second pump will inject. SLC flow will rise and reactor power will begin to slowly lower.</p>

*** If an operator or the crew significantly deviates from, or fails to, follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review (NUREG 1021, Appendix D)**

2018 NRC Scenario 2

Top 10 systems and operator actions important to risk that are tested:

Event 6

Reactor Trip/Turbine Trip -#6 Internal Events

Event 7

Reactor Protection System - #4 Risk Significant systems

Event 8

MSIV Closure - #9 Internal Events

Simulator Setup:

IC: 101

2018 NRC Scenario 2

SCENARIO ACTIVITIES:

- Start SBT report and any other required recording devices.

Event No: <u>1</u>		
Event Description: HPCS CST instrument fails low / manual swap to suppression pool		
Triggered by Lead Examiner		
TIME	Position	Applicant's Actions or Behavior
	BOP	<p>Recognize and report HPCS suction transfer failed.</p> <p>Refer to ARP H13-P601/16A/C04, HPCS SUCTION XFER CST LEVEL LOW.</p> <p>Investigate backpanels for cause.</p> <p>Report the upscale failure of E22-N654C.</p>
	CRS	<p>Notify work management/maintenance of instrument failure and request OSP-0046 notifications.</p> <p>Enter Tech Spec 3.3.5.1 Emergency Core Cooling System (ECCS) Instrumentation</p> <p>Condition A. One or more channels inoperable.</p> <p>A.1 Enter the Condition referenced in Table 3.3.5.1-1 for the channel. Immediately.</p> <p>Condition D. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.</p> <p>D.1 Declare HPCS system inoperable.</p> <p>AND</p> <p>D.2.1 Place channel in trip. 24 hours</p> <p>OR</p> <p>D2.2.2 Align the HPCS pump suction to the suppression pool. 24 hours.</p> <p>Direct the BOP to align the HPCS suction to the Suppression Pool IAW SOP-0030, HPCS System</p>

2018 NRC Scenario 2

	BOP	<p>Accept the direction to align HPCS to the Suppression Pool per SOP-0030, HIGH PRESSURE CORE SPRAY,</p> <p>5.3 Manual Swap of Suppression Pool and CST Suction Valves</p> <p>5.3.1. Swap from CST to Suppression Pool:</p> <ol style="list-style-type: none"> 1. Close E22-F001, HPCS PUMP CST SUCTION VALVE. 2. WHEN E22-F001 indicates dual indication, THEN open E22-F015, HPCS PUMP SUP PL SUCTION VALVE. 3. Verify both valves fully stroke to prevent adding excessive amounts of water to the Suppression Pool.
	BOOTH	<p>Backpanel: indicate that E22-N654C for CST level is reading pegged low and has the gross fail light illuminated. (STP-000-0001 step 23) Note: Meter reads from -60 to +65 Operator may attempt to reset gross fail.</p> <p>If prompting is needed: as the Duty Manager – Tell the Control Room that to swap right now.</p> <p>If building operator dispatched for local CST level indication, wait 2 minutes and report CST level is 29.6 feet.</p>

2018 NRC Scenario 2

Event No: <u>2</u>		
Event Description: Main Condenser vacuum degrades/ reduce power to maintain vacuum.		
Triggered by Lead Examiner		
TIME	Position	Applicant's Actions or Behavior
	ATC	Recognize and report lowering condenser vacuum and main turbine load decreasing. (P680 Insert 2 1 st Gage on left on the second row also digital reading on computer screen left of full core display)
	BOP	<p>Recognize and report air leakage with abnormal offgas indications due to lowering vacuum. (Back panel H13-P845 Offgas Control Panel Alarms)</p> <ul style="list-style-type: none"> ○ D-2 OFF GAS SYS AFTER FILTER DISCH FLOW HI/LO (NORM RNG) ○ F-1 RECOMBINER "A" OR "B" HIGH TEMP (FIRST) ○ G-3 ADSORBER TRAIN "A" FLOW HI/LOW ○ H-3 ADSORBER TRAIN "B" FLOW HI/LOW
	CRS	<p>Recognize and enter AOP-5, Loss of Main Condenser Vacuum/Trip of Circulating Water Pump.</p> <p>Per OSP-0053, Attachment 36, Trigger Points, establish a trigger point for a scram by 23 inches Hg vacuum.</p> <p>Per AOP-5, direct reducing reactor power to 90% using Recirc FCVs.</p>
	ATC	Per AOP-5, reduce reactor power to 90% using Recirc FCVs to maintain Condenser Vacuum greater than 23 inches Hg.

2018 NRC Scenario 2

Event No: <u>3</u>		
Event Description: RE13A fails upscale, automatic start of control room filter train/ HVC-AOD51A fails to isolate, manually isolated.		
Triggered by Lead Examiner		
TIME	Position	Applicant's Actions or Behavior
	BOP	<p>Recognize the failure of RMS-RE13A per ARPs: H13-P863/74A/D03, CONT RM CHARCOAL FLTR BSTR FAN 1A AUTO RESTART H13-P863/74A/G02, DIV 1 CONT ROOM AIR COND SYS DMPRS MISALIGNED H13-P863/74A/H03, DIV 1 CONT BLDG LOCAL INTAKE RADN ALARM</p>
	CRS	<p>Recognize the failure of HVC-AOD51A to close and direct the BOP to close HVC-AOD51A per AOP-0003, Automatic Isolations, or ARP actions.</p>
	BOP	<p>Recognize and report the failure of HVC-AOD51A to close Close HVC-AOD51A per AOP-0003 or ARP actions.</p> <p>Per H13-P863/74A/H03, DIV 1 CONT BLDG LOCAL INTAKE RADN ALARM: Verify Automatic Actions occur as required.</p> <ul style="list-style-type: none"> • HVC-AOD108, SMOKE REMOVAL FAN SUCTION closes • HVC-AOD51A, CR TOILET DN STREAM ISOL closes • HVC-AOD52A, CR KITCHEN DN STREAM ISOL closes • HVC-FN4, CR TOILET EXH FAN trips • HVC-FN5, CR KITCHEN EXH FAN trips • HVC-MOV1A, CR AHU OUTSIDE AIR SPLY closes • HVC-AOD19C, LOCAL AIR INTAKE opens • HVC-AOD19E, LOCAL AIR INTAKE opens • HVC-FN1A, CR FILTER UNIT FAN A starts

2018 NRC Scenario 2

	Booth	<p>If asked, as Radiation Protection to verify dose in area, then after 3 minutes report it is only background in the vicinity or RE13A.</p>
	CRS	<p>Enter Tech Spec 3.3.7.1 Control Room Fresh Air (CRFA) System Instrumentation</p> <p>Condition A. One or more required channels inoperable.</p> <p>A.1 Enter the Condition referenced in Table 3.3.7.1-1 for the channel. Immediately.</p> <p style="text-align: center;">Table 3.3.7.1-1 (page 1 of 1)</p> <p style="text-align: center;">Control Room Fresh Air System Instrumentation</p> <p>3. Control Room Local Intake Ventilation Radiation Monitors</p> <p>REQUIRED CHANNELS PER TRIP SYSTEM: 1</p> <p>CONDITIONS REFERENCED FROM REQUIRED ACTION A.1: D</p> <p>Condition D. As required by Required Action A.1 and referenced in Table 3.3.7.1-1.</p> <p>D.1 Declare associated CRFA subsystem inoperable. 1 hour from discovery of loss of CRFA initiation capability in both trip systems</p> <p>AND</p> <p>D.2 Place channel in trip. 6 hours</p> <p>Enter Tech Spec 3.7.2 Control Room Fresh Air (CRFA) System</p> <p>Condition B. One or more CRFA subsystems inoperable due to inoperable CRE boundary in MODE 1, 2, or 3.</p> <p>B.1 Initiate action to implement mitigating actions. Immediately</p> <p>AND</p> <p>B.2 Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits. 24 hours</p> <p>AND</p> <p>B.3 Restore CRE boundary to OPERABLE status. 90 days</p>

2018 NRC Scenario 2

Event No: <u>4</u>		
Event Description: Division 2 Diesel Generator Oil Leak		
Triggered by Lead Examiner		
TIME	Position	Applicant's Actions or Behavior
	BOOTH	Control building operator reports current lube oil level is between the T6 and T7 dip stick mark for D/G-1A. Estimated oil level is 360 gallons.
	CRS	<p>Recognize and enter Tech Spec 3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air</p> <p>Condition B. One or more DGs with lube oil inventory:</p> <p>1. For DG 1A or 1B, < 367 gal and ≥ 350 gal;</p> <p>B.1 Restore lube oil inventory to within limits. 48 hours</p>

2018 NRC Scenario 2

Event No: <u>5</u>		
Event Description: Level transmitter A fails		
Triggered by Lead Examiner		
TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Recognize and report RPV level transmitter A failed per H13-P680 / 03A / C08, RX FW LEVEL CONTROL SIGNAL FAILURE.</p> <p>Other possible alarms:</p> <p>H13-P680 / 03A / A08, MTS & FWP TRIP RX WATER HIGH LEVEL 8</p> <p>H13-P680 / 03A / B08, REACTOR HIGH/LOW WATER LEVEL</p>
	CRS	<p>Direct alternate feedwater level control signals per SOP-9, Section 5.1.</p> <p>Recognize and enter AOP-6, Condensate/Feedwater Failures</p>
	ATC	<p>5.1 Alternating Feedwater Level Control Signals</p> <p>5.1.1. IF automatically controlling level on the Master Flow controller, THEN alternate the feedwater level control signals as follows:</p> <ol style="list-style-type: none"> 1. Ensure no deviation on C33-R600, FW REG VALVES MASTER FLOW CONTROLLER and place to MANUAL. 2. Swap the level control input by depressing either A or B on the RX LVL A/B SELECT Pushbutton. 3. Check for proper operation, then return C33-R600, FW REG VALVES MASTER FLOW CONTROLLER to AUTO as follows: <ol style="list-style-type: none"> 1) Adjust tape set 2 inches above actual vessel level and observe the deviation signal is positive. 2) Lower tape set 2 inches below actual vessel level and observe the deviation signal is negative. 3) Match tape set to actual vessel level in order to null the deviation signal. 4) WHEN the level signal is nulled, THEN depress the AUTO Pushbutton and check green light above the pushbutton is on. 4. Adjust C33-R600, FW REG VALVES MASTER FLOW CONTROLLER Tape Set to maintain the reactor level requested by the OSM/CRS.

2018 NRC Scenario 2

Event No: <u>6</u>		
Event Description: Vacuum continues to degrades / manual scram		
Triggered by Lead Examiner		
TIME	Position	Applicant's Actions or Behavior
	ATC	Recognize and report condenser air in-leakage worsens per CONDENSER VACUUM LOW Alarm, H13-P680 / 02A / B01 (Setpoint 25" Hg Vac).
	CRS	Recognize and update manual scram required prior to 23 inches vacuum per OSP-0053 Attachment 36. Enters AOP-1, Reactor Scram and directs a manual scram prior to 23 inches vacuum.
	ATC	Per AOP-1, Reactor Scram <ul style="list-style-type: none"> ○ Place C71A-S1, REACTOR SYSTEM MODE SWITCH, to SHUTDOWN. ○ Check all Control Rods are fully inserted. <i>***Recognizes all rods are not fully inserted.</i> ○ ATWS Report <ul style="list-style-type: none"> ○ Mode Switch in shutdown. Scram pushbuttons and ARI not effective. RPS failed to de-energize. ○ Reactor Power 52%. ○ Turbine is tripped. Turbine trip occurs at 22.3 in Hg vacuum. ○ MSIVs are open. MSIV closure 8.5 in Hg vacuum. ○ EOP 1 entry conditions: High pressure, Power >5% scram required.

2018 NRC Scenario 2

Event No: 7

Event Description: ATWS / lower RPV level / insert rods

Critical Task: Terminate and prevent all injection into the RPV except boron injection, CRD, and RCIC to lower RPV level to <-56 inches prior to meeting Level/Power Conditions.

All of the following must be met:

- Reactor power above 5% or cannot be determined
- SP temperature above 110°F
- Any SRV open or DW pressure above 1.68 psid
- RPV level above -100 in.

Critical Task: Before Suppression Pool temperature reaches 110F, inject boron (SLC). (EOP-1A, Step RQA-4/5)

Initial Setup - Automatic

TIME	Position	Applicant's Actions or Behavior
	CRS	<p>Recognize and enter EOP-1, RPV Control.</p> <p>Recognize and enter EOP-1A, RPV Control, ATWS</p> <p>Per EOP-1A, Step RCA-2, directs ATC to trip both reactor recirc pumps.</p> <p>Per EOP-1A, Step RCA-3, directs BOP to terminate and prevent injection from HPCS and to inhibit ADS.</p>
	ATC	<p>Trips both reactor recirc pumps.</p> <ul style="list-style-type: none"> ○ Depress the STOP pushbutton for B33-C001A(B) RECIRC PUMP A(B) MOTOR BREAKER 5A(B). ○ Verify B33-C001A(B) RECIRC PUMP A(B) MOTOR BREAKER 5A(B) opens and pump coasts down to 0% speed. ○ Open NJS-ACB305(029) by depressing the TRIP pushbutton for B33-S001A(B) LFMG A(B) MOT BRKR 1A(B).

2018 NRC Scenario 2

	BOP	<p>Per OSP-0053, Attachment 5 (HARDCARD) terminate and prevent injection from HPCS:</p> <ul style="list-style-type: none"> ○ Override Injection / Initiate HPCS ○ Verify E22-F004 amber override light is lit. ○ Stop the HPCS pump. ○ Notify the CRS that injection from HPCS has been terminated and prevented. <p>Inhibits ADS:</p> <ul style="list-style-type: none"> ○ Places ADS INHIBIT switches to the INHIBIT position.
	CRS	<p>Directs ATC to terminate and prevent all injection in the RPV except boron injection, CRD and RCIC to maintain RPV level -60 to -140 inches wide range. Once level is less than -100 inches changes level band to -100 to -140 inches wide range.</p> <p>Directs ATC to stabilize pressure less than 1090 psig. When pressure is reported stable, directs ATC to maintain RPV pressure 800-1090 psig using Bypass valves and drains until MSIVs close. When MSIVs close use SRVs to maintain pressure 800-1090 psig.</p>

2018 NRC Scenario 2

	ATC	<p>Terminate and prevent injection from condensate/feedwater.</p> <ul style="list-style-type: none"> ○ Place the Master Controller in Manual and drive all Feed Reg valves full closed; place the Startup Feed Reg valve in Manual and drive it full closed. ○ Intentionally lowers water level to maintain -60 to -140 inches wide range. <p>Critical Task: Terminate and prevent all injection into the RPV except boron injection, CRD, and RCIC to lower RPV level to <-56 inches prior to meeting Level/Power Conditions.</p> <p>All of the following must be met:</p> <ul style="list-style-type: none"> • Reactor power above 5% or cannot be determined • SP temperature above 110°F • Any SRV open or DW pressure above 1.68 psid • RPV level above -100 in.
	CRS	<ul style="list-style-type: none"> ○ Directs SLC injection prior to SP temperature reaches 110F. <p>Critical Task: Before Suppression Pool temperature reaches 110F, inject boron (SLC). (EOP-1A, Step RQA-4/5)</p> <ul style="list-style-type: none"> ○ Directs BOP to maximize CRD. ○ Directs Enclosures 10, 12, 14, 16, and 24 installed. ○ Directs RHR A aligned in suppression pool cooling.
	Booth	<p>Install EOP Enclosures as requested; however, do not install Enclosure 10 until Suppression Pool temperature reaches 110F or SLC injecting.</p>
	ATC	<p>Recognizes and reports SLC failure. (See event 9). Takes action to inject SLC.</p> <p>Critical Task: Before Suppression Pool temperature reaches 110F, inject boron (SLC). (EOP-1A, Step RQA-4/5)</p>

2018 NRC Scenario 2

	BOP	<p>MAXIMIZING CRD</p> <ul style="list-style-type: none"> ○ Start any available, non-running CRD pump as follows: <ul style="list-style-type: none"> ○ Start C11-C001AP(BP), CRD AUX OIL PUMP A(B). ○ Verify C11-C001A(B), CRD PUMP A(B), white control power available light on. ○ Start C11-C001A(B), CRD PUMP A(B). ○ Place CRD HYDRAULICS FLOW CONTROLLER, in MANUAL and raise signal to 100%. ○ Fully Open C11-F003, CRD DRIVE WATER PRESS CONTROL VALVE. <p>Verify IAS-MOV106 is Open. IF IAS-MOV106 is not open, AND an ATWS condition exists, THEN notify the CRS that EOP Enclosure 16 is required. See event 13.</p>
	BOP	<p>Installs Enclosures 10, 12, 14, 16, and 24. See events 10-14.</p>
	BOP	<p>Aligns RHR in suppression pool cooling. See event 15.</p>

2018 NRC Scenario 2

Event No: <u>8</u>		
Event Description: MSIVs fail to automatically close on low vacuum (8.5 inches Hg vacuum)		
Initial Setup - Automatic		
TIME	Position	Applicant's Actions or Behavior
	BOP	Recognize and report per AOP-0005, LOSS OF MAIN CONDENSER VACUUM/TRIP OF CIRCULATING WATER PUMP, automatic action failed to occur: MSIV Closure 8.5 in Hg
	CRS	Direct per AOP-0005, LOSS OF MAIN CONDENSER VACUUM/TRIP OF CIRCULATING WATER PUMP, manually closed: MSIV Closure 8.5 in Hg
	BOP	Per AOP-0005, LOSS OF MAIN CONDENSER VACUUM/TRIP OF CIRCULATING WATER PUMP, manually closed: MSIV Closure 8.5 in Hg

2018 NRC Scenario 2

Event No: 9

Event Description: 1st C41-S1A(B), SLC PUMP A(B) attempted fails to start. Crew must start second SLC pump. The failure malfunction is initially on both pumps to ensure either pump that is started first fails. When the first pump is attempted the malfunction is deleted from the second pump.

Critical Task: Before Suppression Pool temperature reaches 110F, inject boron (SLC). (EOP-1A, Step RQA-4/5)

Initial Setup - Automatic

TIME	Position	Applicant's Actions or Behavior
	ATC	<p>NOTE: The first pump started will fail to inject. The operator must recognize the pump failure and place the failed SLC PUMP A(B), control switch to STOP. Then start the other SLC pump.</p> <p>INITIATING STANDBY LIQUID CONTROL</p> <ul style="list-style-type: none"> ○ Place SLC PUMP A(B) (NOT BOTH), control switch to RUN. ○ Verify the following: <ul style="list-style-type: none"> ○ SQUIB CONTINUITY A(B), light goes Off. ○ C41-F001A(B), SLC PUMP A(B) SUCT VLV, Opens. ○ C41-C001A(B), SLC PUMP A(B), Starts. ○ Notify CRS of SLC injection status. ○ Verify IAS-MOV106 is Open. (Enclosure 16 may be required). <p>Critical Task: Before Suppression Pool temperature reaches 110F, inject boron (SLC). (EOP-1A, Step RQA-4/5)</p>

2018 NRC Scenario 2

Event No: <u>10</u>																																										
Event Description: Enclosure 10, DE-ENERGIZING SCRAM SOLENOIDS																																										
TIME	Position	Applicant's Actions or Behavior																																								
	CRS	Direct installation of ENCLOSURE 10, DE-ENERGIZING SCRAM SOLENOIDS.																																								
	BOOTH	Remove and install fuses as requested after SLC is injecting.																																								
	ATC	<p>Per ENCLOSURE 10, DE-ENERGIZING SCRAM SOLENOIDS</p> <p>3.1 OBTAIN EOP-0005 ENCL 10 fuse puller(s) from Control Room Emergency Locker.</p> <p>3.2 Verify alarm P680-06A-A08 CRD SCRAM DISCH VOL HIGH WATER LEVEL is clear prior to initially pulling fuse(s) and between each Group fuse pulls. If necessary, reset the scram and ARI, drain the SDV (ENCL 12, 16)</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Fuses may be pulled and inserted in any order or combination as necessary. Fuses may be pulled simultaneously when multiple personnel are available.</p> <p>3.3 Using the table below identify which fuses are to be pulled.</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="8">H13-P680</th> </tr> <tr> <th colspan="2">RPS DIV 1 SCRAM SOV VALVES CR1A OPEN CR1B</th> <th colspan="2">RPS DIV 3 SCRAM SOV VALVES CR3A OPEN CR3B</th> <th colspan="2">RPS DIV 2 SCRAM SOV VALVES CR2A OPEN CR2B</th> <th colspan="2">RPS DIV 4 SCRAM SOV VALVES CR4A OPEN CR4B</th> </tr> </thead> <tbody> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Fuse C71A- F18A</td> <td>Fuse C71A- F18E</td> <td>Fuse C71A- F18C</td> <td>Fuse C71A- F18G</td> <td>Fuse C71A- F18B</td> <td>Fuse C71A- F18F</td> <td>Fuse C71A- F18D</td> <td>Fuse C71A- F18H</td> </tr> <tr> <td>H13- P691 Bay B GP-1 RPS A</td> <td>H13- P691 Bay B GP-1 RPS B</td> <td>H13- P693 Bay B GP-3 RPS A</td> <td>H13- P693 Bay A GP-3 RPS B</td> <td>H13- P692 Bay B GP-2 RPS A</td> <td>H13- P692 Bay B GP-2 RPS B</td> <td>H13- P694 Bay A GP-4 RPS A</td> <td>H13- P694 Bay B GP-4 RPS B</td> </tr> </tbody> </table> <p>3.4 Pull fuse(s) identified above, one Group at a time, pulling the fuse which results in control rod movement for approximately 5 seconds THEN replace the fuse, as necessary.</p> <p>3.5 RE-PERFORM Steps 3.2 through 3.4 as many times as necessary until the reactor is shutdown or there is no more control rod movement.</p>	H13-P680								RPS DIV 1 SCRAM SOV VALVES CR1A OPEN CR1B		RPS DIV 3 SCRAM SOV VALVES CR3A OPEN CR3B		RPS DIV 2 SCRAM SOV VALVES CR2A OPEN CR2B		RPS DIV 4 SCRAM SOV VALVES CR4A OPEN CR4B		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Fuse C71A- F18A	Fuse C71A- F18E	Fuse C71A- F18C	Fuse C71A- F18G	Fuse C71A- F18B	Fuse C71A- F18F	Fuse C71A- F18D	Fuse C71A- F18H	H13- P691 Bay B GP-1 RPS A	H13- P691 Bay B GP-1 RPS B	H13- P693 Bay B GP-3 RPS A	H13- P693 Bay A GP-3 RPS B	H13- P692 Bay B GP-2 RPS A	H13- P692 Bay B GP-2 RPS B	H13- P694 Bay A GP-4 RPS A	H13- P694 Bay B GP-4 RPS B
H13-P680																																										
RPS DIV 1 SCRAM SOV VALVES CR1A OPEN CR1B		RPS DIV 3 SCRAM SOV VALVES CR3A OPEN CR3B		RPS DIV 2 SCRAM SOV VALVES CR2A OPEN CR2B		RPS DIV 4 SCRAM SOV VALVES CR4A OPEN CR4B																																				
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																																			
Fuse C71A- F18A	Fuse C71A- F18E	Fuse C71A- F18C	Fuse C71A- F18G	Fuse C71A- F18B	Fuse C71A- F18F	Fuse C71A- F18D	Fuse C71A- F18H																																			
H13- P691 Bay B GP-1 RPS A	H13- P691 Bay B GP-1 RPS B	H13- P693 Bay B GP-3 RPS A	H13- P693 Bay A GP-3 RPS B	H13- P692 Bay B GP-2 RPS A	H13- P692 Bay B GP-2 RPS B	H13- P694 Bay A GP-4 RPS A	H13- P694 Bay B GP-4 RPS B																																			

2018 NRC Scenario 2

Event No: <u>11</u>												
Event Description: Enclosure 12, DEFEATING RPS AND ARI LOGIC TRIPS												
TIME	Position	Applicant's Actions or Behavior										
	CRS	Direct installation of Enclosure 12, DEFEATING RPS AND ARI LOGIC TRIPS.										
	ATC	<p style="text-align: center; margin: 0;">NOTE</p> <p style="margin: 0;">For non-ATWS events complete Steps 3.1 through 3.4 only. ARI should only be defeated during ATWS event as necessary.</p> <p style="margin: 0;">3.1 DEFEAT Containment Instrument Air isolation interlocks per EOP-0005 ENCL 16, to supply air to the Scram Valves.</p> <p style="margin: 0;">3.2 OBTAIN EOP-0005 ENCL 12 keys, four (4).</p> <p style="margin: 0;">3.3 DEFEAT the RPS trip logic by placing the following switches in the EMERGENCY position AND VERIFY the red lights illuminate:</p> <table style="width: 100%; margin: 10px 0;"> <tr> <td style="text-align: center; width: 60%;">Switch No.</td> <td style="text-align: center; width: 40%;">Panel No.</td> </tr> <tr> <td>• C71A-S15A RPS LOGIC TRIP DISABLE</td> <td>H13-P691</td> </tr> <tr> <td>• C71A-S15B RPS LOGIC TRIP DISABLE</td> <td>H13-P692</td> </tr> <tr> <td>• C71A-S15C RPS LOGIC TRIP DISABLE</td> <td>H13-P693</td> </tr> <tr> <td>• C71A-S15D RPS LOGIC TRIP DISABLE</td> <td>H13-P694</td> </tr> </table> <p style="margin: 0;">3.4 IF DEFEATING the RPS trip logic only, THEN RESET the reactor SCRAM AND ARI. (H13-P680)</p> <p style="margin: 0;">3.5 If necessary, DEFEAT ARI logic trip as follows:</p> <p style="margin: 0;">3.5.1 Location: H13-P632 Bay A</p>	Switch No.	Panel No.	• C71A-S15A RPS LOGIC TRIP DISABLE	H13-P691	• C71A-S15B RPS LOGIC TRIP DISABLE	H13-P692	• C71A-S15C RPS LOGIC TRIP DISABLE	H13-P693	• C71A-S15D RPS LOGIC TRIP DISABLE	H13-P694
Switch No.	Panel No.											
• C71A-S15A RPS LOGIC TRIP DISABLE	H13-P691											
• C71A-S15B RPS LOGIC TRIP DISABLE	H13-P692											
• C71A-S15C RPS LOGIC TRIP DISABLE	H13-P693											
• C71A-S15D RPS LOGIC TRIP DISABLE	H13-P694											

2018 NRC Scenario 2

	ATC	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">All ARI relays are on the right side of the bay.</p> <p>1. REMOVE Relays:</p> <ul style="list-style-type: none">• C11C-K2B (3rd row of relays from door, 3rd relay from top)• C11C-K3B (3rd row of relays from door, 4th relay from top)• C11C-K4B (3rd row of relays from door, 5th relay from top)• C11C-K5B (3rd row of relays from door, 6th relay from top)• C11C-K2A (4th row of relays from door, 3rd relay from top)• C11C-K3A (4th row of relays from door, 4th relay from top)• C11C-K4A (4th row of relays from door, 5th relay from top)• C11C-K5A (4th row of relays from door, 6th relay from top) <p>3.6 VERIFY ARI is RESET. (H13-P680)</p> <p>3.7 RESET the reactor SCRAM. (H13-P680)</p> <p>3.8 VERIFY OPEN SCRAM DISCH VOL VENT VLVS (F010 & F180) AND SCRAM DISCH VOL DRAIN VLVS (F011 & F181). (H13-P680)</p> <p>3.9 WHEN the ANNUNCIATOR clears,</p> <div style="border: 2px solid black; padding: 10px; text-align: center;"><p>CRD SCRAM DISCH VOL HIGH WATER LEVEL</p><p>P680-06A-A08 2176</p></div> <p>THEN initiate a manual SCRAM.</p> <p>3.10 IF inward control rod motion is observed, THEN REPEAT Steps 3.6 through 3.10 UNTIL the reactor will remain shut down under all conditions without boron (ENCL 26).</p>
--	-----	---

2018 NRC Scenario 2

Event No: <u>12</u>		
Event Description: Enclosure 14, DEFEATING RC&IS INTERLOCKS AND EMERGENCY CONTROL ROD INSERTION DATA SHEET		
TIME	Position	Applicant's Actions or Behavior
	CRS	Direct installation of ENCLOSURE 14, DEFEATING RC&IS INTERLOCKS AND EMERGENCY CONTROL ROD INSERTION DATA SHEET.

2018 NRC Scenario 2

	ATC	<p>3.1 DEFEAT Containment Instrument Air isolation interlocks per EOP-0005 ENCL 16, To supply air to the CRD FCV if necessary.</p> <p>3.2 DEFEAT RC&IS control rod insert blocks as follows:</p> <p>3.2.1 OBTAIN EOP-0005 ENCL 14 key, one (1)</p> <ul style="list-style-type: none"> • Location: H13-P618 <p>Affected Trip Unit: C11-N654B, FIRST STAGE TURBINE PRESSURE (left column, 2nd row from top, 1st unit)</p> <ol style="list-style-type: none"> 1. UNLOCK and REMOVE bar. 2. VERIFY center knob is full out. 3. VERIFY TRANSIENT CURRENT knob is full out. 4. VERIFY center knob is rotated full counter clockwise. 5. ROTATE center knob 1 "click" clockwise to position 1. 6. TURN power switch to ON. 7. DEPRESS center knob. 8. ROTATE STABLE CURRENT knob fully clockwise UNTIL meter on trip unit is full scale and TRIP is reset. <ul style="list-style-type: none"> • Location: H13-P629 <p>Affected Trip Unit: C11-N654A, FIRST STAGE TURBINE PRESSURE (right column, bottom row, 8th unit)</p> <ol style="list-style-type: none"> 1. UNLOCK and REMOVE bar. 2. VERIFY center knob is full out. 3. VERIFY TRANSIENT CURRENT knob is full out. 4. VERIFY center knob is rotated full counter clockwise. 5. ROTATE center knob 8 "clicks" clockwise to position 8. 6. TURN power switch to ON. 7. DEPRESS center knob. 8. ROTATE STABLE CURRENT knob fully clockwise UNTIL meter on trip unit is full scale and TRIP is reset. <p>3.3 Verify Control Rod Pattern Sequence "A" is selected.</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">If the reactor is shutdown, the below listed control rod insertion sequence may be deviated from to achieve control rod separation criteria (EOP-0005 ENCL 26)</p>
--	-----	---

2018 NRC Scenario 2

	ATC	3.4 Fully INSERT control rods by group, starting with Group 10, using IN TIMER SKIP pushbutton. Skip control rods which do not fully INSERT.				
		<u>GROUP 10</u>	<u>GROUP 9</u>	<u>GROUP 8</u>	<u>GROUP 7</u>	<u>GROUP 5</u>
		36-45	28-29	24-17	16-17	20-05
		44-21	12-29	16-33	16-41	04-37
		12-37	28-45	32-41	40-41	36-53
		20-13	44-29	40-25	40-17	52-21
		20-45	28-13	16-25	24-33	04-21
		44-37	20-21	24-41	32-25	20-53
		36-13	20-37	40-33	24-25	52-37
		12-21	36-37	32-17	32-33	36-05
		04-29	36-21	08-17	24-09	
		28-53	12-13	16-49	08-33	
		52-29	12-45	48-41	32-49	
		28-05	44-45	40-09	48-25	
		20-29	44-13	16-09	08-25	
		28-37		08-41	24-49	
		36-29		40-49	48-33	
		28-21		48-17	32-09	

2018 NRC Scenario 2

	ATC	(3.4 Continued)			
		3.4 Fully INSERT control rods by group, starting with Group 10, using IN TIMER SKIP pushbutton.			
		Skip control rods which do not fully INSERT.			
		<u>GROUP 4</u>	<u>GROUP 3</u>	<u>GROUP 2</u>	<u>GROUP 1</u>
		44-41	52-41	40-45	40-53
		44-17	52-17	40-13	40-05
		12-17	04-17	16-13	16-05
		12-41	04-41	16-45	16-53
		28-41	44-49	32-37	48-45
		36-25	44-09	32-21	48-13
		20-25	12-09	16-29	08-13
		36-33	12-49	24-37	08-45
		28-17	20-41	40-29	16-37
		20-33	36-41	24-21	16-21
		52-33	28-25	24-53	32-29
		36-09	36-17	48-37	40-37
		20-09	20-17	48-21	40-21
		04-33	28-33	24-05	24-29
		36-49	44-33	32-53	32-45
		52-25	28-09	32-05	32-13
		04-25	12-33	08-21	08-29
		20-49	28-49	08-37	48-29
			44-25		24-13
			12-25		24-45

2018 NRC Scenario 2

Event No: <u>13</u>						
Event Description: Enclosure 16, DEFEATING CONTAINMENT INSTRUMENT AIR ISOLATION INTERLOCKS						
TIME	Position	Applicant's Actions or Behavior				
	CRS	Direct installation of Enclosure 16, DEFEATING CONTAINMENT INSTRUMENT AIR ISOLATION INTERLOCKS.				
	BOP	<p>Per ENCLOSURE 16, DEFEATING CONTAINMENT INSTRUMENT AIR ISOLATION INTERLOCKS</p> <p>3.1 VERIFY Instrument Air Header Pressure on IAS-PI105 (H13-P870) is greater than Containment pressure on CMS-PR2A(B). (H13-P808)</p> <p>3.2 OBTAIN EOP-0005 ENCL 16 key, one (1)</p> <p>3.3 PLACE the following switch in the EMERGENCY position AND VERIFY the red light illuminates:</p> <table><tr><td>Switch Name</td><td>Panel No.</td></tr><tr><td>3.3.1 CONTMT INST AIR ISOL INTLK BYP</td><td>H13-P851</td></tr></table> <p>3.4 VERIFY open IAS-MOV106, INST AIR OUTBD ISOL. (H13-P870)</p>	Switch Name	Panel No.	3.3.1 CONTMT INST AIR ISOL INTLK BYP	H13-P851
Switch Name	Panel No.					
3.3.1 CONTMT INST AIR ISOL INTLK BYP	H13-P851					

2018 NRC Scenario 2

Event No: <u>14</u>		
Event Description: Enclosure 24, DEFEATING RPV LOW LEVEL 1 MSIV AND MSL DRAINS ISOLATION INTERLOCKS		
TIME	Position	Applicant's Actions or Behavior
	CRS	Direct installation of ENCLOSURE 24, DEFEATING RPV LOW LEVEL 1 MSIV AND MSL DRAINS ISOLATION INTERLOCKS
	BOP	<p>3.1 DEFEAT Containment Instrument Air Isolation interlocks per EOP-0005 ENCL 16 to supply air to the inboard MSIVs.</p> <p>3.2 OBTAIN EOP-0005 ENCL 24 keys (4)</p> <p>3.3 PLACE the following keylock switches in the EMERGENCY position AND VERIFY the red lights illuminate.</p> <p>Switch No.</p> <p>Panel No.</p> <ul style="list-style-type: none"> • B21H-S78A RPV LO LVL 1 MSIV AND MSL DR ISOL INTLK BYP H13-P691 • B21H-S78B RPV LO LVL 1 MSIV AND MSL DR ISOL INTLK BYP H13-P692 • B21H-S78C RPV LO LVL 1 MSIV AND MSL DR ISOL INTLK BYP H13-P693 • B21H-S78D RPV LO LVL 1 MSIV AND MSL DR ISOL INTLK BYP H13-P694 <p>3.4 OPEN MSIVs and MSL drains as directed by the CRS.</p>

2018 NRC Scenario 2

Event No: <u>15</u>		
Event Description: Align RHR A in suppression pool cooling, per OSP-53, Attachment 12 ESTABLISHING SUPPRESSION POOL COOLING.		
TIME	Position	Applicant's Actions or Behavior
	CRS	Direct RHR A to be aligned in suppression pool cooling per OSP-53, Attachment 12, ESTABLISHING SUPPRESSION POOL COOLING.
	BOP	<p>1 Verify the selected system is not required for adequate core cooling.</p> <p>2 Throttle E12-F068A, RHR HX A SVCE WTR RTN, not to exceed 5800 gpm flow.</p> <p>3 Start/Verify Running RHR PUMP A.</p> <p>4 Verify E12-F042A, RHR PUMP A LPCI INJECT ISOL VALVE, Closed.</p> <p>5 Verify E12-F053A, RHR PUMP A SDC INJECTION VALVE, Closed.</p> <p>6 Open/Verify Open E12-F024A, RHR PUMP A TEST RTN TO SUP PL.</p> <p>7 Verify E12-F064A, RHR PUMP A MIN FLOW TO SUP PL, Closed.</p> <p>8 Close E12-F048A, RHR A HX BYPASS VALVE, when auto open signal has cleared.</p>

2018 NRC Scenario 2

END OF SCENARIO

When directed by the Lead Examiner, place the simulator in freeze and tell the crew to stop operating.

Notes

2018 NRC Scenario 2

Offgoing OSM:		Oncoming OSM:
---------------	--	---------------

(Print) KCN
(Print) KCN

Off-Going Shift
 N D
☐ ☐
 Date

PART I - TO BE REVIEWED PRIOR TO ASSUMING THE SHIFT

UNIT STATUS MODE 1 RX POWER 100%

EVOLUTIONS (COMPLETED / IN PROGRESS / PLANNED); GENERAL INFORMATION

SIGNIFICANT LCO STATUS

EQUIPMENT STATUS

☐ Night Orders ☐ Standing Orders ☐ Board Walkdown ☐ Temp Alts

(Signature: Oncoming OSM Review Completed) KCN

2018 NRC Scenario 3

Facility: <u>River Bend Nuclear Station</u> Scenario No.: <u>3</u> Op-Test No.: <u>2018-07</u>			
Examiners: _____ _____ _____		Operators: _____ _____ _____	
Initial Conditions: 86% Power. Normal operating conditions.			
Event No.	Malf. No.	Event Type †	Event Description
1		R (ATC/CRS)	Raise power with rods per reactivity management plan.
2	CRDM1637	C (ATC/CRS) TS (CRS) A (ALL)	Control Rod 16-37 drift out / hydraulically isolated / Enter Tech Spec 3.1.3.C
3	p870_54a:g_5	C (BOP/CRS) A (ALL)	Rotate to standby packing exhauster due to high temperature
4		TS (CRS)	LPCS Pump Breaker trip/Enter TS 3.5.1 Condition A
5	CRD016	C (BOP/CRS) A (ALL)	CRD Pump A trip / start CRD-P1B
6	FWS004B	C (ATC/CRS) A (ALL)	FWS Master Controller output fails high / controller to manual
7	WCS004 WCS005 WCS006	M (ALL)	RWCU leak / reactor scram EOP-1/EOP-3 CT-1
8	D3mod124c1v final = 0	I (ALL)	Bypass Valves fail closed / pressure control to SRVs (and Bypass Valves if manually opened).
9	WCS006	C (ALL)	RWCU leak spreads to RCIC Room, Emergency depressurization per EOP-3. CT-2
† (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (A)bnormal (TS) Tech Spec * Critical Task (As defined in NUREG 1021 Appendix D)			

ALL annotation for Abnormal (A) and Major (M) events denotes ATC, BOP, and CRS are credited.

2018 NRC Scenario 3

Quantitative Attributes Table			
Attribute	E3-301-4 Target	Actual	Description
Malfunctions after EOP entry	1-2	2	<ul style="list-style-type: none"> EHC pressure transmitter failure RWCU leak spreads to RCIC Room.
Abnormal Events	2-4	4	<ul style="list-style-type: none"> Rod drifts out AOP-61, Control Rod Mispositioned/Malfunction Steam Packing Exhauster high temperature condition per ARP H13-P870-54A-G05. CRD pump trip, ARP-H13-P601-22A-A01 FRV malfunction, AOP-6, Condensate/Feedwater Failures
Major Transients	1-2	1	<ul style="list-style-type: none"> RWCU leak requires reactor scram per EOP-3, Secondary Containment and Radioactive Release Control
EOP entries requiring substantive action	1-2	2	<ul style="list-style-type: none"> Post scram RPV level and pressure control per EOP-1, RPV Control RWCU leak requires reactor scram per EOP-3, Secondary Containment and Radioactive Release Control
Entry into a contingency EOP with substantive actions	≥ 1	1	<ul style="list-style-type: none"> RWCU leak spreads to RCIC Room, requires emergency depressurization per EOP-3.
Preidentified critical tasks	2-3	2	<ul style="list-style-type: none"> Scram reactor prior to reaching Max Safe Operating Values in any area (SC-2). Emergency Depressurize RPV within 15 minutes of any Sec CTMT parameter exceeding its Table SC-2 Max Safe Operating Value in 2 or more areas.

2018 NRC Scenario 3

SCENARIO ACTIVITIES:

Initial Conditions

86% Power. Normal operating conditions.

Event 1 –

Raise power with control rods per reactivity management plan.

Event 2 – (Initial Setup - Automatic)

When withdrawing Control Rod 16-37 it continues to drift out, requiring it to be driven fully in and hydraulically isolated per AOP-61, Control Rod Mispositioned/ Malfunction. CRS will enter Tech Spec 3.1.3.C when the control rod is isolated.

Event 3 – (Triggered by Lead Examiner)

Steam Packing Exhauster high temperature condition requiring crew to rotate to the standby packing exhauster.

Event 4 – (Triggered by Lead Examiner)

LPCS pump will trip and building operator will report acrid odor (no smoke or fire). CRS should enter Tech Spec 3.5.1 condition A.

Event 5 – (Triggered by Lead Examiner)

CRD Pump A trip. BOP starts the B lube oil pump and then CRD pump B to restore CRD flow.

Event 6 – (Triggered by Lead Examiner)

FWS Master Controller output fails high. ATC must take manual control of the controller per AOP-6, Condensate/Feedwater Failures.

Event 7 – (Triggered by Lead Examiner)

RWCU leak requires reactor scram per EOP-3, Secondary Containment and Radioactive Release Control.

Event 8 – (Initial Setup - Automatic)

When a manual scram is inserted, the RPV pressure controller pressure transmitter will fail. This will cause the Main Turbine Control Valves to close and prevent the Bypass Valves from automatically opening (they may still be manually opened). This results in a shift of RPV pressure control to the SRVs (and Bypass Valves if manually opened).

2018 NRC Scenario 3

Event 9 – (Initial Setup – Automatic, 5 minutes after the mode switch is taken to shutdown, the leak will spread)

RWCU leak spreads to RCIC Room, requires emergency depressurization per EOP-3.

2018 NRC Scenario 3

Critical Task	CT-1	CT-2
	Scram reactor prior to reaching Max Safe Operating Values in any area (SC-2).	**Emergency Depressurize RPV within 15 minutes of any Sec CTMT parameter exceeding its Table SC-2 Max Safe Operating Value in 2 or more areas.
EVENT	6	8
Safety Significance	Per EOP-3 bases for steps SC-13, 14, and 15, If temperatures, radiation levels or water levels in any one of the areas listed in Table SC-2 approach their maximum safe operating value, adequate core cooling, containment integrity, safety of personnel, or continued operability of equipment required to perform EOP actions can no longer be assured. A reactor scram is initiated through entry of EOP-1 to reduce the primary system discharge into secondary containment and in anticipation of possible RPV depressurization in Step SC-17.	Per EIP-2-001, when either RWCU pump room or RCIC room is above Table F2 Max Normal Operating Temperatures and above Table F1 Max Safe Operating Temperatures a Site Area Emergency should be declared per FS1. This is based on a loss of Reactor Coolant System Barrier (RC3) and Primary Containment Barrier (PC3). The crew has 15 minutes to make this upgrade declaration.
Cueing	RWCU Pump Room area temperature will rise.	The ADS/SRVs will indicate open using red lights, steam flow, and acoustic monitoring. Reactor pressure will lower.

* If an operator or the crew significantly deviates from, or fails to, follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review (NUREG 1021, Appendix D)

**Per EPSTG*0002, EOP-1, Step ED-6: Five open SRVs is the Minimum Number of SRVs Required for Emergency Depressurization (MNSRED) and is the least number of SRVs which corresponds to a Minimum Steam Cooling Pressure (MSCP) sufficiently low that the ECCS with the lowest head will be capable of making up the SRV steam flow at the corresponding MSCP. The MNSRED is utilized to assure the RPV will depressurize and remain depressurized when emergency depressurization is required. Refer to Appendix A for a detailed discussion of the MNSRED and the MSCP.

2018 NRC Scenario 3

Top 10 systems and operator actions important to risk that are tested:

Event 7

Reactor Trip/Turbine Trip -#6 Internal Events

Event 9

SRV Depressurization - #3 Risk Significant System

Manual depressurization of reactor vessel – #1 Operator Actions

Simulator Setup:

IC: 117

Verify CRD pump A running B in standby.

2018 NRC Scenario 3

SCENARIO ACTIVITIES:

- Start SBT report and any other required recording devices.

Event No: <u>1</u>		
Event Description: Raise power with rods per reactivity management plan.		
Crew will perform reactivity manipulation as directed from turnover.		
TIME	Position	Applicant's Actions or Behavior
	CRS	Direct ATC to perform RCP-18-015 to raise Reactor Power. Act as Reactivity SRO for Control Rod movement.
	ATC	Per the reactivity management plan, withdraw the following rods from position 10 to 12: 24-29 32-29 16-37**** 40-21 40-37 16-21 *****NOTE: When rod 16-37 is withdrawn to position 12, the rod will continue to drift out. See event 2.

2018 NRC Scenario 3

Event No: <u> 2 </u>		
Event Description: Control Rod 16-37 drift out / hydraulically isolated / enter Tech Spec 3.1.3.C		
Initial Setup - Automatic		
TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Recognize and report that control rod 16-37 is drifting out. Per AOP-0061, CONTROL ROD(S) MISPOSITIONED/ MALFUNCTION:</p> <p>5.1 IF control rod drift is detected (actual rod motion), THEN perform the following:</p> <p>5.1.1. Determine which rod is drifting/drifted by depressing "ROD DRIFT" and observing red lights on ROD POSITION DISPLAY.</p>
	CRS	<p>Direct the ATC to take actions per AOP-0061, CONTROL ROD(S) MISPOSITIONED/ MALFUNCTION.</p>

2018 NRC Scenario 3

	ATC	<p>Per AOP-0061, CONTROL ROD(S) MISPOSITIONED/ MALFUNCTION:</p> <p>5.1.2. Select AND continuously insert the drifting/drifted control rod to position 00.</p> <p>5.1.3. Refer to CONTROL ROD DRIFT Alarm Response Procedure for Annunciator P680-07A-B02.</p> <p>Per ARP H13 P680/07A/B02, CONTROL ROD DRIFT:</p> <p>5. WHEN the control rod is inserted to the full in position, THEN remove the continuous insert signal.</p> <p>a. IF the rod continues to withdraw from full-in, THEN reinsert with a continuous insert signal and hold it until one of the following is performed:</p> <ul style="list-style-type: none"> • CRD drive pressure can be reduced. OR • An Operator isolates the HCU by closing Drive water (V103) and Exhaust water (V105) isolation valves.
	CRS	<p>Enter Tech Spec 3.1.3 Control Rod OPERABILITY Condition C. One or more control rods inoperable for reasons other than Condition A or B.</p> <p>C.1 Fully insert inoperable control rod. 3 hours AND C.2 Disarm the associated CRD. 4 hours</p> <p>3.1.3.C when the control rod is isolated. Contact reactor engineering for the drifting control rod.</p>

2018 NRC Scenario 3

	BOOTH	<p>When requested as the reactor building operator, wait 5 minutes and then:</p> <p>Delete malfunction CRDM1637 Drifts Out and report that control rod 16-37 has been isolated.</p> <p>If monitor case requested, act as reactor engineering and deliver monitor case.</p>
--	-------	--

2018 NRC Scenario 3

Event No: <u>3</u>		
Event Description: Rotate to standby packing exhauster due to high temperature		
Triggered by Lead Examiner		
TIME	Position	Applicant's Actions or Behavior
	BOP	Recognize and report steam packing fan failure per ARP: H13-P870/54A/G05, STEAM PACKING EXH FAN MOTOR HIGH TEMPERATURE
	CRS	Recognize and direct actions per H13-P870/54A/G05, STEAM PACKING EXH FAN MOTOR HIGH TEMPERATURE, to swap steam packing exhaust fans per SOP-0015, Gland Seal System and Exhaust System.
	BOOTH	If turbine building operator dispatched to investigate cause of trip, report no obvious indications for cause of tripped fan.

2018 NRC Scenario 3

		<p>Per SOP-0015, Gland Seal System and Exhaust System:</p> <p>5.3 Alternating Steam Packing Exhauster Fans</p> <p style="text-align: center;">NOTE</p> <p>Unless otherwise indicated, all controls and instrumentation are located on H13-P870.</p> <p>Steps 5.3.1 and 5.3.2 drain accumulated moisture in the vertical piping run above TME-MOVD1(D2), STM PKG EXH A(B) DISCH DMPR. Maintain greater than or equal to 16 inches and less than or equal to 18 inches water vacuum on TME-PIEPR-9, STM PKG EXH VENT VACUUM during performance of these steps.</p> <p>5.3.1. Partially open TME-MOVD1(D2), STM PKG EXH A(B) DISCH DMPR for the fan to be started.</p> <p>5.3.2. WHEN at least 3 minutes have elapsed, THEN close TME-MOVD1(D2), STM PKG EXH A(B) DISCH DMPR for the fan to be started.</p> <p>5.3.3. Start TME-SPEM-A(B), STM PKG EXH A(B) FAN.</p> <p>5.3.4. Throttle open TME-MOVD1(D2), STM PKG EXH A (B) DISCH DMPR while closing TME-MOVD2 (D1), STM PKG EXH B (A) DISCH DMPR to maintain greater than or equal to 10 inches and less than or equal to 18 inches of water as indicated on TME-PIEPR-9, STM PKG EXH VENT VACUUM.</p> <p>5.3.5. WHEN TME-MOVD2 (D1), STM PKG EXH B (A) DISCH DMPR, is completely closed, THEN stop TME-SPEM-B(A), STM PKG EXH B(A) FAN.</p> <p>5.3.6. Throttle open TME-MOVD1(D2), STM PKG EXH A (B) DISCH DMPR as necessary to maintain greater than or equal to 16 inches and less than or equal to 18 inches of water as indicated on TME-PIEPR-9, STM PKG EXH VENT VACUUM.</p>
	BOP	

2018 NRC Scenario 3

Event No: <u>4</u>		
Event Description: LPCS pump failure		
Triggered by Lead Examiner		
TIME	Position	Applicant's Actions or Behavior
	BOOTH	Trigger Event 4 and call control room as building operator to report LPCS pump breaker tripped and acrid odor in vicinity of breaker. No smoke or fire.
	CRS	Recognize and enter tech spec 3.5.1 ECCS –Operating Condition A. One low pressure ECCS injection/spray subsystem inoperable. A.1 Restore low pressure ECCS injection/spray subsystem to OPERABLE status. 7 days

2018 NRC Scenario 3

Event No: <u>5</u>		
Event Description: CRD Pump A trip / second accumulator fault T S 3.1.5 / start CRD-P1B		
Triggered by Lead Examiner		
TIME	Position	Applicant's Actions or Behavior
	BOP	Recognize and report CRD Pump A trip per H13-P601/22/A01, CRD PUMP A OR B AUTO TRIP.
	SRO	Direct crew to start B CRD pump per H13-P601/22/A01, CRD PUMP A OR B AUTO TRIP.
	BOP	<p>Start B CRD pump per H13-P601/22/A01, CRD PUMP A OR B AUTO TRIP:</p> <ol style="list-style-type: none"> 1. At H13-P601, start the standby CRD Pump as follows: <ol style="list-style-type: none"> a. Start Standby CRD Pump Aux Oil Pump C11-C001BP, CRD AUX OIL PUMP B. b. Place Flow Controller C11-R600 to MANUAL c. Close C11-R600, CRD HYDRAULICS FLOW CONTROLLER C11-F00B. d. Verify White Control Power Light on for CRD Pump to be started. e. Start Standby Pump C11-C001B, CRD PUMP B. f. Verify amps return to normal of less than 45 amps. g. WHEN system flow drops below 45 gpm as indicated on C11-R606, CRD HYDR FLOW, THEN slowly throttle open Flow Controller C11-R600 to achieve 45 gpm. h. WHEN Flow Controller C11-R600 setpoint is nulled out, THEN place to AUTO.

2018 NRC Scenario 3

	BOOTH	<p>ROLE PLAY: As SNEO investigating CRD Pump A breaker, wait ~4 minutes then inform the control room you have an overcurrent trip and 86 lockout.</p> <p>ROLE PLAY: As SNEO investigating CRD Pump A trip, wait ~5 minutes to inform control room that the outboard motor bearing is extremely hot and the B pump is ready for a start.</p>
--	-------	---

2018 NRC Scenario 3

<p style="text-align: center;">Event No: <u>6</u></p> <p>Event Description: FWS Master Controller output fails high / controller to manual</p> <p>Triggered by Lead Examiner</p>		
TIME	Position	Applicant's Actions or Behavior
	ATC	Recognize and report the failure of the master controller.
	SRO	<p>Recognize and enter AOP-6, CONDENSATE/FEEDWATER FAILURES.</p> <p>Direct ATC per AOP-6, 5.1 manually control the feedwater level control system and/or reduce reactor power to mitigate any level transient.</p>
	ATC	<p>Per AOP-6, 5.1 Manually control the feedwater level control system and/or reduce reactor power to mitigate any level transient.</p> <ul style="list-style-type: none"> • Place Feedwater level control into manual. • Manually control reactor level at 36 inches.

2018 NRC Scenario 3

Event No: 7

Event Description: RWCU pump room leak / reactor scram

Critical Task: Scram reactor prior to reaching Max Safe Operating Values in any area (SC-2). (13 min 45 seconds, reference RWCU temperature table)

Triggered by Lead Examiner

Per EOP-3, Secondary Containment and Radioactivity Release Control:

SC-2	OPERATING VALUES OF SECONDARY CONTAINMENT AND FUEL BUILDING PARAMETERS	
Parameter	Max Normal	Max Safe
Area Temperatures		
Main Steam Line Tunnel	144°F (P601-19A-H1)	200°F
RHR Equipment Area 1 (A)	110°F (P601-20A-B5)	200°F
RHR Equipment Area 2 (B)	110°F (P601-20A-B5)	200°F
RCIC Equipment Area	144°F (P601-21A-H2)	200°F
RWCU Pump Room 1 (A) / 2 (B)	145°F (P680-1A-A5)	200°F

TIME	Position	Applicant's Actions or Behavior
	BOP	<p>Recognize and report leak in RWCU pump room per ARP: H13-P680/01A/A05, RWCU EQUIP RMS AMBIENT HIGH TEMP AMBIENTTEMP (Alarm setpoint 145°F) H13-P680/01A/A02, RWCU PUMP RM 1HI AMBIENTTEMP (Alarm setpoint 165°F)</p>
	CRS	<p>Recognize and enter EOP-3, Secondary Containment and Radioactivity Release Control for RWCU radiation level when RWCU Pump Room temperature is >145°F.</p> <p>Recognize and enter AOP-3, Automatic Isolations.</p> <p>Direct RWCU isolation per EOP-3, AOP-3, and H13-P680/01A/A02, RWCU PUMP RM 1HI AMBIENTTEMP.</p>

2018 NRC Scenario 3

	BOP	<p>NOTE: G33-MOV-F001 and G33-MOV-F004 cannot be manually closed.</p> <p>Isolate RWCU per EOP-3, AOP-3, and H13-P680/01A/A02, RWCU PUMP RM 1HI AMBIENTTEMP:</p> <p>OPERATOR ACTIONS</p> <p>1. Verify automatic actions have occurred in accordance with AOP-0003, Automatic Isolations.</p> <p>AUTOMATIC ACTIONS</p> <p>1. The following valves close:</p> <ul style="list-style-type: none"> · G33-MOV-F001, RWCU PUMPS INBD SUCTION VALVE · G33-MOV-F004, RWCU PUMPS OUTBD SUCTION VALVE · G33-MOV-F028, RWCU INBD DRAIN VALVE · G33-MOV-F034, RWCU OUTBD DRAIN VALVE · G33-MOV-F039, RWCU OUTBD RETURN VALVE · G33-MOV-F040, RWCU INBD RETURN VALVE · G33-MOV-F053, RWCU PUMPS INBD DISCH VALVE · G33-MOV-F054, RWCU PUMPS OUTBD DISCH VALVE <p>2. RWCU pumps trip</p>
	BOOTH	<p>If room temperatures are requested, reference RWCU Pump Room and RCIC Room Temperature Tables</p>
	CRS	<p>Per EOP-3, SC-14, before any Sec CTMT or MSL tunnel parameter reaches its Table SC-2 Max Safe Operating Value, enter EOP-1.</p> <p>Per EOP-1, RC-1, verify reactor mode switch in SHUTDOWN.</p> <p>Critical Task: Scram reactor prior to reaching Max Safe Operating Values in any area (SC-2).</p>
	ATC	<p>Per EOP-3, SC-14, before any Sec CTMT or MSL tunnel parameter reaches its Table SC-2 Max Safe Operating Value, enter EOP-1.</p> <p>Per EOP-1, RC-1, Verify reactor mode switch in SHUTDOWN.</p> <p>Critical Task: Scram reactor prior to reaching Max Safe Operating Values in any area (SC-2). (13 min 45 seconds, reference RWCU temperature table)</p>

2018 NRC Scenario 3

	CRS	<p>Direct ATC to maintain RWL -20 to 51 inches.</p> <p>Direct BOP to maintain reactor pressure 500 to 1090 psig. When pressure is stable and <700 psig, change pressure band 500-700 psig.</p>
	ATC	<p>Per OSP-53, Attachment 16 POST SCRAM FEEDWATER / CONDENSATE MANIPULATIONS BELOW 5% REACTOR POWER</p> <ol style="list-style-type: none"> 1 Verify Rx Water level is in the prescribed band. 2 Transfer to the S/U feedwater level controller as follows: <ol style="list-style-type: none"> 2.1 Place the Master feedwater level controller in Manual. <ol style="list-style-type: none"> 2.1.1. Depress CLOSE and set output to 0. 2.2 Select SINGLE ELEMENT control. 2.3 Roll the S/U feedwater level controller tape set to 25 inches. <p style="text-align: center;">NOTE</p> <p style="text-align: center;">The S/U feedwater level controller may be placed in Manual and operated as necessary.</p> <ol style="list-style-type: none"> 2.4 Place the S/U feedwater level controller in AUTO as desired. 3 Depress CLOSE on A/B/C Feed Reg Valve isolation MOV's. 4 Reduce to one Feed Pump. (Preferred order of removal A/B/C) 5 Reduce to two Condensate Pumps. 6 Secure operating Heater Drain Pumps. 7 Bypass Feedwater Pump Level 8 Trips as follows: <ol style="list-style-type: none"> 7.1 IF desired, THEN install Feedwater Pump Level 8 trip jumper per ATTACHMENT 30, Feedwater Pump Level 8 Trip Jumper Installation. 7.2 IF desired, THEN bypass the MSO Level 8 Feed Pump Trip per ATTACHMENT 37, Bypassing MSO Level 8 Feed Pump Trip 8 Re-Open Feed Reg Valve isolation when needed for Rx Water Level control. <ol style="list-style-type: none"> 8.1 Verify unisolated FEED REG VALVE is in service. 9 Verify S/U Feed Reg Valve opens when RPV level approaches tape set <ol style="list-style-type: none"> 9.1 S/U feedwater level controller tape set may be slowly raised to verify proper S/U Feed Reg Valve operation. 9.2 Slowly adjust S/U feedwater level controller tape set to desired level. (10 to 51 inches)

2018 NRC Scenario 3

	BOP	<p>Using bypass valves and drains, maintain pressure 500-1090 psig. Notify CRS when stable and <700 psig to obtain new pressure band 500-700 psig.</p> <p>Note: Bypass valves fail closed. See event 8.</p>
--	-----	--

2018 NRC Scenario 3

Event No: 8

Event Description: Bypass Valves fail closed / pressure control to SRVs (and Bypass Valves if manually opened).

Initial Setup - Automatic

Per EOP-3, Secondary Containment and Radioactivity Release Control:

SC-2	OPERATING VALUES OF SECONDARY CONTAINMENT AND FUEL BUILDING PARAMETERS	
Parameter	Max Normal	Max Safe
Area Temperatures		
Main Steam Line Tunnel	144°F (P601-19A-H1)	200°F
RHR Equipment Area 1 (A)	110°F (P601-20A-B5)	200°F
RHR Equipment Area 2 (B)	110°F (P601-20A-B5)	200°F
RCIC Equipment Area	144°F (P601-21A-H2)	200°F
RWCU Pump Room 1 (A) / 2 (B)	145°F (P680-1A-A5)	200°F

TIME	Position	Applicant's Actions or Behavior
	BOP	Recognize and report bypass valves failed closed. (Indication on P680 Digital EHC Monitor.
	CRS	Recognize and direct BOP to maintain pressure 500 to 1090 psig, using all available steam line drains, manual jack control of bypass valves, and SRVs.

2018 NRC Scenario 3

	BOP	<p>Per OSP-53, Attachment 1B:</p> <p>1.3.3. IF bypass valves are not operating to control pressure, THEN perform the following:</p> <ol style="list-style-type: none">1. Utilize all available steam line drains, as required, to control pressure.2. Attempt to control pressure with the bypass valve manual jack control.3. IF bypass valve manual jack control is not available AND further pressure reduction is needed, THEN closely coordinate with the level control operator to manually operate SRVs as required to control pressure in the prescribed pressure band, without driving level outside the prescribed level band.
--	-----	---

2018 NRC Scenario 3

Event No: <u>9</u>		
Event Description: RWCU leak spreads to RCIC room.		
<p>Critical Task: Emergency Depressurize RPV within 15 minutes of any Sec CTMT parameter exceeding its Table SC-2 Max Safe Operating Value in 2 or more areas. (RWCU Room Max Safe Operating Value reached 14 minutes after Event 7, reference RWCU Temperature Table)</p> <p>(RCIC Equipment Area Max Safe Operating Value reached 12 minutes after scram, reference RCIC Temperature Table)</p> <p>Initial Setup – Automatic, trigger 5 minutes after mode switch taken to shutdown.</p>		
TIME	Position	Applicant's Actions or Behavior
	BOP	Recognize and report RWCU leak spreading to RCIC room per H13-P601/21A/B06, RCIC ISOLATION RCIC RM HI AMBIENT TEMP.
	CRS	<p>Per EOP-3, SC-16, WHEN a primary system is discharging into the Sec CTMT or MSL tunnel AND Any Sec CTMT or MSL tunnel parameter exceeds its Table SC-2 Max Safe Operating Value in 2 or more areas, EMERGENCY DEPRESSURIZATION IS REQUIRED (SC-17).</p> <p>Direct BOP per EOP-1, ED-5, open 7 ADS/SRVs.</p> <p>Critical Task: Emergency Depressurize RPV within 15 minutes of any Sec CTMT parameter exceeding its Table SC-2 Max Safe Operating Value in 2 or more areas.</p> <p>(RWCU Room Max Safe Operating Value reached 14 minutes after Event 7, reference RWCU Temperature Table)</p> <p>(RCIC Equipment Area Max Safe Operating Value reached 12 minutes after scram, reference RCIC Temperature Table)</p>

2018 NRC Scenario 3

	BOP	<p>Per EOP-1, ED-5, open 7 ADS/SRVs.</p> <p>Critical Task: Emergency Depressurize RPV within 15 minutes of any Sec CTMT parameter exceeding its Table SC-2 Max Safe Operating Value in 2 or more areas.</p> <p>(RWCU Room Max Safe Operating Value reached 14 minutes after Event 7, reference RWCU Temperature Table) (RCIC Equipment Area Max Safe Operating Value reached 12 minutes after scram, reference RCIC Temperature Table)</p>
	CRS	<p>Direct BOP to install Enclosure 18, DEFEATING REACTOR FEED PUMPS HIGH RPV WATER LEVEL TRIPS. See event 10.</p>

2018 NRC Scenario 3

Event No: <u>10</u>		
Event Description: Enclosure 18, DEFEATING REACTOR FEED PUMPS HIGH RPV WATER LEVEL TRIPS		
TIME	Position	Applicant's Actions or Behavior
	CRS	Direct BOP to install Enclosure 18, DEFEATING REACTOR FEED PUMPS HIGH RPV WATER LEVEL TRIPS.
	BOP	<p>Install Enclosure 18, DEFEATING REACTOR FEED PUMPS HIGH RPV WATER LEVEL TRIPS</p> <p>3.1 OBTAIN EOP-0005 ENCL 18 jumper kit from the Control Room Emergency Locker.</p> <p>3.1.1 INSPECT kit for 3 jumpers.</p> <p style="text-align: center;">CAUTION</p> <p>Installation of these jumpers will also defeat the Main Turbine high RPV water level trip.</p> <p>3.2 DEFEAT the Reactor Feed pumps high RPV water level trips as follows:</p> <ul style="list-style-type: none"> • Location: H13-P612 Bay A <p>Affected Trip Unit: C33-K624A (2nd row of Trip Units from top, 1st Trip Unit from left)</p> <p>1. Jumper No. 1</p> <p>JUMPER Terminal 9 on Trip Unit Block C33-K624A</p> <p>to</p> <p>Terminal 10 on Trip Unit Block C33-K624A</p> <ul style="list-style-type: none"> • Location: H13-P612 Bay A <p>Affected Trip Unit: C33 K624B (3rd row of Trip Units from top, 12th Trip Unit from left)</p> <p>1. Jumper No. 2</p> <p>JUMPER Terminal 9 on Trip Unit Block C33 K624B</p> <p>to</p> <p>Terminal 10 on Trip Unit Block C33 K624B</p>

2018 NRC Scenario 3

	BOP	<p>(CONTINUED Install Enclosure 18, DEFEATING REACTOR FEED PUMPS HIGH RPV WATER LEVEL TRIPS)</p> <ul style="list-style-type: none">• Location: H13-P612 Bay A <p>Affected Trip Unit: C33 K624C (3rd row of Trip Units from top, 11th Trip Unit from left)</p> <p>1. Jumper No. 3</p> <p>JUMPER Terminal 9 on Trip Unit Block C33 K624C</p> <p>to</p> <p>Terminal 10 on Trip Unit Block C33 K624C</p> <p>3.3 RESET RX FWP A, B, and C HIGH LEVEL TRIPS (H13-P680).</p> <p>3.4 Defeat MSO Level 8 Reactor Feed Pump Trip as follows:</p> <p>3.4.1 Obtain key #182 from the MCR or WMC key locker.</p> <p>3.4.2 At C33-PNL100 in the Normal Switchgear Building 98'el B Switchgear Room, place the BYPASS switch to the BYPASS position.</p> <p>3.4.3 Verify Bypass indicating light is lit.</p> <p>3.5 Return Reactor Feed Pumps to service as directed by the CRS.</p>
--	-----	--

2018 NRC Scenario 3

END OF SCENARIO

When directed by the Lead Examiner, place the simulator in freeze and tell the crew to stop operating.

Notes

2018 NRC Scenario 3

RWCU Pump Room Temperatures						
Time	Additional time	°F		Time	Additional time	°F
	P680-1A-H5 Alarm	145			10 min	185
	15 sec	146			10 min 15 sec	186
	30 sec	147			10 min 30 sec	187
	45 sec	148			10 min 45 sec	188
	1 min	149			11 min	189
	1 min 15 sec	150			11 min 15 sec	190
	1 min 30 sec	151			11 min 30 sec	191
	1 min 45 sec	152			11 min 45 sec	192
	2 min	153			12 min	193
	2 min 15 sec	154			12 min 15 sec	194
	2 min 30 sec	155			12 min 30 sec	195
	2 min 45 sec	156			12 min 45 sec	196
	3 min	157			13 min	197
	3 min 15 sec	158			13 min 15 sec	198
	3 min 30 sec	159			13 min 30 sec	199
	3 min 45 sec	160			13 min 45 sec	200
	4 min	161			14 min	201
	4 min 15 sec	162			14 min 15 sec	202
	4 min 30 sec	163			14 min 30 sec	203
	4 min 45 sec	164			14 min 45 sec	204
	5 min	165			15 min	205
	5 min 15 sec	166			15 min 15 sec	206
	5 min 30 sec	167			15 min 30 sec	207
	5 min 45 sec	168			15 min 45 sec	208
	6 min	169			16 min	209
	6 min 15 sec	170			16 min 15 sec	210
	6 min 30 sec	171			16 min 30 sec	211
	6 min 45 sec	172			16 min 45 sec	212
	7 min	173			17 min	213
	7 min 15 sec	174			17 min 15 sec	214
	7 min 30 sec	175			17 min 30 sec	215
	7 min 45 sec	176			17 min 45 sec	216
	8 min	177				
	8 min 15 sec	178				
	8 min 30 sec	179				
	8 min 45 sec	180				
	9 min	181				
	9 min 15 sec	182				
	9 min 30 sec	183				
	9 min 45 sec	184				

2018 NRC Scenario 3

RCIC Room Temperatures		
Time	Additional time	°F
	P601-21A-H2 Alarm	144
	15 sec	146
	30 sec	148
	45 sec	150
	1 min	152
	1 min 15 sec	154
	1 min 30 sec	156
	1 min 45 sec	158
	2 min	160
	2 min 15 sec	162
	2 min 30 sec	164
	2 min 45 sec	166
	3 min	168
	3 min 15 sec	170
	3 min 30 sec	172
	3 min 45 sec	174
	4 min	176
	4 min 15 sec	178
	4 min 30 sec	180
	4 min 45 sec	182
	5 min	184
	5 min 15 sec	186
	5 min 30 sec	188
	5 min 45 sec	190
	6 min	192
	6 min 15 sec	194
	6 min 30 sec	196
	6 min 45 sec	198
	7 min	200
	7 min 15 sec	202
	7 min 30 sec	204
	7 min 45 sec	206
	8 min	208
	8 min 15 sec	210
	8 min 30 sec	212
	8 min 45 sec	214
	9 min	216

2018 NRC Scenario 3

Offgoing OSM:	Oncoming OSM:	Off-Going Shift
<div style="display: flex; justify-content: space-between;"> _____ _____ </div> <div style="display: flex; justify-content: space-between;"> (Print) KCN </div>	<div style="display: flex; justify-content: space-between;"> _____ _____ </div> <div style="display: flex; justify-content: space-between;"> (Print) KCN </div>	<div style="display: flex; justify-content: space-around;"> N D </div> <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> <input type="checkbox"/> </div> <div style="text-align: center;">Date</div>
PART I - TO BE REVIEWED PRIOR TO ASSUMING THE SHIFT		
UNIT STATUS <u>MODE</u> 1 RX POWER 86%		
EVOLUTIONS (COMPLETED / IN PROGRESS / PLANNED); GENERAL INFORMATION		
Raise power with rods per reactivity management plan.		
SIGNIFICANT LCO STATUS		
EQUIPMENT STATUS		

☐
Night Orders

☐
Standing Orders

☐
Board Walkdown

☐
Temp Alts

(Signature: Oncoming OSM Review Completed)

KCN

2018 NRC Scenario 4

Facility: <u>River Bend Nuclear Station</u> Scenario No.: <u>4</u> Op-Test No.: <u>2018-07</u>			
Examiners: _____ _____ _____		Operators: _____ _____ _____	
Initial Conditions: 5% Power. Mode 2. Startup in progress.			
Event No.	Malf. No.	Event Type †	Event Description
1		R (ATC/CRS)	Control Rod Withdrawal
2	CRDM01617	C (ALL) A (ALL)	Rod 16-17 stuck
3	DI_GTS-BMNINIT DI_GTS-AMNINIT	C (BOP/CRS) A (BOP/CRS) TS (CRS)	Spurious SBGT initiation (both trains)
4	RHR008B	TS (CRS)	Division 2 Line Fill Pump trips
5	DI_CNM-HA68A-CAM DI_CNM-HA68A-COS	C (ATC/CRS) A (CREW)	Feed Pump A min flow fails open
6	FWS008B	C (ALL)	Feed Pump A trip (Loss of all feed), Scram, EOP-1
7	RPS001A RPS001B	M (ALL)	Automatic scram, mode switch, and RPS pushbuttons fail to scram, ARI manual pushbuttons insert all of the control rods. CT-1
8	EHC002C	NA	BPV-1, Main Turbine Bypass valve, fails open
9	HPCS002	N/A	E22-F004, HPCS INJECT ISOL VALVE, fails closed
10	RCIC001	C (ALL)	RCIC will start and trip on over speed. Small Drywell leak will cause level to lower. EJS-SWGR2A trip CT-2
†	(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (A)bnormal (TS) Tech Spec		
*	Critical Task (As defined in NUREG 1021 Appendix D)		

CREW notation for Abnormal (A) and Major (M) events denotes ATC, BOP, and CRS are credited.

2018 NRC Scenario 4

Quantitative Attributes Table			
Attribute	E3-301-4 Target	Actual	Description
Malfunctions after EOP entry	1-2	2	<ul style="list-style-type: none"> • ARI manual pushbuttons insert all of the control rods. • Manually align condensate after RCIC and HPCS failures.
Abnormal Events	2-4	3	<ul style="list-style-type: none"> • Rod 16-17 stuck per AOP-61 • Spurious SBGT initiation (both trains) • Feed Pump A min flow fails open, actions per AOP 6.
Major Transients	1-2	1	<ul style="list-style-type: none"> • Automatic scram, mode switch, and RPS pushbuttons fail to scram, ARI manual pushbuttons insert all of the control rods.
EOP entries requiring substantive action	1-2	1	<ul style="list-style-type: none"> • Loss of HP injection will require EOP-1, RPV Control, entry.
Entry into a contingency EOP with substantive actions	≥1	1	<ul style="list-style-type: none"> • Loss of HP injection will require EOP-1, RPV Control, Alternate Level Control Contingency entry.
Preidentified critical tasks	2-3	2	<ul style="list-style-type: none"> • CT-1: Reactor must be scrammed using ARI manual pushbuttons within 15 minutes of automatic scram setpoint (9.7 inches, RWL) • CT-2: Condensate must be manually aligned and reactor water level restored above -162 inches, prior to Emergency Depressurization for low reactor water level.

2018 NRC Scenario 4

SCENARIO ACTIVITIES:

Initial Conditions

5% Power. Mode 2. Startup in progress.

Inoperable Equipment: None

Turnover: Continue startup. Continue rod withdrawal to enter Mode 1.

Event 1 – (Event completed based on turnover.)

Crew will continue control rod withdrawal per the reactivity management plan. 3 control rods will operate properly.

Event 2 – (Initial Setup - Automatic)

The fourth control rod (16-17) will be stuck in a bowed channel. The crew will take actions per AOP-61, CONTROL ROD(S) MISPOSITIONED/MALFUNCTION, section 5.7 to increase drive water pressure to 275 psid. This will free the bowed channel and allow the crew to move the rod IAW reactivity management plan.

Event 3 – (Triggered by Lead Examiner)

Spurious SSGT initiation (both trains) will occur. The crew will take actions per OSP-53, Attachment 21, Operating Auxiliary Building Ventilation, to reduce to one train of SSGT running. The CRS will enter Tech Spec for locking out SSGT and declaring one system inoperable. CRS will enter 3.6.4.3 SGT System, Condition A One SGT subsystem inoperable.

Event 4 – (Triggered by Lead Examiner)

Division 2 Line Fill Pump trips. Enter Tech Spec 3.5.1, ECCS Operating, Condition C.1 Two ECCS injection subsystems INOP – Restore system to operable within 72 hours. Enter Tech Spec 3.6.2.3 A1 One RHR suppression pool cooling subsystem INOP – Restore subsystem to operable within 7 days

Event 5 – (Triggered by Lead Examiner)

Feed Pump A min flow fails open. Crew must take actions per AOP-6, Condensate/Feedwater Failures to place minimum flow valve controller in manual and depress CLOSE pushbutton to close valve.

Event 6 – (Triggered by Lead Examiner)

Feed Pump A trips. When RPV level cannot be restored the crew will enter EOP-1, RPV Control, and scram the reactor.

Event 7 – (Initial Setup - Automatic)

Automatic scram fails (low RPV level), mode switch fails to scram, RPS manual pushbuttons fail to work, ARI manual pushbuttons insert all of the control rods.

Event 8 – (Initial Setup - Automatic)

BPV-1, Main Turbine Bypass valve, fails open.

2018 NRC Scenario 4

Event 9 – (Initial Setup - Automatic)

E22-F004, HPCS INJECT ISOL VALVE, fails closed and cannot be opened.

Event 10 – (Initial Setup - Automatic)

RCIC will start and trip on over speed. The governor cannot be reset locally. A small drywell leak develops to assist lowering RPV level. EJS-SWGR2A trips to de-energize the LPCS and RHR A injection valves. Condensate must be manually aligned to bypass the feed pumps to inject into the RPV.

2018 NRC Scenario 4

	CT-1	CT-2
Critical Task	Reactor must be scrammed using ARI manual pushbuttons within 15 minutes of automatic scram setpoint (9.7 inches, RWL). See NOTE 1.	Condensate must be manually aligned and reactor water level restored above -162 inches, prior to Emergency Depressurization for low reactor water level. See NOTE 2.
EVENT	7	10
Safety Significance	Per EOP-1A, RPV Control - ATWS, Initiation of ARI provides an independent and redundant means of depressurizing the reactor scram air header and operating the scram discharge volume vent and drain valves as required to effect a reactor scram.	Per EOP-1, ALC-3, 4, 5, & 6, While the core is expected to remain adequately cooled as long as RPV water level remains above the Minimum Steam Cooling RPV Water Level, permitting the core to become partially uncovered when it can be prevented is undesirable unless specific benefits can be gained. If available injection sources have not been sufficient to reverse the decreasing RPV level trend before level drops to the top of the active fuel, it is unlikely that they will be sufficient after level drops below the top of the active fuel.
Cueing	RPV water level will lower below 9.7 inches narrow range indicating automatic scram setpoint. When the mode switch is taken to SHUTDOWN and the RPS manual pushbuttons are depressed, the control rods will not change position and reactor power will not change.	RPV water level will lower until RCIC is injecting.

* If an operator or the crew significantly deviates from, or fails to, follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review (NUREG 1021, Appendix D)

NOTE 1: Per EIP-2-001, an ALERT is declared per SA3 if an automatic scram fails to shutdown the reactor and the manual actions taken from the reactor control console are successful in shutting down the reactor. A SITE AREA EMERGENCY is declared per SS3, if an automatic scram fails to shutdown the reactor and the manual actions taken from the reactor control console are not successful in shutting down the reactor. The crew has 15 minutes to make the declaration. If the crew fails to insert the rods using ARI manual pushbuttons, the site will unnecessarily declare a Site Area Emergency.

NOTE 2: Per EOP-1, RPV Control, Step ALC-8 and 11, Emergency Depressurization is required with RPV level cannot be restored and maintained above -187 inches. The crew must wait until RPV level drops to -162 inches (Top of Active Fuel) to determine if level cannot be restored and maintained above -187 inches. The crew cannot enter Emergency Depressurization prior to -162 inches.

2018 NRC Scenario 4

Top 10 systems and operator actions important to risk that are tested:

Event 5 & 6
Loss of FW/Cond – #7 Internal Events
Reactor Trip/Turbine Trip -#6 Internal Events
Event 7
Reactor Protection System - #4 Risk Significant systems
Event 10
EJS 480VAC Power – #5 Risk Significant System

Simulator Setup:

IC: 57

2018 NRC Scenario 4

SCENARIO ACTIVITIES:

- Start SBT report and any other required recording devices.

Event No: <u> 1 </u>		
Event Description: Control Rod Withdrawal		
No trigger. Event completed based on turnover.		
TIME	Position	Applicant's Actions or Behavior
	CRS	Directs ATC to continue rod withdrawal to transition to Mode 1.
	ATC	<p>At H13 P680, on the ROD SELECT MODULE, select the rod to be moved.</p> <p>Rods to be moved from 00-04:</p> <ul style="list-style-type: none"> ○ 16-41 ○ 40-41 ○ 40-17 ○ 16-17 <p>Depress SELECTED GROUP button to check positions of control rods within group are correct prior to movement.</p> <p>Check that a Rod Withdrawal Block or Inhibit does not exist.</p> <p>On H13 P680, depress and hold C11A S334, WITHDRAW Pushbutton until the IN indicator is lit or the start of rod motion is observed.</p> <p>Check that the new rod notch position displayed is the next highest even number.</p> <p>Note: Expected alarm H13-P680/07A/C01, CONTROL ROD WITHDRAWAL BLOCK comes in at position 04.</p>

2018 NRC Scenario 4

Event No: <u>2</u>		
Event Description: Rod 16-17 stuck		
Initial Setup – Automatic		
TIME	Position	Applicant's Actions or Behavior
	ATC	Recognizes and reports rod 16-17 stuck.
	SRO	Directs BOP to raise drive water pressure per AOP-61 (CONTROL ROD(S) MISPOSITIONED/MALFUNCTION) and SOP-71 (ROD CONTROL AND INFORMATION SYSTEM).
	BOP	<p>Per AOP-61 (CONTROL ROD(S) MISPOSITIONED / MALFUNCTION):</p> <p>5.7 IF a control rod exhibits movement difficulty, THEN perform the following:</p> <p>5.7.1. Verify C11-R602, DRIVE WTR DIFF PRESS (ERIS Pt C11EA008), indicates</p> <p>a Drive Water D/P of greater than or equal to 250 psid.</p> <p>5.7.2. Verify Directional Control Valves are responding to RCIS rod movement signal by observation of flow on C11-R604A(B, C, D), CRD DRIVE WATER HDR A(B, C, D) FLOW (ERIS Pts C11EA002 – C11EA005).</p> <p>5.7.3. For control rod withdrawal, attempt to move the control rod using the guidance of SOP-0071, Rod Control and Information System.</p>

2018 NRC Scenario 4

	BOP	<p>Per SOP-71, ROD CONTROL AND INFORMATION SYSTEM: 5.7.2. Perform High Drive Water Pressure Method as follows:</p> <p style="text-align: center;">NOTE</p> <p>The drive water header pressure control valve is in parallel with an inline relief valve. The manual adjustment of high drive water pressure must be below the relief valve setting, approximately 550 psid.</p> <p>1. IF this method is being used for a control rod that is difficult to withdraw, THEN complete the General Information section and record any additional applicable data on Attachment 8, Control Rod Deficiency Report.</p> <p>2. Raise drive water header pressure to 300 psid by throttling C11-F003, CRD DRIVE WATER PRESS CONTROL VALVE closed to achieve 300 psid on C11-R602, DRIVE WTR DIFF PRESS.</p> <p>3. Notch out the Control Rod per Step 5.1.1.</p>
	ATC	<p>Withdraws rod 16-17 to position 04 IAW reactivity management plan.</p>

2018 NRC Scenario 4

Event No: <u>3</u>		
Event Description: Spurious SBGT initiation (both trains)		
Triggered by Lead Examiner		
TIME	Position	Applicant's Actions or Behavior
	BOP	Recognize and report SBGT initiation for both trains due to isolation signal.
	CRS	<p>Recognize and direct BOP to place one train of standby Gas Treatment in standby per SOP-50, CONTAINMENT HVAC SYSTEM.</p> <p>Recognize and enter Tech Spec 3.6.4.3 Standby Gas Treatment (SGT) System.</p> <p>Condition A. One SGT subsystem inoperable.</p> <p>A.1 Verify OPERABLE SGT subsystem not operating in the primary containment purge flow path. 4 hours</p> <p>AND</p> <p>A.2 Restore SGT subsystem to OPERABLE status 7 days.</p>

2018 NRC Scenario 4

		<p>Per SOP-50, CONTAINMENT HVAC SYSTEM, 5.3.10. Place one train of standby Gas Treatment in standby as follows:</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Select all "A" train OR all "B" train components.</p> <p>1. Place GTS-FN1A(B), SGT EXH FAN A(B) in STOP and LOCKOUT.</p> <p>2. Verify the following:</p> <ul style="list-style-type: none"> 1) GTS-AOD1A(B), SGT FILTER A(B) SUCT ISOL closes. 2) GTS-AOD3A(B), SGT EXH FAN A(B) DISCH closes. 3) IF GTS-AOD22A(B), SGT FILTER A(B) RECIRC control switch is in OPEN, THEN place GTS-AOD22A(B) in AUTO. 4) Verify GTS-AOD22A(B) closes. <p>3. IF the filter train was running greater than 60 sec., THEN verify the following:</p> <ul style="list-style-type: none"> GTS-FN2A(B), SGT A(B) DECAY HEAT REMOVAL starts. GTS-AOD4A(B), DECAY HEAT REMOVAL INTK opens. <p>4. WHEN at least two minutes have passed to allow for system flows to stabilize, THEN place the LOCKOUT/RESET switch for GTS-FN1A(B) in RESET.</p> <p>5. WHEN GTS-FN2A(B) has run for at least 30 minutes OR at the discretion of the OSM/CRS, THEN perform the following:</p> <ul style="list-style-type: none"> 1) Place GTS-FN2A(B), SGT A(B) DECAY HEAT REMOVAL in STOP. 2) Verify GTS-AOD4A(B), DECAY HEAT REMOVAL INTK closes. 3) Place GTS-FN2A(B), SGT A(B) DECAY HEAT REMOVAL in AUTO.
--	--	---

2018 NRC Scenario 4

Event No: <u>4</u>		
Event Description: Division 2 Line Fill Pump trips		
Triggered by Lead Examiner		
TIME	Position	Applicant's Actions or Behavior
	BOP	<p>Recognize and report Loss Division 2 Line Fill Pump per: H13-P601/17A/C01, RHR PUMP B DISCH PRESSURE HI/LOW H13-P601/17A/C02, RHR PUMP C DISCH PRESSURE HI/LOW</p> <p>Check Backpanel 618 for ECCS pressures.</p> <p>Direct the Reactor Building Operator to investigate the Division 2 Line Fill Pump trip.</p> <p>Direct the Control Building Operator to remove control power fuses for RHR-B and C pump breakers.</p>
	SRO	<p>Recognize and acknowledge the report of the Div 2 Line Fill Pump trip.</p> <p>Direct the UO to check Div 2 ECCS pressures.</p> <p>When pressure has decayed, or when it is known that the line fill pump will not be started quickly, direct that the control power fuses for the Div 2 ECCS pump breakers be removed.</p> <p>Recognize and enter Tech Spec 3.5.1 ECCS –Operating Condition C. Two ECCS injection subsystems inoperable. C.1 Restore one ECCS injection/spray subsystem to OPERABLE status. 72 hours</p> <p>Recognize and enter Tech Spec 3.6.2.3 Residual Heat Removal (RHR) Suppression Pool Cooling Condition A. One RHR suppression pool cooling subsystem inoperable. A.1 Restore RHR suppression pool cooling subsystem to OPERABLE status. 7 days</p>

2018 NRC Scenario 4

	BOOTH	<p>Backpanel – indicate RHR B and C discharge pressures are 5 pounds and lowering (alarm at 28 psig).</p> <p>As CB/RB Operator, accept direction to investigate Division 2 ECCS Line Fill Pump. Wait 3 minutes and report back that the line fill pump motor bearings are extremely hot to touch).</p> <p>As CB/RB Operator, accept direction to remove control power fuses RHR-B and -C pump breakers.</p> <p>REMOTE:</p> <p>ECCS005, RHR B fuses pulled (delay 2 min 30sec)</p> <p>ECCS006, RHR C fuses pulled delay 3 min 15 sec)</p> <p>Report back that control power fuses are pulled for RHR B and C.</p>
--	-------	--

2018 NRC Scenario 4

Event No: <u>5</u>		
Event Description: Feed Pump A min flow fails open		
Triggered by Lead Examiner		
TIME	Position	Applicant's Actions or Behavior
	ATC	Recognize and report Feed Pump A min flow fails open.
	CRS	When RFP min flow valve is discovered open, direct implementation of AOP-6, Condensate/ Feedwater Failures and AOP-0007, Loss of Feedwater Heating (if required).
	ATC	At H13-P680, place CNM-H/A68A, RX FWP 1A MIN FLOW FLOW CONTROLLER to MANUAL. Slowly close FWR-FV2A, RX FWP 1A MIN FLOW VALVE using CNM-H/A68A, RX FWP 1A MIN FLOW FLOW CONTROLLER while monitoring Reactor Water Level.
	BOOTH	As Duty Manager take notification of AOP entry As WMC take request for I&C to investigate the min flow and feed reg valve failures

2018 NRC Scenario 4

Event No: <u>6</u>		
Event Description: Feed Pump A Trip		
Triggered by Lead Examiner		
TIME	Position	Applicant's Actions or Behavior
	ATC	Recognize and report Feed Pump A trip, Pumps B and C fail to start.
	CRS	Recognize and acknowledge complete loss of feedwater. Direct manual scram prior to 9.7 inches (RPS low level automatic scram setpoint.)
	ATC	Manually scram reactor by taking mode switch to shutdown. Mode switch fails to insert any rods. See event 7.

2018 NRC Scenario 4

<p style="text-align: center;">Event No: <u>7</u></p> <p>Event Description: Automatic scram, mode switch, and RPS pushbuttons fail to scram, ARI manual pushbuttons insert all of the control rods. CT-1</p> <p>Initial Setup – Automatic</p>		
TIME	Position	Applicant's Actions or Behavior
	CRS	Recognize and direct entry into AOP-1, Reactor Scram and AOP-2, Main Turbine and Generator Trips.
	ATC	<p>Recognize mode switch failure.</p> <p>Per AOP-1, Reactor Scram, Immediate Operator Actions:</p> <p>4.1 Place C71A-S1, REACTOR SYSTEM MODE SWITCH, to SHUTDOWN. (Fails to insert control rods)</p> <p>4.2 Check all Control Rods are fully inserted.</p> <p>4.3 IF all Control Rods are not fully inserted, THEN perform one OR both of the following steps to insert control rods:</p> <p>4.3.1. Arm and depress C71A-S3A, B, C, and D, MANUAL SCRAM Pushbuttons. (Fails to insert control rods)</p> <p>4.3.2. IF any Control Rods are not fully inserted, THEN arm and depress both C11C-S1A and B, ARI CHANNEL A and B MANUAL INITIATION, Pushbuttons.</p> <p>Critical Task: Reactor must be scrammed using ARI manual pushbuttons within 15 minutes of automatic scram setpoint (9.7 inches, RWL)</p>

2018 NRC Scenario 4

<p style="text-align: center;">Event No: <u>8</u></p> <p>Event Description: BPV-1, Main Turbine Bypass valve, fails open</p> <p>Initial Setup – Automatic</p>		
TIME	Position	Applicant's Actions or Behavior
	BOP	Recognize and report BPV-1, Main Turbine Bypass valve failed open.
	CRs	Recognize and direct BOP to dispatch an operator to secure Bypass EHC pumps to close the bypass valves per OSP-53, Attachment 1B, Post Scram Pressure Control Strategies.
	BOP	<p>Per OSP-53, Attachment 1B, Post Scram Pressure Control Strategies:</p> <p>1.3.2. IF there is an event resulting in an uncontrolled pressure drop, THEN perform the following:</p> <p>1. IF it can be determined that pressure will drop below 600 psig before the condition can be corrected, THEN close MSIVs by 600 psig. Outboard MSIVs are preferred to provide maximum drain paths.</p> <p>2. IF pressure is lowering because the bypass valves have failed open, THEN dispatch an operator to secure Bypass EHC pumps.</p>

2018 NRC Scenario 4

Event No: 9

Event Description: E22-F004, HPCS INJECT ISOL VALVE, fails closed and cannot be opened.

Initial Setup – Automatic

TIME	Position	Applicant's Actions or Behavior
	BOP	Recognize and report E22-F004, HPCS INJECT ISOL VALVE, fails closed and cannot be opened.
	CRS	Recognize E22-F004, HPCS INJECT ISOL VALVE, failure and loss of HPCS injection.

2018 NRC Scenario 4

Event No: <u>10</u>		
Event Description: RCIC will start and trip on over speed. Small Drywell leak will cause level to lower. EJS-SWGR2A trips to de-energize LPCS and RHR A injection valves. CT-2 Initial Setup – Automatic		
TIME	Position	Applicant's Actions or Behavior
	ATC	<p>Per OSP-53, Attachment 16, POST SCRAM FEEDWATER/CONDENSATE MANIPULATIONS BELOW 5% REACTOR POWER</p> <ol style="list-style-type: none"> 1 Verify Rx Water level is in the prescribed band. 2 Transfer to the S/U feedwater level controller as follows: <ol style="list-style-type: none"> 2.1 Place the Master feedwater level controller in Manual. <ol style="list-style-type: none"> 2.1.1. Depress CLOSE and set output to 0. 2.2 Select SINGLE ELEMENT control. 2.3 Roll the S/U feedwater level controller tape set to 25 inches. <p style="text-align: center;">NOTE</p> <p style="text-align: center;">The S/U feedwater level controller may be placed in Manual and operated as necessary.</p> <ol style="list-style-type: none"> 2.4 Place the S/U feedwater level controller in AUTO as desired. 3 Depress CLOSE on A/B/C Feed Reg Valve isolation MOV's. 4 Reduce to one Feed Pump. (Preferred order of removal A/B/C) 5 Reduce to two Condensate Pumps. 6 Secure operating Heater Drain Pumps.
	BOP	<p>Recognize and report RCIC startup and trip on overspeed.</p> <p>Recognize and report failure of EJS-SWGR2A and loss of power to LPCS and RHR A injection valves.</p> <p>Recognize and report drywell leak.</p>

2018 NRC Scenario 4

	CRS	<p>Recognize and enter EOP-1, RPV Control when RPV level is below 9.7 inches and Drywell Pressure is above 1.68 psid.</p> <p>Recognize and enter EOP-1, Alternate Level Control when RPV level cannot be restore and maintained above -162 inches. (no high pressure injection is available)</p> <p>Per EOP-1, ALC-2, direct BOP to inhibit ADS.</p> <p>Per EOP-1, ALC-3, Use Table L-2 Alternate Injection Subsystems if necessary. Per table L-1 and L-2 systems direct RO to :</p> <p>Maximize CRD</p> <p>Inject SLC</p>
	BOP	<p>Per EOP-1, ALC-2, Inhibit ADS</p> <p>Places ADS INHIBIT switches to the INHIBIT position.</p>
	CRS	<p>Per OSP-53, ATTACHMENT 1D - LEAKAGE STRATEGIES, direct the following:</p> <p>Trip Reactor Recirc pumps</p> <p>Verify ECCS initiations and isolations</p> <p>Lower pressure to minimize effects of the leak *</p> <p>Override LP ECCS if not required</p> <p>Enclosure 20 for Drywell cooling (if DW temperature < 200 degrees)</p> <p>Attempt to identity and isolate the leak</p>
	ATC	<p>Trip Recirc pumps</p> <p>Depress the STOP pushbutton for B33-C001A(B) RECIRC PUMP A(B) MOTOR BREAKER 5A(B).</p> <p>Verify B33-C001A(B) RECIRC PUMP A(B) MOTOR BREAKER 5A(B) opens and pump coasts down to 0% speed.</p> <p>Open NJS-ACB305(029) by depressing the TRIP pushbutton for B33-S001A(B) LFMG A(B) MOT BRKR 1A(B).</p>

2018 NRC Scenario 4

	BOP	<p>Per OSP-53, ATTACHMENT 14 - MAXIMIZING CRD, Maximize CRD</p> <ol style="list-style-type: none"> 1 Start any available, non-running CRD pump as follows: <ol style="list-style-type: none"> 1.1 Start C11-C001AP(BP), CRD AUX OIL PUMP A(B). 1.2 Verify C11-C001A(B), CRD PUMP A(B), white control power available light on. 1.3 Start C11-C001A(B), CRD PUMP A(B). 2 Place CRD HYDRAULICS FLOW CONTROLLER, in MANUAL and raise signal to 100%. 3 Fully Open C11-F003, CRD DRIVE WATER PRESS CONTROL VALVE. 4 Verify IAS-MOV106 is Open. <ol style="list-style-type: none"> 4.1 IF IAS-MOV106 is not open, AND an ATWS condition exists, THEN notify the CRS that EOP Enclosure 16 is required. (Enclosure 16 installed per event 11)
	BOP	<p>Per OSP-53, ATTACHMENT 13 - INITIATING STANDBY LIQUID CONTROL,</p> <ol style="list-style-type: none"> 1. Place SLC PUMP A(B) (NOT BOTH), control switch to RUN. 2. Perform the following: <p>Verify the following:</p> <ol style="list-style-type: none"> 1. SQUIB CONTINUITY A(B), light goes Off. 2. C41-F001A(B), SLC PUMP A(B) SUCT VLV, Opens. 3. C41-C001A(B), SLC PUMP A(B), Starts.
	CRS	<p>Direct Enclosure 16 to be installed. (Reference Event 11)</p> <p>Direct Enclosure 20 to be installed. (Reference Event 12)</p>
	CRS	<p>Recognize and direct alignment of condensate to makeup water to the reactor per SOP-7, Condensate System.</p> <p>Critical Task: Condensate must be manually aligned and reactor water level restored above -162 inches, prior to Emergency Depressurization for low reactor water level.</p>

2018 NRC Scenario 4

	ATC	<p>Per SOP-7, Condensate System:</p> <p>4.4 Condensate Makeup to the Reactor</p> <p>4.4.1. Verify FWS-MOV103, LONG CYCLE CLEAN UP ISOL, is closed.</p> <p>4.4.2. Lineup at least one feedwater header to the reactor by opening the following valves:</p> <p style="padding-left: 40px;">B21-F065A(B), A(B) FW INBD ISOL,</p> <p style="padding-left: 40px;">FWS-MOV7A(B), A(B) FW OUTBD ISOL</p> <p>4.4.3. Contact Chemistry to verify the condensate chemistry is within limits for feeding to the vessel.</p> <p>4.4.4. Verify that condensate system is in operation in short cycle cleanup per Section 4.2.</p> <p>4.4.5. Verify that C33-LVF002, START UP FWREG VALVE and C33-LVF001A(B)(C), FWREG VALVES A(B)(C), are closed.</p> <p>4.4.6. Open the following:</p> <ol style="list-style-type: none"> 1. FWS-MOV109, FEED PUMP BYPASS 2. FWS-MOV105, S/U FW REG VLV ISOL 3. FWS-MOV17A(17B), PT HTR E1A(E1B) INLT VLV 4. FWS-MOV22A(22B), PT HTR E1A(E1B) OUTL VLV <p>4.4.7. Throttle open C33-LVF002, START UP FWREG VALVE to control the rate of level increase and to control water level.</p> <p>4.4.8. Verify CNM-FCV114, MAIN CNDS RECIRC automatically throttles in the closed direction to maintain flow constant.</p> <p>4.4.9. Ensure condensate pump current remains less than 152 amps.</p> <p>4.4.10. Monitor hotwell level.</p> <p>Critical Task: Condensate must be manually aligned and reactor water level restored above -162 inches, prior to Emergency Depressurization for low reactor water level.</p>
	CRS	<p>Per EOP-1, ALC-1, when RPV level can be restored and maintained above -162 inches, then go to 1. (Exit Alternate level control).</p> <p>Direct ATC to maintain RPV water level 10 to 51 inches. (May direct 45-100 inches if recirc pumps are tripped because of drywell pressure.</p> <p>Direct BOP to maintain RPV pressure 400 to 600 psig.</p>
	ATC	Maintain RPV water level 10 to 51 inches.
	BOP	Maintain RPV pressure 400 to 600 psig.

2018 NRC Scenario 4

Event No: <u>11</u>						
Event Description: Enclosure 16, DEFEATING CONTAINMENT INSTRUMENT AIR ISOLATION INTERLOCKS						
TIME	Position	Applicant's Actions or Behavior				
	CRS	Direct installation of Enclosure 16, DEFEATING CONTAINMENT INSTRUMENT AIR ISOLATION INTERLOCKS.				
	RO	<p>Per ENCLOSURE 16, DEFEATING CONTAINMENT INSTRUMENT AIR ISOLATION INTERLOCKS</p> <p>3.1 VERIFY Instrument Air Header Pressure on IAS-PI105 (H13-P870) is greater than Containment pressure on CMS-PR2A(B). (H13-P808)</p> <p>3.2 OBTAIN EOP-0005 ENCL 16 key, one (1)</p> <p>3.3 PLACE the following switch in the EMERGENCY position AND VERIFY the red light illuminates:</p> <table><tr><td>Switch Name</td><td>Panel No.</td></tr><tr><td>3.3.1 CONTMT INST AIR ISOL INTLK BYP</td><td>H13-P851</td></tr></table> <p>3.4 VERIFY open IAS-MOV106, INST AIR OUTBD ISOL. (H13-P870)</p>	Switch Name	Panel No.	3.3.1 CONTMT INST AIR ISOL INTLK BYP	H13-P851
Switch Name	Panel No.					
3.3.1 CONTMT INST AIR ISOL INTLK BYP	H13-P851					

2018 NRC Scenario 4

Event No: <u>12</u>								
Event Description: ENCLOSURE 20, DEFEATING DRYWELL COOLING ISOLATION INTERLOCKS								
TIME	Position	Applicant's Actions or Behavior						
	CRS	Direct installation of ENCLOSURE 20, DEFEATING DRYWELL COOLING ISOLATION INTERLOCKS using all available drywell unit coolers.						
		<p>Per ENCLOSURE 20, DEFEATING DRYWELL COOLING ISOLATION INTERLOCKS</p> <p>3.1 OBTAIN EOP-0005 ENCL 20 keys (2)</p> <p>3.2 VERIFY Normal Service Water pressure on SWP-PI124, SVCE SPLY HDR PRESSURE (H13-P870) OR Standby Service Water pressure on SWP-PR50A(B), STBY CLG TOWER LVL & PUMP DISCH PRESS RECORDER (H13-P870) as applicable is greater than Containment AND Drywell pressure on CMS-PR2A(B), DRYWELL PRESSURE (H13-P808)</p> <p>3.3 PLACE Control Switches for all tripped Drywell Unit Coolers to OFF. (H13-P863)</p> <p>3.4 PLACE the following keylock switches in the EMERGENCY position AND VERIFY the red lights illuminate.</p> <table><tr><td>Switch Name</td><td>Panel No.</td></tr><tr><td>DW CLG ISOL INTLK BYP</td><td>H13-P851</td></tr><tr><td>DW CLG ISOL INTLK BYP</td><td>H13-P852</td></tr></table> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">DIV I AND II H2 Analyzers will no longer auto start.</p> <p>3.5 START DIV I AND II H2 Analyzers. (H13-P808)</p> <p>3.5.1 Verify START of DIV I AND II H2 recorders 1CMS*AR25A(B)</p> <p>3.6 IF any drywell temperature on CMS-TR41A or B, DRYWELL ATMOS TEMP (H13-P808) is or has been greater than 200°F, THEN notify the CRS/OSM that this enclosure cannot be completed.</p>	Switch Name	Panel No.	DW CLG ISOL INTLK BYP	H13-P851	DW CLG ISOL INTLK BYP	H13-P852
Switch Name	Panel No.							
DW CLG ISOL INTLK BYP	H13-P851							
DW CLG ISOL INTLK BYP	H13-P852							

2018 NRC Scenario 4

	RO	<p style="text-align: center;">CAUTION</p> <p>Restoration of Service Water to Drywell unit coolers following isolation, if any drywell temperature on CMS-TR41A or B is or has been greater than 200 °F, can result in piping failure due to voiding and subsequent water hammer. Drywell UC Supply and Return Valves should NOT be reopened if any drywell temperature on CMS-TR41A or B is or has been greater than 200 °F.</p> <p style="text-align: center;">NOTE</p> <p>Service Water should only be aligned and Drywell Unit Coolers started if a minimum of two (2) units can run. (Ref. CR-RBS-2011-00346)</p> <p>3.7 IF a minimum of two (2) Drywell Unit Coolers can be started, THEN perform the following:</p> <p>OPEN the following valves: (H13-P870)</p> <ul style="list-style-type: none"> • SWP-MOV4A DRYWELL UC SUPPLY • SWP-MOV5A DRYWELL UC RETURN • SWP-MOV4B DRYWELL UC SUPPLY • SWP-MOV5B DRYWELL UC RETURN <p>VERIFY closed the following: (H13-P877)</p> <ul style="list-style-type: none"> • EJS*ACB25 NHS-MCC102A SPLY BRKR • EJS*ACB66 NHS-MCC102B SPLY BRKR <p>3.8 IF a minimum of two (2) Drywell Unit Coolers can be started, THEN START Drywell Unit Coolers as directed by the CRS. (Should start A, B, C, D, E, and F Drywell Unit coolers).</p>
--	----	--

2018 NRC Scenario 4

END OF SCENARIO

When directed by the Lead Examiner, place the simulator in freeze and tell the crew to stop operating.

Notes

2018 NRC Scenario 4

Offgoing OSM:	Oncoming OSM:	Off-Going Shift
<div style="display: flex; justify-content: space-between;"> _____ _____ </div> <div style="display: flex; justify-content: space-between;"> (Print) KCN (Print) KCN </div>	<div style="display: flex; justify-content: space-between;"> _____ _____ </div> <div style="display: flex; justify-content: space-between;"> (Print) KCN </div>	<div style="display: flex; justify-content: space-around;"> N D </div> <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> <input type="checkbox"/> </div> <div style="text-align: center;">Date</div>
PART I - TO BE REVIEWED PRIOR TO ASSUMING THE SHIFT		
UNIT STATUS <u>MODE 2</u> RX POWER <u>5%</u>		
EVOLUTIONS (COMPLETED / IN PROGRESS / PLANNED); GENERAL INFORMATION		
Preparations are being made to transfer to Mode 1 per GOP-1, Attachment 1, Section E (page 50 of 68), Step 1 complete. Steps 2 and 3 are in progress.		
Continue startup. Continue rod withdrawal to enter Mode 1. Continue with step 76 of the startup reactivity management plan (Rod 16-41).		
SIGNIFICANT LCO STATUS		
EQUIPMENT STATUS		

☐
Night Orders

☐
Standing Orders

☐
Board Walkdown

☐
Temp Alts

(Signature: Oncoming OSM Review Completed)

KCN