ES-301 **Administrative Topics Outline** **Form ES-301-1**

Facility: South Texas Project **Date of Examination:** 10-22-18

Examination Level: RO ■ SRO □ **Operating Test Number:** LOT 22 NRC

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations RA(1) K/A Importance: 4.6	D,P,R	2.1.20 Ability to interpret and execute procedure steps. Verify an Excore QPTR Calculation
Conduct of Operations RA(2) K/A Importance: 3.9	M,R	2.1.25 Ability to interpret reference materials, such as graphs, curves, tables, etc. RO Complete ESF Power Availability Surveillance
Equipment Control RA(3) K/A Importance: 4.1	D,R	2.2.13 Knowledge of Tagging and Clearance Procedures. Prepare ECO for SFP Skimmer Pump
Radiation Control RA(4) K/A Improrrtance: 3.5	D,R	2.3.7 Ability to comply with radiation work permit requirements during normal or abnormal conditions. Determine RWP Requirements for Work in RRA (SFP)
Emergency Plan	N/A	N/A

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, 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)

ES-301 **Administrative Topics Outline** **Form ES-301-1**

Facility: South Texas Project **Date of Examination:** 10-22-18

Examination Level: RO ☐ SRO ■ **Operating Test Number:** LOT 22 NRC

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations SA(5) K/A Importance: 4.6	D,P,R	2.1.37 Knowledge of procedures, guidelines, or limitations associated with reactivity management. Calculate SDM with a Misaligned Control Rod and Determine Applicable Technical Specifications.
Conduct of Operations SA(6) K/A Importance: 4.2	M,R	2.1.25 Ability to interpret reference materials, such as graphs, curves, tables, etc. SRO Review ESF Power Availability Surveillance TS 3.8.1.1
Equipment Control SA(7) K/A Importance: 4.3	D,R	2.2.13 Knowledge of Tagging and Clearance Procedures. Review Faulted ECO for CCW Pump
Radiation Control SA(8) K/A Importance: 3.7	D,R	2.3.4 Knowledge of radiation exposure limits under normal or emergency conditions. Determine Personnel Exposure Limits (E-Plan)
Emergency Plan SA(9) K/A Importance: 4.4	M,R	2.4.41 Knowledge of the emergency action level thresholds and classifications. Determine EAL

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, 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)

Rev. 1

STP LOT-21
NRC Admin JPM Description

RO

(A1) Verify Excore QPTR Calculation
Demonstrate the ability to perform and/or verify a QPTR.

(A2) RO Complete ESF Power Availability Surveillance
Demonstrate the ability to determine power availability using the switch yard table in 0PSP03-EA-0002, ESF Power Availability, and given switchyard breaker positions.

(A3) Prepare ECO for SFP Skimmer Pump
Demonstrate the ability to prepare an ECO for equipment maintenance.

(A4) Determine RWP Requirements for Work in RRA (SFP)
Demonstrate the ability to extract necessary information from survey maps and RWP to perform work in the RRA.

SRO

(A5) Calculate SDM with a Misaligned Control Rod and Determine Applicable Technical Specifications
Demonstrate the ability perform a SDM and apply appropriate TSs if required. 0PSP10-ZG-0005, Shutdown Margin Verification – Modes 1 and 2.

(A6) SRO Review ESF Power Availability Surveillance TS 3.8.1.1
Demonstrate the ability to determine power availability using the switch yard table in 0PSP03-EA-0002, ESF Power Availability, and determine Technical Specification action requirements.

(A7) Review faulted ECO for CCW Pump
Demonstrate the ability perform a technical review of an ECO for equipment maintenance.

(A8) Determine Personnel Exposure Limits (E-Plan)
Demonstrate the ability to determine personnel exposure margins during an emergency.

(A9) Determine Appropriate Emergency Plan Action Levels
Demonstrate the ability to correctly determine an Emergency Plan Action Level for a given condition requiring entry into the STPNOC Emergency Action Plan in accordance with 0ERP01-ZV-IN01, Emergency Classification.

STPNOC

Job Performance Measure

VERIFY AN EXCORE QPTR CALCULATION

JPM Number: NRC A1

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted JPM for use on LOT 22 NRC Exam.

SIMULATOR SETUP INSTRUCTIONS

This is an Admin JPM – No simulator setup instructions required.

INITIAL CONDITIONS

Unit 2 has been at approximately 100% steady state power for several months. One (1) hour ago, Control Rod M12 (Control Bank 'D') dropped fully into the core. The crew has stabilized the plant and preparations are being made to lower Reactor power.

Control Room Annunciator 05M3 Window B-3, PR LOWER DET FLUX DEV HI/AUTO DEF, has alarmed. The Shift Manager has had a QPTR calculation done using the manual method (i.e. without use of the Plant Computer or RO Calculator).

INITIATING CUE

The Unit Supervisor instructs you to perform the Independent Verification of the QPTR calculation required by Step 5.2.9 of 0PSP10-NI-0002.

You are expected to correct any errors found, including subsequent entries/calculations, AND, once any corrections are made, determine if the Acceptance Criteria is/are met per step 5.3.

Additional information:

- All Excore Nuclear Instrumentation Channels are operable.
- The U2 Plant Curve Book Figure 5.1 is the latest approved version for purposes of this JPM AND there are no errors in the data of Figure 5.1.
- Reactor Power is stable and meets the requirements of 0PSP10-NI-0002 Step 4.3.
- Reactor Power is 99.7% by U1169, average NI power.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

The applicant must successfully discover an error on Form 3, accurately calculate the QPTR to at least 2 decimal places and determine Acceptance Criteria.

QPTR should be LTR = 1.032 and the Acceptance Criteria is NOT met.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Hand out Student Copy of 0PSP10-NI-0002, Excore QPTR Determination. Hand out Student Copy of U2 Plant Curve Book Figure 5.1, Incore-Excore Cross-Calibration Constants. (The data in this copy may be different from that contained in the current Plant Curve Book. The KEY is based off the data from this Student Handout.) When the student has reviewed the Initial Conditions & Initiating Cue and they have indicated they are ready to begin the JPM, then record the start time for the JPM. A KEY is provided for the Examiner. Actual numerical results will vary somewhat due to rounding and possibly using a 'most conservative' approach. Because of this, there will be a range of numerical results, however the end result should be the same (i.e. numbers within the possible range should all indicate that Tech Spec QPTR Acceptance Criteria is NOT met.)					
*1	Performs the Independent Verification of the QPTR calculation. (Required by step 5.2.9)	Determines there is an error on the calculation of NI-43 data and recalculates the result. **Note:** For N44L, the '100% Power Detector Current' should be 424.5 from Figure 5.1. The value used (445.4) by the performer is for NI 44 Upper Detector. After performing the division correctly, the result should be an LTR of 1.032. Refer to the KEY to see details.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*2	Correct any errors found and determine if the Acceptance Criteria is met. (Step 5.3)	Based on the error found for NI 44 data, the applicant corrects subsequent error carried forward results, LTR = 1.032 and determines the Acceptance Criteria is NOT met. **Note:** Refer to the KEY to see details of the 'error carried forward' data and the final result that is NOT within the Acceptance Criteria of procedure section 6.1.			
CUE	This JPM is complete				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: VERIFY AN EXCORE QPTR CALCULATION

JPM Number: NRC A1 Revision Number: 0

Task Number and Title: 37750, Perform a Quadrant Power Tilt Ratio calculation.

K/A Number and Importance: 2.1.20 4.6/4.6

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: SRO Only ☐; RO/SRO ☒; AO/RO/SRO ☐

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 3

Reference(s): 0PSP10-NI-0002, Excore QPTR Determination, Rev. 17.
Plant Curve Book Figure 5.1, Incore-Excore Cross-Calibration Constants

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 1 & 2

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

Unit 2 has been at approximately 100% steady state power for several months. One (1) hour ago, Control Rod M12 (Control Bank 'D') dropped fully into the core. The crew has stabilized the plant and preparations are being made to lower Reactor power.

Control Room Annunciator 05M3 Window B-3, PR LOWER DET FLUX DEV HI/AUTO DEF, has alarmed. The Shift Manager has had a QPTR calculation done using the manual method (i.e. without use of the Plant Computer or RO Calculator).

INITIATING CUE

The Unit Supervisor instructs you to perform the Independent Verification of the QPTR calculation required by Step 5.2.9 of 0PSP10-NI-0002.

You are expected to correct any errors found, including subsequent entries/calculations, AND, once any corrections are made, determine if the Acceptance Criteria is/are met per step 5.3.

Additional information:

- All Excore Nuclear Instrumentation Channels are operable.
- The U2 Plant Curve Book Figure 5.1 is the latest approved version for purposes of this JPM AND there are no errors in the data of Figure 5.1.
- Reactor Power is stable and meets the requirements of 0PSP10-NI-0002 Step 4.3.
- Reactor Power is 99.7% by U1169, average NI power.

DOCUMENT ON FORM 1 AND FORM 3 OF HANDOUT

5.2.2.1 Unit 2 Cycle 20 Date Today Time Now

5.2.2.2 Reactor Power 99.7% Indicator U1169

UPPER DETECTORS

		N41U	N42U	N43U	N44U		
5.2.3	Current Meter Range Switch Scale (0.1, 0.5, 1 or 5)	1	1	1	1		
5.2.4	Indicated Detector Current (μA)	435	419	440	451		
5.2.2.3	100% Power Detector Current (μA)	432.6	416.2	440.3	445.4	5.2.5.2 Sum I_U	5.2.5.3 Average I_U
5.2.5.1	Normalized (I_U) Currents	1.006	1.007	0.999	1.013	4.025	1.006

5.2.5.4 UPPER TILT RATIO (UTR) = $\frac{\text{Maximum } I_U}{\text{Average } I_U}$ = 1.007

1

100% Power Detector Current for N44L should be 424.5 which makes Normalized Current 1.051

LOWER DETECTORS

		N41L	N42L	N43L	N4		
5.2.3	Current Meter Range Switch Scale (0.1, 0.5, 1 or 5)	1	1	1	1		
5.2.4	Indicated Detector Current (μA)	487	449	441	446		
5.2.2.3	100% Power Detector Current (μA)	485.4	446.3	435.6	445.4	5.2.6.2 Sum I_L	5.2.6.3 Average I_L
5.2.6.1	Normalized (I_L) Currents	1.003	1.006	1.012	1.001	4.022	1.006

2

Sum IL should be 4.072
Average IL should be 1.018

5.2.6.4 LOWER TILT RATIO (LTR) = $\frac{\text{Maximum } I_L}{\text{Average } I_L}$ = 1.006

3

5.2.7 QPTR = Larger numerical value of the UTR or LTR = 1.007

LTR should be 1.032 and should be the larger numerical value.

5.2.8 Performed by: *Randy White* Date: Today

5.2.9 Verified (IV) by: _____ Date: _____

The QPTR does not meet the Acceptance Criteria of Step 6.1
The QPTR SHALL NOT exceed 1.02.
Checks UNACCEPTABLE in block 5.8 on Form 1.

If the Student calculates LTR to 2 decimal places then the only correct answer is 1.03. If the Student calculates LTR to 3 decimal places then 1.029 to 1.033 is acceptable.

This form, when completed, SHALL be retained for the life of the plant.

STPNOC

Job Performance Measure

RO COMPLETE ESF POWER AVAILABILITY SURVEILLANCE

JPM Number: NRC A2

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted JPM for use on LOT 22 NRC Exam.

SIMULATOR SETUP INSTRUCTIONS

This is an Admin JPM – No simulator setup instructions required.

INITIAL CONDITIONS

Unit 1 is at 100% power with a NORMAL electrical lineup. 0PSP03-EA-0002, ESF Power Availability is scheduled to be performed.

The STP Coordinator has been consulted and has supplied the following switchyard information for Data Sheet 1.

All Switchyard Disconnects CLOSED	SCADA 345A 346 kilovolts	SCADA 345B 349 kilovolts
BKR Y500 CLOSED	BKR Y510 CLOSED	BKR Y520 CLOSED
BKR Y530 OPEN	BKR Y540 OPEN	BKR Y550 CLOSED
BKR Y560 OPEN	BKR Y570 OPEN	BKR Y580 OPEN
BKR Y590 CLOSED	BKR Y600 CLOSED	BKR Y610 CLOSED
BKR Y620 CLOSED	BKR Y630 OPEN	BKR Y640 OPEN
BKR Y650 CLOSED	BKR Y660 CLOSED	

INITIATING CUE

The Unit Supervisor instructs you to complete DATA Sheet 1 of 0PSP03-EA-0002, ESF Power Availability, per Step 5.1.

NOTE: Another Reactor Operator and a Plant Operator are going to complete the other data sheets for this surveillance.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

On 0PSP03-EA-0002, ESF Power Availability, Data Sheet 1, correctly identifies the following:

- *ONLY the EASTERN RIGHT OF WAY is an approved 345 KV offsite circuit by circling YES for DOW VELASCO 27 and JONES CREEK 18 and NO for the other 4 circuits.*

AND

- *There is ONLY 1 offsite circuit available for TS 3.8.1.1.a by circling NO for the statement AT LEAST 2 RIGHTS OF WAY AVAILABLE.*

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Hand out Student Copy of 0PSP03-EA-0002, ESF Power Availability. When the student has reviewed the Initial Conditions & Initiating Cue and they have indicated they are ready to begin the JPM, then record the start time for the JPM. A KEY is provided for the Examiner.					
*1	Performs section 5.1 and fills out Data Sheet #1 of 0PSP03-EA-0002, ESF Power Availability.	Determines the status of the switchyard power available for TS purposes. **Note:** **See TASK STANDARD and answer KEY provided.** **This JPM is only testing the effects on Unit 1. Unit 2 would also be affected.**	___	___	___
CUE	This JPM is complete				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: RO COMPLETE ESF POWER AVAILABILITY SURVEILLANCE
JPM Number: NRC A2 Revision Number: 0
Task Number and Title: 62450, Perform AC Breaker Lineup Verification.
K/A Number and Importance: 2.1.25 3.9/4.2
Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other
Alternate Path: ☐ Yes ☒ No
Task Designed For: SRO Only ☐; RO/SRO ☒; AO/RO/SRO ☐
Time Critical: ☐ Yes ☒ No
Level of Difficulty: 3
Reference(s): 0PSP03-EA-0002, ESF Power Availability, Rev. 38

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other
Testing Method: ☐ Simulate ☐ Perform
Estimated Time to Complete: 10 minutes **Actual Time Used:** _____ minutes
Critical Steps (*) 1
Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No
The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

Unit 1 is at 100% power with a NORMAL electrical lineup. 0PSP03-EA-0002, ESF Power Availability is scheduled to be performed.

The STP Coordinator has been consulted and has supplied the following switchyard information for Data Sheet 1.

All Switchyard Disconnects CLOSED	SCADA 345A 346 kilovolts	SCADA 345B 349 kilovolts
BKR Y500 CLOSED	BKR Y510 CLOSED	BKR Y520 CLOSED
BKR Y530 OPEN	BKR Y540 OPEN	BKR Y550 CLOSED
BKR Y560 OPEN	BKR Y570 OPEN	BKR Y580 OPEN
BKR Y590 CLOSED	BKR Y600 CLOSED	BKR Y610 CLOSED
BKR Y620 CLOSED	BKR Y630 OPEN	BKR Y640 OPEN
BKR Y650 CLOSED	BKR Y660 CLOSED	

INITIATING CUE

The Unit Supervisor instructs you to complete DATA Sheet 1 of 0PSP03-EA-0002, ESF Power Availability, per Step 5.1.

NOTE: Another Reactor Operator and a Plant Operator are going to complete the other data sheets for this surveillance.

TURN IN DATA SHEET #1 WITH THIS JPM WHEN COMPLETED.

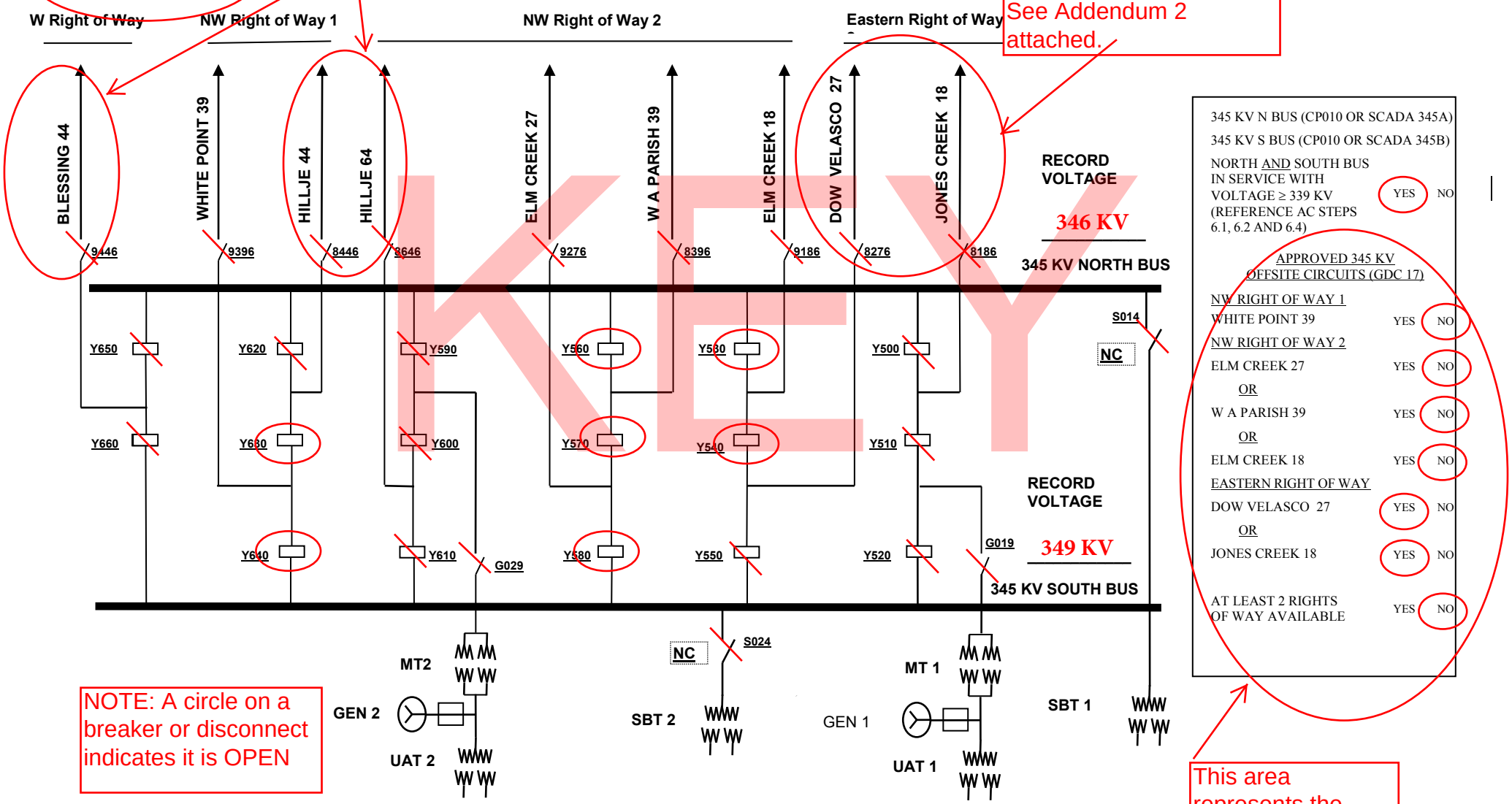
Credit cannot be given for these 3 circuits:
Blessing is unreliable and both Hillje circuits cross under other circuits.
See Addendum 2 attached.

These two circuits only count as one because they are on the same towers.
See Addendum 2 attached.

UNIT 1

(Circle Unit Performing Data Sheet)

UNIT 2



KEY

345 KV N BUS (CP010 OR SCADA 345A)
345 KV S BUS (CP010 OR SCADA 345B)
NORTH AND SOUTH BUS IN SERVICE WITH VOLTAGE ≥ 339 KV (REFERENCE AC STEPS 6.1, 6.2 AND 6.4) YES NO

APPROVED 345 KV OFFSITE CIRCUITS (GDC 17)

NW RIGHT OF WAY 1
WHITE POINT 39 YES NO
NW RIGHT OF WAY 2
ELM CREEK 27 YES NO
OR
W A PARISH 39 YES NO
OR
ELM CREEK 18 YES NO
EASTERN RIGHT OF WAY
DOW VELASCO 27 YES NO
OR
JONES CREEK 18 YES NO

AT LEAST 2 RIGHTS OF WAY AVAILABLE YES NO

NOTE: A circle on a breaker or disconnect indicates it is OPEN

This area represents the TASK STANDARD

1) The following provides guidance regarding the requirement for *two physically independent circuits* between the offsite transmission network and the onsite Class 1E Distribution System:

   a) In Modes 1, 2, 3 and 4, At least *two physically independent circuits* between the offsite transmission network and the onsite Class 1E Distribution System SHALL be OPERABLE. (Technical Specification 3.8.1.1)

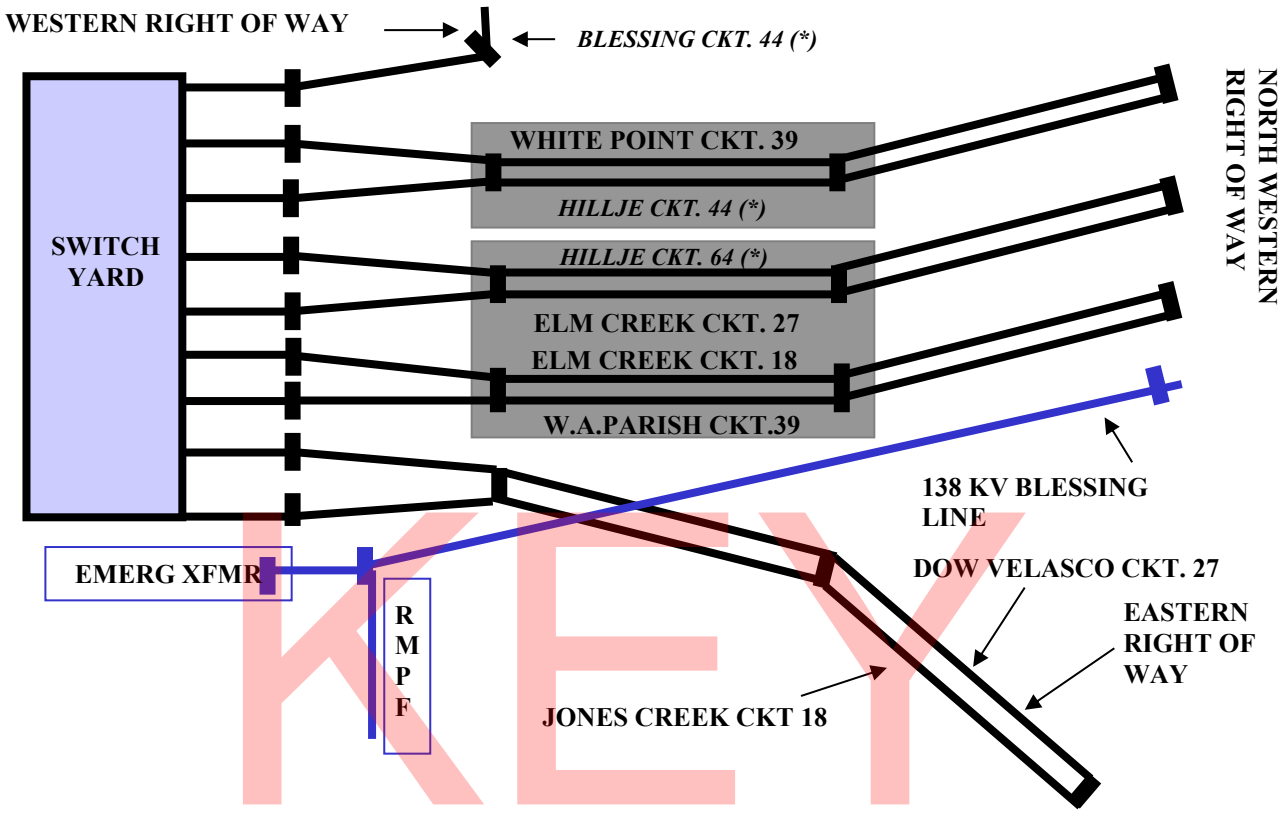
   b) The 400 ft. wide NW right-of-way "common corridor" out of STP property is considered as two independent rights-of-way; one with circuits to White Point 39 and Hillje 44, and the other with circuits to W.A. Parish 39, Hillje 64, Elm Creek 27 and Elm Creek 18. (Reference UFSAR 8.2.1.1)

   c) As delineated within UFSAR Section 8.2.1.1, "The Hillje transmission lines cross under the Elm Creek transmission lines at the Hillje substation. Since the Hillje lines are below the Elm Creek line, the Hillje lines are not allowed to be credited with being an offsite source of power in accordance with GDC 17 (i.e., "Hillje Ckt. 44" and "Hillje Ckt. 64" SHALL **NOT** be utilized to satisfy Technical Specification requirements for an offsite transmission network).

   d) As delineated within CREE 13-1596-2, the 345 KV Blessing transmission line (Blessing 44) has limited capability with respect to providing the required voltage when used as an independent source of offsite power. Due to this limited capability, the Blessing 44 line is not allowed to be credited with being an offsite source of power in accordance with GDC 17 (i.e., "Blessing 44" SHALL **NOT** be utilized to satisfy Technical Specification requirements for an offsite transmission network). (Reference 8.30)

(continued on next page)

(continued)



(*) *Blessing Ckt. 44, Hillje Ckt. 44* and *Hillje Ckt. 64* are **NOT** qualified in accordance with GDC 17 AND SHALL **NOT** be utilized to satisfy Technical Specification requirements for an offsite transmission network.

e) Examples of "at least two physically independent circuits":

- White Point Ckt. 39 and Elm Creek Ckt. 27 – The circuits are in different rights-of-way and the circuits do not share the same towers. The 400 ft. wide NW right-of-way "common corridor" out of STP property is considered as two independent rights-of-way.

- White Point Ckt. 39 and Jones Creek Ckt. 18 - The circuits are in different rights-of-way and the circuits do not share the same towers.

STPNOC

Job Performance Measure

PREPARE AN EQUIPMENT CLEARANCE ORDER FOR SPENT FUEL POOL SKIMMER PUMP 2A

JPM Number: NRC A3

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Used on 1999 NRC Exam.

Revised JPM for use on LOT 22 NRC Exam

SIMULATOR SETUP INSTRUCTIONS

1. This is an Admin JPM.

INITIAL CONDITIONS:

Unit 2 is at 100% power.

Mechanical Maintenance has requested to replace a mechanical seal assembly on the Spent Fuel Pool Skimmer Pump (WAN 584059).

ORACLE is unavailable.

INITIATING CUE:

You are the extra Reactor Operator working a weekend shift and you are directed to prepare an equipment clearance for Spent Fuel Pool Skimmer Pump 2A in accordance with 0PGP03-ZO-EC01A, Equipment Clearance Order Instructions.

NOTE the following:

- Isolate the pump at the closest boundary valves for draining.
- Restoration positions and components listed solely for restoration purposes are NOT required.
- Only one set of vent and drain valves is required. The vent and drain path used should be as close to the pump as possible.
- Double valve protection is NOT required.
- The next ECO Number will be B90945.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Correctly writes an ECO which isolates and depressurizes Spent Fuel Pool Skimmer Pump 2A in accordance with 0PGP03-ZO-EC01A, Equipment Clearance Order Instructions.

2	D	B	MCC 2S1 CUBICLE C3 - SPENT FUEL POOL SKIMMER PUMP 2A BREAKER	Y	HANG	2	OFF		
3	D	B	7R212FC0104 - SFP SKIMMER PUMP DISCHARGE VALVE	Y	HANG	3	CLOSED		
4	D	B	7R212FC0001 - SFP SKIMMER PUMP SUCTION VALVE	Y	HANG	3	CLOSED		
5	D	B	7R212FC0053, SFP SKIMMER PUMP DISCHARGE TEST VALVE	Y	HANG	4	OPEN		

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Provide the following Student Handouts: • HO1 - 0PGP03-ZO-ECO1A, Equipment Clearance Order Instructions. This procedure will have the manual ECO forms. (For use of Form 3 & 9) • HO2 - Completed Form 2, Equipment Clearance Order Request Form • HO3 - Work Instructions for WAN 584059 • HO4 - 9-E-PFBA #2 • HO5 - 9-E-FC02 #2 • HO6 - 9-F-05028 #2					
1	Review Student Handout material.	Student reviews the material.	___	___	___
NOTE: **The student should also use Form 9, ECO Preparation Checklist, but it is not required for this JPM.**					
2	Prepare Page 1 of Form 3:	Fills in the form: • ECO Number (2-18-B90945) • Unit 2 • Hazardous System – YES • Notify Fire Protection - NO • Notify Security – NO • What is being tagged? - Spent Fuel Pool Skimmer Pump 2A • TPNS - #7R212NPA202A **NOTE:** **Student may sign PREPARED BY after completing ECO but it is not required for this JPM.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
3	Prepare Page 2 of Form 3:	Fills in the form: • ECO Number (2-18-B90945) • Job Number – 1 • WAN – 584059 • Work Group – MM	___	___	___
NOTE: **The next steps are all for the completion of Form 3, Page 3. Critical steps are marked with a (*). Also see Task Standard and KEY provided.**					
4	Caution Tag the Spent Fuel Pool Skimmer Pump 2A Handswitch in STOP	Line Item requires: Caution Tag on N2FCHS1403 Position STOP Action HANG	___	___	___
***5**	Danger Tag MCC 2S1, Cubicle C3 in OFF	Line Item requires: Danger Tag on MCC 2S1, Cubicle C3, Position OFF Boundary checked Verification required	___	___	___
***6**	Danger Tag Valve FC-0104 CLOSED	Line Item requires: Danger Tag on FC-0104, position CLOSED Boundary checked Verification required	___	___	___
***7**	Danger Tag Valve FC-0001 CLOSED	Line Item requires: Danger Tag on FC-0001, position CLOSED Boundary checked Verification required	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*8	Danger Tag Valve FC-0053 OPEN	Line Item requires: Danger Tag on FC-0053, position OPEN Boundary checked Verification required	___	___	___
NOTE: Step 9 is not required, but does facilitate draining the catch basin when the casing plug is removed.					
9	Identify Valve FC-0064 as necessary to drain the catch basin to the floor drain. When pump casing plug is removed to drain the casing, this valve must be opened to ensure the water goes to the floor drain.	Line Item requires: FC-0064 OPEN as necessary to drain the catch basin. Verification required	___	___	___
10	Determine the proper sequence	1 - Handswitch 2 – breaker, discharge and suction valves - 3, vent and/or drain – 4.	___	___	___
CUE	This JPM is complete				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: PREPARE AN EQUIPMENT CLEARANCE ORDER FOR SPENT FUEL POOL SKIMMER PUMP 2A

JPM Number: NRC A3 Revision Number: 0

Task Number and Title: 68950 (RO), Prepare Equipment Clearances

K/A Number and Importance: 2.2.13 4.1/4.3

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: SRO Only ☐; RO/SRO ☒; AO/RO/SRO ☐

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 4

Reference(s): 0PGP03-ZO-ECO1A, Equipment Clearance Order Instructions, Rev. 29, 9-F-05028 #2, 9-E-PFBA-01#2, 9-E-FC02 #2

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: 25 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 5, 6, 7, 8

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS:

Unit 2 is at 100% power.

Mechanical Maintenance has requested to replace a mechanical seal assembly on the Spent Fuel Pool Skimmer Pump (WAN 584059).

ORACLE is unavailable.

INITIATING CUE:

You are the extra Reactor Operator working a weekend shift and you are directed to prepare an equipment clearance for Spent Fuel Pool Skimmer Pump 2A in accordance with 0PGP03-ZO-EC01A, Equipment Clearance Order Instructions.

NOTE the following:

- Isolate the pump at the closest boundary valves for draining.
- Restoration positions and components listed solely for restoration purposes are NOT required.
- Only one set of vent and drain valves is required. The vent and drain path used should be as close to the pump as possible.
- Double valve protection is NOT required.
- The next ECO Number will be B90945.

ECO Number: *2* - *18* - *B90945* **Unit:** *2* **Page** *1* **of** *3*
(Unit - Year - Number)

Hazardous System? ☒ Yes ☐ No **Notify Fire Protection?** ☐ Yes ☒ No

Notify Security? ☐ Yes ☒ No

What Is Being Tagged? *Spent Fuel Pool Skimmer Pump 2A* **TPNS#** *7R212NPA202A*

Work Description: *Replace mechanical seal assembly*

Prepared By: _____ (Signature) _____ (Date) _____ (Time)

Tech Review By: _____ (Signature) _____ (Date) _____ (Time)

Approved By: _____ (Signature) _____ (Date) _____ (Time)

KEY

Notes:

ECO Number: *2* - *18* - *B90945*

Page *2* of *3*

Unit Year Number

Job Number	Work Document WAN / CR / Procedure	Work Group	Job Addition		Ready for Work Group Acceptance	Work Group Sign ON (Print, Sign, Date Time)	Work Group Sign OFF (Print, Sign, Date Time)
			Add	SRO			
1	*584059*	*MM*					
(Work Description)							
(Work Description)							
(Work Description)							
(Work Description)							
(Work Description)							
(Work Description)							

ECO Number: 2 - 18 - B90945
Unit Year Number

Page 3 of 3

Line Number	Type	BOUNDARY	Component ID Or Instructions	Verification Required?	Action	Exe. Seq	Required Position	Performed By	Verified By
1	C		N2FCHS1403 - SPENT FUEL POOL SKIMMER PUMP 2A HANDSWITCH	Y	HANG	1	STOP		
2	D	B	MCC 2S1 CUBICLE C3 - SPENT FUEL POOL SKIMMER PUMP 2A BREAKER	Y	HANG	2	OFF		
3	D	B	7R212FC0104 - SFP SKIMMER PUMP DISCHARGE VALVE	Y	HANG	3	CLOSED		
4	D	B	7R212FC0001 - SFP SKIMMER PUMP SUCTION VALVE	Y	HANG	3	CLOSED		
5	D	B	7R212FC0053, SFP SKIMMER PUMP DISCHARGE TEST VALVE	Y	HANG	4	OPEN		
6			7R212FC0064, SFP SKIMMER PUMP SKID DRAIN VALVE	Y	HANG	4	OPEN		

KEY

Critical Steps
Line Items 2, 3, 4 & 5
NOTES:
1) 2-FC-0053 is the only valve that can de-pressurize the boundary. It must be tagged open with danger tag and marked as a boundary. 2-FC-0064 is a pump skid drain valve and not actually connected to the system.
2) Valves can be numbered 2-FC-0... instead of the TPNS number as shown.
3) Noun names of valves and breaker do not have to be exact match.
4) The student should also use Form 9, ECO Preparation Checklist, but it is not required for this JPM.

STPNOC

Job Performance Measure

DETERMINE RWP REQUIREMENTS FOR WORK IN RRA (SFP)

JPM Number: NRC A4

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted JPM for use on LOT 22 NRC Exam.

SIMULATOR SETUP INSTRUCTIONS

This is an Admin JPM – No simulator setup instructions required.

INITIAL CONDITIONS

You have been directed to move Fuel Assemblies from Region 1 to Region 2 per approved Fuel Transfer Forms.

INITIATING CUE

This activity will require you to work in a Radiological Restricted Area. Given a Radiological Work Permit (RWP) and Survey Map of the FHB, you are to determine the following:

- What are the MINIMUM dress requirements for performing this work?
- What are the highest radiation levels in the area you will be working?

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Operator determines the following:

- *MINIMUM dress requirements are one full set of protective clothing and surgeons gloves to be used for the outer set of gloves when handling fuel handling machine tools.*

AND

- *Highest radiation levels in work area are 0.1 mr/hour or <0.1 mr/hour.*

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Hand out Student Copy of the RWP and Survey Map. When the student has reviewed the Initial Conditions & Initiating Cue and they have indicated they are ready to begin the JPM, then record the start time for the JPM. A KEY is provided for the Examiner.					
*1	Reviews RWP and Survey Map to determine MINIMUM dress requirements and highest dose rates in work area.	Determines the following: • MINIMUM dress requirements are one full set of protective clothing and surgeons gloves to be used for the outer set of gloves when handling fuel handling machine tools. AND • Highest radiation levels in work area are 0.1 mr/hour or <0.1 mr/hour. **Note:** **See TASK STANDARD and answer KEY provided.**	___	___	___
CUE	This JPM is complete				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: DETERMINE RWP REQUIREMENTS FOR WORK IN RRA (SFP)
JPM Number: NRC A4 Revision Number: 0
Task Number and Title: T67500, Operate the Spent Fuel Handling Machine/Bridge Hoist.
K/A Number and Importance: 2.3.7 3.5/3.6
Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other
Alternate Path: ☐ Yes ☒ No
Task Designed For: SRO Only ☐; RO/SRO ☒; AO/RO/SRO ☐
Time Critical: ☐ Yes ☒ No
Level of Difficulty: 3
Reference(s): Radiation Work Permit with Survey Map

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other
Testing Method: ☐ Simulate ☐ Perform
Estimated Time to Complete: 10 minutes **Actual Time Used:** _____ minutes
Critical Steps (*) 1
Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No
The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

You have been directed to move Fuel Assemblies from Region 1 to Region 2 per approved Fuel Transfer Forms.

INITIATING CUE

This activity will require you to work in a Radiological Restricted Area. Given a Radiological Work Permit (RWP) and Survey Map of the FHB, you are to determine the following:

- What are the MINIMUM dress requirements for performing this work?
- What are the highest radiation levels in the area you will be working?

KEY

SOUTH TEXAS PROJECT
ELECTRIC GENERATING STATION
RADIATION WORK PERMIT

PERMT/RWP
U10

2018-2-0131
REVISION 0

PERFORM FUEL MOVEMENT FROM REGION 1 TO REGION 2
WHITE RCA Entry Card Required

ACTIVE 05/01/2018 00:00
TERMINATION 12/31/2018 23:59

JOB DESCRIPTION

PERFORM FUEL MOVEMENT IN THE FHB
MOVE FUEL FROM REGION 1 TO REGION 2
SUPPORT WORK

RADIOLOGICAL DATA

CONTAMINATION		DOSE RATES		ALARM SETPOINTS
GA:	1000 dpm/100cm2	GA:	2-10 mrem/hr	ALARM SETPOINT: BY WAN
WORK:	100000 dpm/100cm2	WORK:	2-20 mrem/hr	ALARM RATE: BY WAN
AIRBORNE:	<1 DAC			

RESTRICTIONS

* NO ENTRY INTO POSTED LOCKED HIGH RADIATION AREAS
* NO ENTRY INTO POSTED HIGH RADIATION AREAS
* NO ENTRY INTO POSTED AIRBORNE RADIOACTIVITY AREAS (EXCLUDING NOBLE GAS)
* NO CONTAMINATED SYSTEM BREACH ALLOWED

CHANGE OUT OF UNDERWATER FILTERS IS NOT ALLOWED ON THIS RADIATION WORK PERMIT.

THIS RADIATION WORK PERMIT DOES NOT ALLOW MOVEMENT OF IRRADIATED MATERIAL KNOWN TO BE GREATER THAN 10 rem/hr WITH TOOLS OR EQUIPMENT THAT ARE NOT CONTROLLED BY TOOL LENGTH OR LIMIT SWITCHES THAT WOULD ALLOW UNRESTRICTED MOVEMENT OF THE MATERIAL PAST THE SURFACE OF THE WATER.

REQUIREMENTS

DOSIMETRY	RESPIRATORY PROTECTION	RAD. PROT. COVERAGE
WB TLD EPD	None	Intermittent

SIGNATURES

TOMEK,MICHAEL K	05/07/2018 09:34		
Approved by	Date/Time	Terminated by	Date/Time

KEY

KEY

SOUTH TEXAS PROJECT
ELECTRIC GENERATING STATION
RADIATION WORK PERMIT

PERMT/RWP
U10

2018-2-0131
REVISION 0

PERFORM FUEL MOVEMENT FROM REGION 1 TO REGION 2
WHITE RCA Entry Card Required

Entry Requirements

PRE-JOB BRIEFING REQUIRED WITH RADIATION PROTECTION PRIOR TO FUEL MOVEMENT

Dress Requirements

FOR REMOVING ITEMS COMPLETELY FROM WATER:
- One full set protective clothing

FOR ENTRY INTO A POSTED CONTAMINATION AREA:
- One full set protective clothing
- For work over water, surgeons cap may be substituted for hood provided life vest used for floatation does not touch neck.
Surgeon gloves are to be used for the outer set of gloves when handling fuel handling machine tool

FOR ENTRY INTO A POSTED HIGH CONTAMINATION AREA:
- One full set protective clothing
Second set of coveralls, second set of shoe covers and second set of gloves (surgeon gloves allowed permission from radiation protection)
Water repellent protective clothing may be substituted for second set of coveralls for wet work

Additional Requirements

FOR PARTIAL REMOVAL OF ITEMS FROM WATER:
- As per instructions/guidance from RP

FOR REMOVING ITEMS COMPLETELY FROM WATER:
- Due to high contamination levels and the potential for high dose rates, all items removed from the spent fuel pool shall be surveyed by RP and wiped and/or rinsed with demin water as items are being removed. NOTE: PERMISSION FROM MAIN CONTROL ROOM IS REQUIRED PRIOR TO ADDING WATER TO SPENT FUEL POOL.

- Items shall be lowered back into the water immediately if radiation monitor on bridge alarms

- Permission from RP supervisor/designee required to continue activities if dose rates at the surface of the water exceed 100 mrem/hr

Cautions / ALARA Notes

- Do not attempt to retrieve any debris or trash observed floating in the water. Notify RP for survey and retrieval.

- An area radiation monitor (ARM) set to alarm at 3 mrem/hr shall be placed on fuel handling bridge prior to movement of fuel. If monitor alarms, put the work in a safe condition, leave the area, and notify RP.

- Movement of irradiated material or fuel within 10 feet of the southwest spent fuel pool cask canal gate or the transfer canal gate if the transfer canal is drained, requires specific approval from the radiation protection supervisor responsible for the fuel handling building.

For move fuel assemblies from Region 1 to Region 2 the operator will be working in a contaminated area.

MINIMUM dress requirements would be one full set of protective clothing AND surgeons' gloves as the outer set of gloves when handling the fuel handling machine tool.

NOTE: Both of the above are required for this task, however, a surgeon's cap is optional.

KEY

KEY

SURVEY #: 55221
STATUS: APPROVED
DATE/TIME 06/24/2018 22:36
MAP CODE: 2-FHB+068-TG03
RWP: 2018-2-0131-0
WAN: 396891

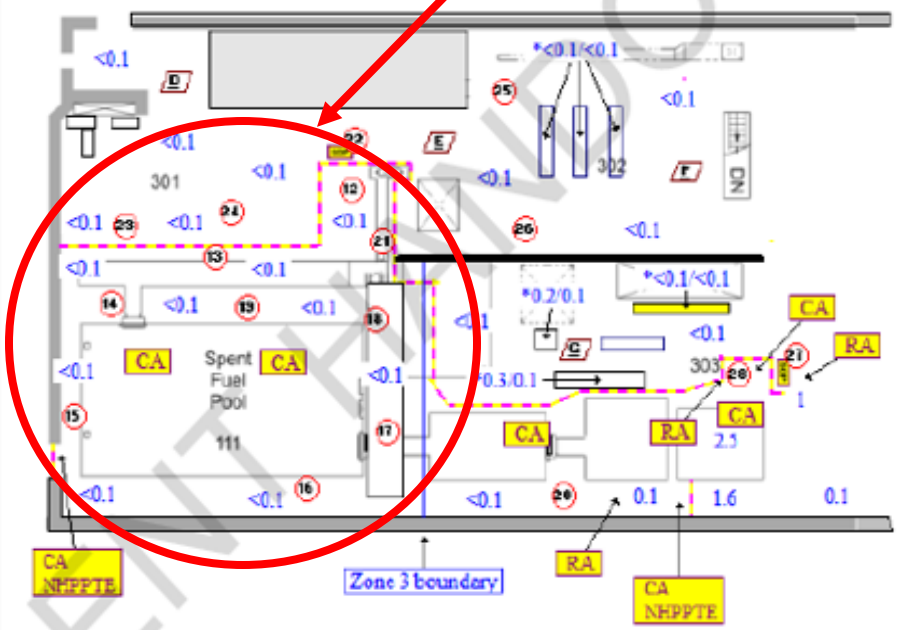
Nuclear Operating Company
Radiological Survey Report Package

U17

POWER: 100 %
PURPOSE: Routine
ROUTINE: Task Group 3
TPNS: N/A

The area in the circle is the SFP and is made up of Region 1 and Region 2. This is the area where the operator would be working and the highest radiation levels are 0.1 mr/hour or <0.1mr/hour.

HIGHEST CONTAMINATION	
#	dpm/100cm² βγ / α
15	2 K
13	2 K
21	1 K
18	1 K
16	1 K
12	<1 K
14	<1 K
17	<1 K
19	<1 K
20	<1 K
22	<1 K
23	<1 K
24	<1 K
25	<1 K
26	<1 K
27	<1 K
28	<1 K
D	<100 ccpm/LAW
E	<100 ccpm/LAW
F	<100 ccpm/LAW
G	<100 ccpm/LAW



INSTRUMENTS
155-00127-007
400-00012-062
400-00047-005
400-00097-027
400-00097-040

LEGEND

Contact → 120/2.5 ← 30cm or specified distance
<0.2 ← GA or specified distance
DOSE RATES - Units are per hr (mrem unless specified)
1 SMEAR
1 AIR SAMPLE
A LAW

SURVEY COMMENTS

See back page(s) for all contamination result details.
Egress sticky pads: 1.8 nCi.

SURVEYORS: Gurn,Thomas R
Beaver,William Arnold

REVIEWER: Gonzales,Rodney E
DATE/TIME: 06/26/2018 02:25

KEY

KEY

SURVEY #: 55221
STATUS: APPROVED
DATE/TIME: 06/24/2018 22:36
MAP CODE: [illegible]
RWP: 2018-2-0131-0
WAN: [illegible]

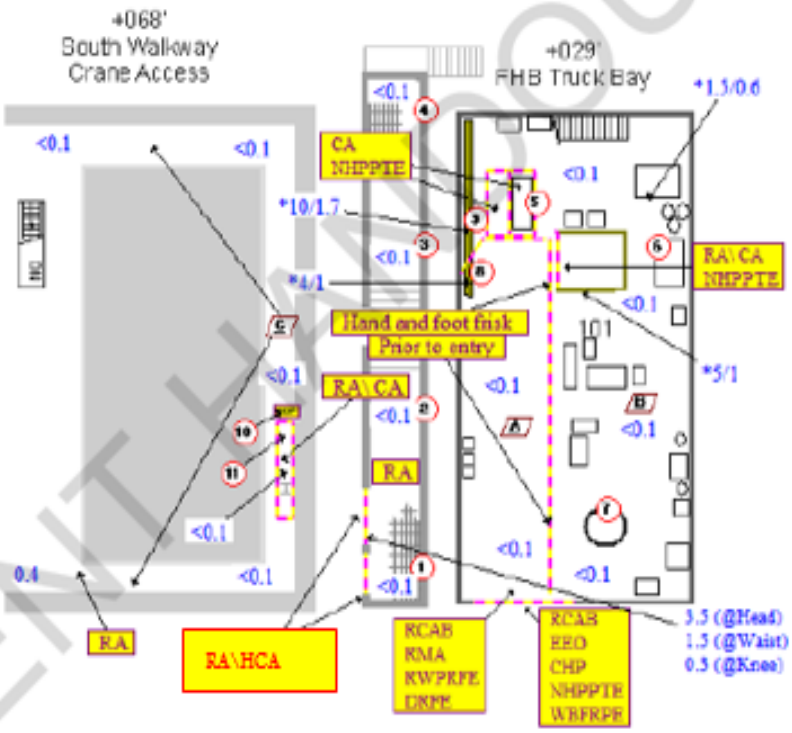
STP Nuclear Operating Company
Radiological Survey Report Package

U17

POWER: 100 %
PURPOSE: Routine
ROUTINE: Task Group 3
TPNS: N/A

Task Group 03

HIGHEST CONTAMINATION	
#	dpm/100cm² βγ / α
1	<1 K
2	<1 K
3	<1 K
4	<1 K
5	<1 K
6	<1 K
7	<1 K
8	<1 K
9	<1 K
10	<1 K
11	<1 K
A	<100 ccpm/LAW
B	<100 ccpm/LAW
C	<100 ccpm/LAW



INSTRUMENTS
155-00127-007
400-00012-062
400-00047-005
400-00097-027
400-00097-040

LEGEND

Contact → *120/2.5 ← 30cm or specified distance
<0.2 ← GA or specified distance
DOSE RATES - Units are per hr (mrem unless specified)
1 SMEAR
1 AIR SAMPLE
A LAW

SURVEY COMMENTS

See back page(s) for all contamination result details.
Egress sticky pads: 1.8 nCi.

SURVEYORS: Gurn,Thomas R
Beaver,William Arnold

REVIEWER: Gonzales,Rodney E
DATE/TIME 06/26/2018 02:25

KEY

KEY

SURVEY #: 55221
STATUS: APPROVED
DATE/TIME: 06/24/2018 22:36
MAP CODE: [illegible]
RWP: 2018-2-0131-0
WAN: [illegible]

STP Nuclear Operating Company
Radiological Survey Report Package

U17

POWER: 100 %
PURPOSE: Routine
ROUTINE: Task Group 3
TPNS: N/A

SMEARS			
#	dpm/100cm² βγ	dpm/100cm² α	Comments
1	<1 K	N/A	Handrail
2	<1 K	N/A	Handrail
3	<1 K	N/A	Handrail
4	<1 K	N/A	Handrail
5	<1 K	N/A	Stud Cleaning Booth
6	<1 K	N/A	B 25 Box
7	<1 K	N/A	RCP Stand
8	<1 K	N/A	Long Handle Tool Packaging
9	<1 K	N/A	Long Handle Tool Packaging
10	<1 K	N/A	S.O.P.
11	<1 K	N/A	Floor
12	<1 K	N/A	floor
13	2 K	N/A	by track
14	<1 K	N/A	floor
15	2 K	N/A	near w est skimmer
16	1 K	N/A	near vacuum breaker
17	<1 K	N/A	bridge deck
18	1 K	N/A	pendant
19	<1 K	N/A	floor
20	<1 K	N/A	floor
21	1 K	N/A	cable trough
22	<1 K	N/A	Step-Off-Pad
23	<1 K	N/A	transfer system tank
24	<1 K	N/A	table
25	<1 K	N/A	frisker table
26	<1 K	N/A	person-lift
27	<1 K	N/A	Step-Off-Pad
28	<1 K	N/A	inside CA

LARGE AREA WIPES		
#	ccpm/LAW βγ	Comments
A	<100	Floor
B	<100	Floor
C	<100	Floor
D	<100	
E	<100	
F	<100	
G	<100	

SURVEYORS: Gurn,Thomas R
Beaver,William Arnold

REVIEWER: Gonzales,Rodney E
DATE/TIME: 06/26/2018 02:25

KEY

KEY

SURVEY #: 55221
STATUS: APPROVED
DATE/TIME: 06/24/2018 22:36
MAP CODE: 2-EHR-068-TG03
RWP: 2018-2-0131-0
WAN: 396691

Nuclear Operating Company
Radiological Survey Report Package

U17

POWER: 100 %
PURPOSE: Routine
ROUTINE: Task Group 3
TPNS: N/A

POSTING DEFINITIONS	
Abbreviation	**Definition**
RA	Radiation Area
DHRA	Danger High Radiation Area
CA	Contaminated Area
HCA	High Contamination Area
RMA	Radioactive Materials Area
NHPPTE	Notify HP Prior to Entry
LIAW TS 6.12.2	Locked IAW Tech. Spec. 6.12.2
WBFRPE	Whole Body Frisk Req. Prior to Exit
RWPRFE	RWP Required For Entry
DRFE	Dosimeter Required For Entry
CHP	Contact Health Physics
RCAB	Radiological Controlled Area Boundary
EEO	Emergency Exit Only

SURVEYORS: Gurn,Thomas R
Beaver,William Arnold

REVIEWER: Gonzales,Rodney E
DATE/TIME: 06/26/2018 02:25

KEY

STPNOC

Job Performance Measure

REVIEW SDM CALCULATION

JPM Number: NRC A5

Revision Number: 0

Date: 06/25/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted JPM for use on LOT 21 Audit Exam.

Updated JPM for use on LOT 22 NRC Exam

SIMULATOR SETUP INSTRUCTIONS

1. This is an Admin JPM.

INITIAL CONDITIONS:

Unit 1 is operating at 100% power during Cycle 21. During the performance of 0PSP03-RS-0001, Monthly Control Rod Operability, all three (3) Control Rods in Control Bank 'D', Group 2, failed to return to their original height of 246 steps after being inserted.

I&C has determined that all three (3) Control Rods are being affected by Rod Control logic problems and have the following issues:

- Further testing has determined that Control Rods H-8 and M-4 are known to be untrippable (mechanically stuck).
- Control Rod D-12 slipped to a lower position and has been determined to be trippable.

NOTE the following additional information:

- Reactor power is stable at 100% by U1169.
- Core Burnup is at End-of Life (EOL) – 15,500 MWD/MTU per BEACON Monitor.
- Full Out Position (FOP) And Bank Overlap (BOL) are set as follows:
  - FOP = 254
  - BOL = 117
- RCS Boron is 500 ppm.
- Rod H-8 is at 240 steps.
- Rod M-4 is at 240 steps.
- Rod D-12 is at 234 steps.
- Control Bank 'D', Group 1, is at 246 steps.
- All other Rods are at 254 steps.
- A Logbook entry has been made.

The Crew is making preparations to shutdown the unit per TS 3.1.3.1.

A Shutdown Margin Calculation was performed in accordance with 0PSP10-ZG-0005, Shutdown Margin Verification - Modes 1 and 2, using the MANUAL method, to verify compliance with Technical Specifications.

INITIATING CUE:

You are the Shift Manager. Perform a second review of the test data per step 5.17 of 0PSP10-ZG-0005, Shutdown Margin Verification - Modes 1 and 2, to determine if the Test Results are ACCEPTABLE or UNACCEPTABLE.

For the purposes of this JPM DO NOT use 'Conservative Values.' Use data directly derived from charts or tables.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Determines the SDM calculation is in error, calculates the correct SDM, SDM requirements are NOT met and TS 3.1.1.1, Boration Control, applies as per procedure Acceptance Criteria Step 6.0.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Provide the Student handout copy of 0PSP10-ZG-0005, Shutdown Margin Verification – Modes 1 and 2. Provide the Student Handout copy of Plant Curve Book Figure 5.4, Mode 1 and 2 Minimum Shutdown Margin. The Unit 1 Cycle 21 NDR and Tech Specs should be made available. A KEY has been prepared for this JPM to aid in determining satisfactory performance.					
1	The Shift Manager SHALL: • PERFORM a second review of the test data. *(Step 5.17 and 5.17.1)*	Reviews the surveillance.	___	___	___
NOTE The following error is credible because of the total number of Control Rods that were affected. Only the steps effected by the error are included.					
*2	Review number of Inoperable RCCA (immovable as a result of excessive friction or mechanical interference, or known to be untrippable). *(Step 5.5.6)*	Determines that 2 control rods (instead of 1) should have been marked as INOPERABLE due to excessive friction or mechanical interference or known to be untrippable.	___	___	___
*3	Review Inoperable RCCA Worth (INOP RW) = (AMRSR) x (Number of Inoperable RCCA) = 5.8.4 x 5.5.6 *(Step 5.8.7)*	Determines that calculated value should be 2900 pcm instead of 1450 pcm because 2 control rods are untrippable.	___	___	___
*4	Review available RCCA Worth = (ARI LMRSR) - (IRW) - (ARCW) - (INOP RW) = 5.8.3 - 5.8.5 - 5.8.6.2.c - 5.8.7 *(Step 5.8.8)*	Determines that the calculated value should be 3822 pcm instead of 5272 pcm. Mistake carried forward from Performance Step 2.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*5	Review actual Shutdown Margin = (Available RCCA Worth) + (Total Power Defect) = 5.8.8 + 5.8.9 *(Step 5.5.10)*	Determines that calculated value should be 1259 pcm instead of 2709 pcm. Mistake carried forward from Performance Step 2.	___	___	___
*6	Review comparison of actual shutdown margin to required shutdown margin. *(Step 5.8.12)*	Determines that Actual SDM is NOT greater than Required SDM. The surveillance is UNACCEPTABLE. Acceptance Criteria from step 6.0 is NOT satisfied and TS 3.1.1.1 for Shutdown Margin Modes 1 and 2 applies. **NOTE for Examiner:** **If JPM is turned in as second review ACCEPTABLE, then collected paper work from student and terminate JPM.** **If JPM is turned in as UNACCEPTABLE and no reason is given, then ask the student to document what acceptance criteria was NOT met and WHY prior to terminating the JPM.**	___	___	___
CUE	This JPM is complete				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: REVIEW SDM CALCULATION

JPM Number: NRC A5 Revision Number: 0

Task Number and Title: 76950 (SRO), Perform a Shutdown Margin Verification.

K/A Number and Importance: 2.1.37 4.3/4.6

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: SRO Only ☒; RO/SRO ☐; AO/RO/SRO ☐

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 4

Reference(s): 0PSP10-ZG-0005, Shutdown Margin Verification – Modes 1 and 2, Rev. 6
NDR Unit 1 Cycle 21
Unit 1 Plant Curve Book Figure 5.4, Rev. 24

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 30 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 2-6

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS:

Unit 1 is operating at 100% power during Cycle 21. During the performance of 0PSP03-RS-0001, Monthly Control Rod Operability, all three (3) Control Rods in Control Bank 'D', Group 2, failed to return to their original height of 246 steps after being inserted.

I&C has determined that all three (3) Control Rods are being affected by Rod Control logic problems and have the following issues:

- Further testing has determined that Control Rods H-8 and M-4 are known to be untrippable (mechanically stuck).
- Control Rod D-12 slipped to a lower position and has been determined to be trippable.

NOTE the following additional information:

- Reactor power is stable at 100% by U1169.
- Core Burnup is at End-of Life (EOL) – 15,500 MWD/MTU per BEACON Monitor.
- Full Out Position (FOP) And Bank Overlap (BOL) are set as follows:
  - FOP = 254
  - BOL = 117
- RCS Boron is 500 ppm.
- Rod H-8 is at 240 steps.
- Rod M-4 is at 240 steps.
- Rod D-12 is at 234 steps.
- Control Bank 'D', Group 1, is at 246 steps.
- All other Rods are at 254 steps.
- A Logbook entry has been made.

The Crew is making preparations to shutdown the unit per TS 3.1.3.1.

A Shutdown Margin Calculation was performed in accordance with 0PSP10-ZG-0005, Shutdown Margin Verification - Modes 1 and 2, using the MANUAL method, to verify compliance with Technical Specifications.

INITIATING CUE:

You are the Shift Manager. Perform a second review of the test data per step 5.17 of 0PSP10-ZG-0005, Shutdown Margin Verification - Modes 1 and 2, to determine if the Test Results are ACCEPTABLE or UNACCEPTABLE.

For the purposes of this JPM DO NOT use 'Conservative Values.' Use data directly derived from charts or tables.

Unit 1 Cycle 21

Tech Spec Reference:	Test Interval:	Modes Required:	Test Performance Mode:
4.1.1.1.1.a 3.1.3.1 Action a.	Within 1 hour, and At least once per 12 hours, With an Inop. Control Rod	1 and 2	1 or 2

Reason for Test:

- ☐ For Surveillance Credit
- ☒ Not for Surveillance Credit
- ☐ Periodic Surveillance Test
- ☒ Other 3.1.3.1.a

Test Results:

- ☒ Acceptable (All Acceptance Criteria met)
- ☐ Unacceptable (Any Acceptance Criteria NOT met)

Should be UNACCEPTABLE
Mark UNACCEPTABLE in 'Second Review'
See Pages 14 & 15 of 15

Test Completed By: Robert Newhouse _____ _____ _____
Test Coordinator Date Time

Second Review of Test Results:

- ☐ Acceptable (All Acceptance Criteria met)
- ☐ Unacceptable (Any Acceptance Criteria NOT met)

Test Reviewed By: _____ _____ _____
Shift Manager Date Time

Plant Operations Review of Test Results (if required):

IF test results are unacceptable, IMMEDIATELY inform the Shift Manager who SHALL complete the following:

Potential Reportable Occurrence ☐ Yes ☐ No
LCO Action Statement Entered ☐ Yes ☐ No
Corrective Action Taken: _____

Test Reviewed By: _____ _____ _____
Shift Manager Date Time

All pages of this form, Form 2 and Form 3 SHALL be included in the data package.

KEY

Performers and Verifiers:			
Name (Printed)	Signature	Initials	Sections Performed
Robert Newhouse	Robert Newhouse	RN	Various

4.5 Shift Manager has given permission to commence testing: Robert Newhouse (Test Performer) — Today/ 10 min. ago (Date / Time)

5.1 Prerequisites have been met and Precautions and Notes have been read: Robert Newhouse (Test Performer) — Today/ 10 min. ago (Date / Time)

5.13 Shift Manager notified of test completion: Robert Newhouse (Test Performer)

Remarks: Performed due to inoperable control rod

KEY

Unit **1** Cycle **21**

Operating Data

5.5.1 Date **Today** Time **1 hr. ago**

5.5.2 Reactor Power Level **100%** % from **U1169**

5.5.3 RCCA Bank Positions (Steps)

254	254	254	234	254
CBA	CBB	CBC	CBD	S/D Banks

5.5.4 Abnormal RCCA Configuration (ARC)

☐Yes ☒No

RCCA Bank	Rod	Position

5.5.5 RCS Boron Concentration 500 ppm

5.5.6 Number of Inoperable RCCA (immovable as a result of excessive friction or mechanical interference, or known to be untrippable) 1

Number of Inoperable RCCAs should be 2.

5.5.7 Cycle Burnup 15,500 MWD/MTU

Remarks: None

Completed By: *Robert Newhouse* Date: Today

Verified By: _____ Date: _____

KEY

Unit 1 Cycle 21

Rod Worths

5.8.3	All Rods Inserted Less Most Reactive Stuck Rod Worth (ARI LMRSR)	(+) 6804	pcm
5.8.4	Additional Most Reactive Stuck Rod Worth (AMRSR)	(+) 1450	pcm
5.8.5	Inserted RCCA Bank Worth (IRW)	(+) 82	pcm
5.8.6.2.a	Rods Positioned from 0 to 229 Steps (RODS≤229) = (AMRSR) × (# of Rods Positioned from 0 to 229 Steps) = 5.8.4 × (# of Rods Positioned from 0 to 229 Steps)	(+) 0	pcm
5.8.6.2.b	Single Rod/Bank Positioned from 230 Steps to FOP (SR/B≥230)	(+) 0	pcm
5.8.6.2.c	Abnormal RCCA Configuration Worth (ARCW) = (RODS≤229) + (SR/B≥230) = 5.8.6.2.a + 5.8.6.2.b	(+) 0	pcm
5.8.7	Inoperable RCCA Worth (INOP RW) = (AMRSR) × (Number of Inoperable RCCA) = 5.8.4 × 5.5.6	(+) 1450	pcm
5.8.8	Available RCCA Worth = (ARI LMRSR) - (IRW) - (ARCW) - (INOP RW) = 5.8.3 - 5.8.5 - 5.8.6.2.c - 5.8.7	(+) 5267	pcm

Should be 2900 because 2 RCCAs Inoperable

Should be 3822 Mistake carried forward

Power Defect

5.8.9	Total Power Defect	(-) 2563	pcm

Shutdown Margin Verification

5.8.10	Actual Shutdown Margin = (Available RCCA Worth) + (Total Power Defect) = 5.8.8 + 5.8.9	(+) 2704	pcm
5.8.11	Required Shutdown Margin	(+) 1300	pcm

Should be 1259 Mistake carried forward. (1240 to 1270 pcm)

5.8.12 Actual Shutdown Margin ≥ Required Shutdown Margin? ☒ Yes (Acceptance Criteria Satisfied)

☐ No

Per Acceptance Criteria Step 6.0, TS 3.1.1.1 Applies.

Should be NO because Actual SDM is less than Required SDM

Completed By: *Robert Newhouse* Date: Today

Verified By: _____ Date: _____

KEY

This Form, when completed SHALL be retained for the life of the plant.

STPNOC

Job Performance Measure

SRO REVIEW ESF POWER AVAILABILITY SURVEILLANCE TS 3.8.1.1

JPM Number: NRC A6

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted JPM for use on LOT 22 NRC Exam.

SIMULATOR SETUP INSTRUCTIONS

This is an Admin JPM – No simulator setup instructions required.

INITIAL CONDITIONS

Unit 1 is at 100% power with a NORMAL electrical lineup. 0PSP03-EA-0002, ESF Power Availability, was just performed to support the surveillance requirement of TS 3.8.1.1.b due to ESF DG #11 being INOPERABLE for the last 4 days.

INITIATING CUE

As the Unit Supervisor you are to review the completed surveillance and document the results of your review on Step 5 of the Data Package Cover Sheet of 0PSP03-EA-0002, ESF Power Availability.

Note the following:

- All data collected for the Data Package has been verified to be correct.
- The Shift Manager will perform the Reportability Review portion of Step 5.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Determines that 0PSP03-EA-0002, ESF Power Availability, test is UNACCEPTABLE, TS 3.8.1.1 Action c now applies and that the LCO action should be entered.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Hand out Student Copy of 0PSP03-EA-0002, ESF Power Availability. A copy of Technical Specifications will be available to the student. When the student has reviewed the Initial Conditions & Initiating Cue and they have indicated they are ready to begin the JPM, then record the start time for the JPM. A KEY is provided for the Examiner.					
1	Perform a Test Results Second Review.	Reviews 0PSP03-EA-0002, ESF Power Availability, Data Package for accuracy.	___	___	___
*2	Complete Step 5 of Data Package Cover Sheet of 0PSP03-EA-0002, ESF Power Availability. **Cue:** **If the applicant begins to pursue a reportability determination, inform them that the Shift Manager will determine reportability.**	*Determines the following on the "Test Results Second Review" Step 5:* ***1) *Test Results – Unacceptable**** ***2) *Refer to T.S. – 3.8.1.1 Action 'c' applies**** *3) Is this condition a potentially reportable occurrence? – N/A per Initiating Cue* ***4) *Should an LCO action statement be entered? – YES**** *5) Fill out REMARKS section with words to the effect of:* *Surveillance Acceptance Criteria 6.1 is not satisfied. (Only 1 physically independent circuit exists with an inoperable ESF DG.) Technical Specification LCO action statement 3.8.1.1.a is not met and 3.8.1.1 Action 'c' should be entered.*	___	___	___
CUE	This JPM is complete				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: SRO REVIEW ESF POWER AVAILABILITY SURVEILLANCE TS 3.8.1.1
JPM Number: NRC A6 Revision Number: 0
Task Number and Title: SRO-12000, Authorize the Start of & Review Surveillance Tests.
K/A Number and Importance: 2.1.25 3.9/4.2
Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other
Alternate Path: ☐ Yes ☒ No
Task Designed For: SRO Only ☒; RO/SRO ☐; AO/RO/SRO ☐
Time Critical: ☐ Yes ☒ No
Level of Difficulty: 3
Reference(s): 0PSP03-EA-0002, ESF Power Availability, Rev. 38

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other
Testing Method: ☐ Simulate ☐ Perform
Estimated Time to Complete: 15 minutes **Actual Time Used:** _____ minutes
Critical Steps (*) 2
Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No
The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

Unit 1 is at 100% power with a NORMAL electrical lineup. 0PSP03-EA-0002, ESF Power Availability, was just performed to support the surveillance requirement of TS 3.8.1.1.b due to ESF DG #11 being INOPERABLE for the last 4 days.

INITIATING CUE

As the Unit Supervisor you are to review the completed surveillance and document the results of your review on Step 5 of the Data Package Cover Sheet of 0PSP03-EA-0002, ESF Power Availability.

Note the following:

- All data collected for the Data Package has been verified to be correct.
- The Shift Manager will perform the Reportability Review portion of Step 5.

TURN IN DATA PACKAGE WITH THIS JPM WHEN COMPLETED.

4. Test Results:

   __/_____ Acceptable _____ Unacceptable

   IF unacceptable, THEN immediately INFORM the Shift Manager.

   Ron Oldham _____ Today _____ Now _____
   Test Performer Date Time

Because of the mistakes on Data Sheet 1, the surveillance is UNACCEPTABLE.
See next page.
The 3 circled items represent the task standard.

5. Test Results Second Review:

   _____ Acceptable /_____ Unacceptable (complete section below)

   Refer to Technical Specification 3.8.1.1 Act. c LCO Action Requirements

   Is this condition a potentially reportable occurrence? _____ Yes

   Per the Initiating Cue, the Shift Manager will perform this section. _____ No

   Should an LCO Action Statement be entered? /_____ Yes

   _____ No

   Remarks _____

   _____

   _____

   _____

   _____

   _____

   _____

   Sometimes an added clarification is given in the remarks section and can be used to satisfy the Task Standard for the TS LCO Action Requirements above.
   It might read something like this:
   Surveillance Acceptance Criteria 6.1 is not satisfied. (Only 1 physically independent circuit exists with an inoperable ESF DG.) Technical Specification LCO action statement 3.8.1.1.a is not met and with an ESF DG already inoperable TS 3.8.1.1 Action 'c' should be entered.

   _____

   _____ _____ _____
   Shift Manager Date Time

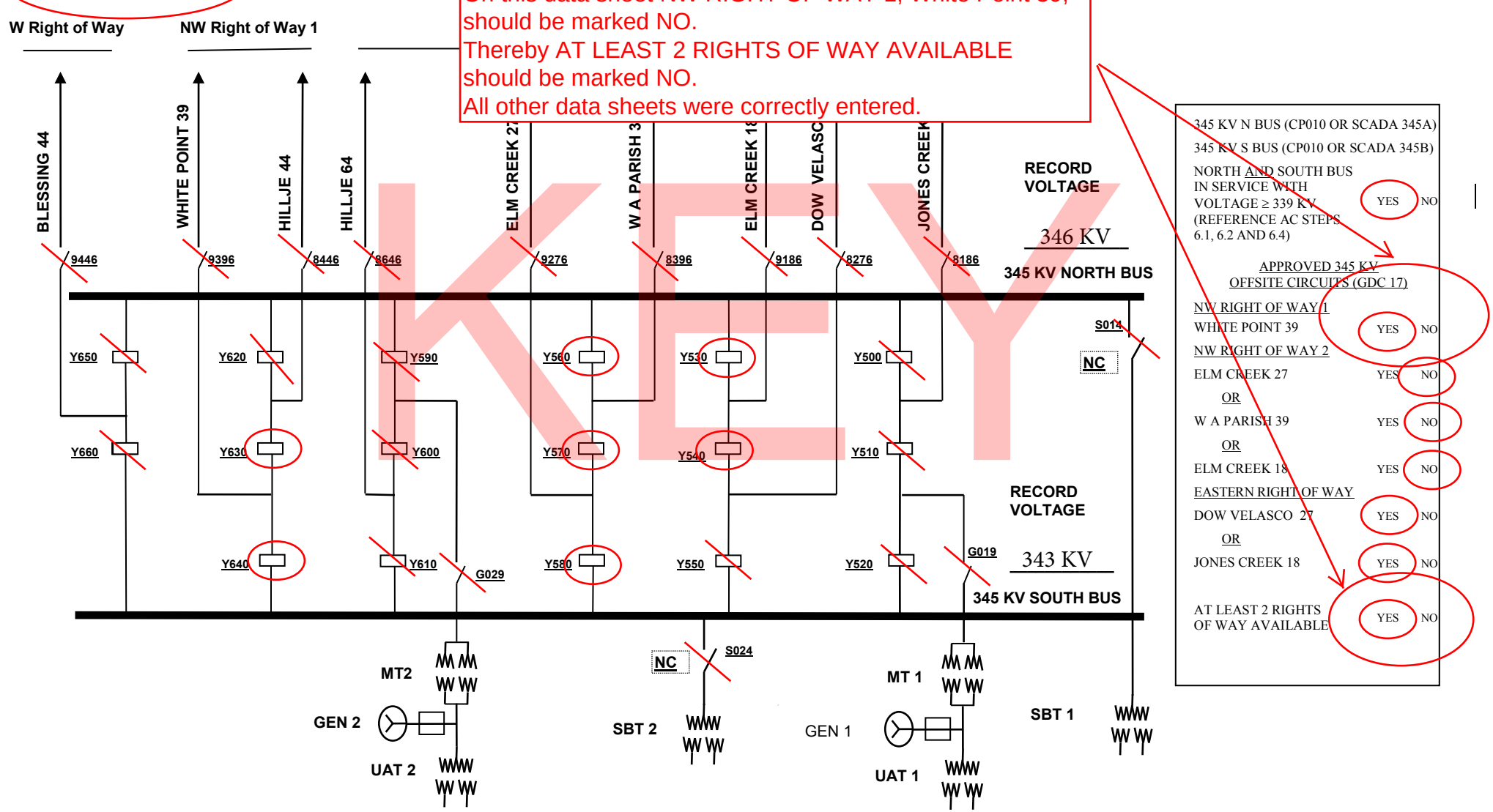
6. Data Review:

   _____ _____ _____
   Surveillance Coordinator Date Time

UNIT 1

UNIT 2

On this data sheet NW RIGHT OF WAY 1, White Point 39, should be marked NO.
Thereby AT LEAST 2 RIGHTS OF WAY AVAILABLE should be marked NO.
All other data sheets were correctly entered.



345 KV N BUS (CP010 OR SCADA 345A)
345 KV S BUS (CP010 OR SCADA 345B)

NORTH AND SOUTH BUS IN SERVICE WITH VOLTAGE ≥ 339 KV (REFERENCE AC STEPS 6.1, 6.2 AND 6.4) — YES / NO

APPROVED 345 KV OFFSITE CIRCUITS (GDC 17)

NW RIGHT OF WAY 1
WHITE POINT 39 — YES / NO

NW RIGHT OF WAY 2
ELM CREEK 27 — YES / NO
OR
W A PARISH 39 — YES / NO
OR
ELM CREEK 18 — YES / NO

EASTERN RIGHT OF WAY
DOW VELASCO 27 — YES / NO
OR
JONES CREEK 18 — YES / NO

AT LEAST 2 RIGHTS OF WAY AVAILABLE — YES / NO

STPNOC

Job Performance Measure

REVIEW AN EQUIPMENT CLEARANCE ORDER FOR SPENT FUEL POOL SKIMMER PUMP 2A

JPM Number: NRC A7

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Developed for LOT 22 NRC Exam

SIMULATOR SETUP INSTRUCTIONS

1. This is an Admin JPM.

INITIAL CONDITIONS:

Unit 2 is at 100% power.

Mechanical Maintenance has requested to replace a mechanical seal assembly on the Spent Fuel Pool Skimmer Pump (WAN 584059).

ORACLE is unavailable.

INITIATING CUE:

You are the Unit Supervisor working a weekend shift.

A Reactor Operator has prepared an equipment clearance for Spent Fuel Pool Skimmer Pump 2A.

You are to perform the Technical Review of the equipment clearance in accordance with 0PGP03-ZO-EC01A, Equipment Clearance Order Instructions.

The Reactor Operator was given the following directions while preparing the ECO:

- Isolate the pump at the closest boundary valves for draining.
- Restoration positions and components listed solely for restoration purposes are NOT required.
- Only one set of vent and drain valves is required. The vent and drain path used should be as close to the pump as possible.
- Double valve protection is NOT required.
- The next ECO number will be B90945.

Review the equipment clearance order.

- **If no errors are found then sign for the 'Tech Review By' and turn in to the examiner.**
- **If errors are found then document the errors prior to turning into the examiner.**

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Reviews an ECO which isolates and drains Spent Fuel Pool Skimmer Pump 2A in accordance with 0PGP03-ZO-EC01A, Equipment Clearance Order Instructions. Identifies two errors.

- *Circuit Breaker position should be OFF*
- *Isolation valve 2-FC-0053 position should be OPEN*

1	C		N2FCHS1403 - SPENT FUEL POOL SKIMMER PUMP 2A HANDSWITCH	Y	HANG	1	STOP		
2	D	B	MCC 2S1 CUBICLE C3 - SPENT FUEL POOL SKIMMER PUMP 2A BREAKER	Y	HANG	2	CLOSED		
3	D	B	7R212FC0104 - SFP SKIMMER PUMP DISCHARGE VALVE	Y	HANG	3	CLOSED		
4	D	B	7R212FC0001 - SFP SKIMMER PUMP SUCTION VALVE	Y	HANG	3	CLOSED		
5	D	B	7R212FC0053, SFP SKIMMER PUMP DISCHARGE TEST VALVE	Y	HANG	4	CLOSED		
6	D		7R212FC0064, SFP SKIMMER PUMP SKID DRAIN VALVE	Y	HANG	4	OPEN		

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Provide the following Student Handouts: • HO1 - Completed Form 3 • HO2 - Completed Form 9 • HO3 - 0PGP03-ZO-ECO1A, Equipment Clearance Order Instructions. This procedure will have the manual ECO forms. • HO4 - Completed Form 2, Equipment Clearance Order Request Form • HO5 - Work Instructions for WAN 584059 • HO6 - 9-E-PFBA #2 • HO7 - 9-E-FC02 #2 • HO8 - 9-F-05028 #2					
1	Review Student Handout material.	Student reviews the material.	___	___	___
NOTE: **The student should also use Form 10, ECO Technical Reviewer Checklist, but it is not required for this JPM.**					
2	Reviews Page 1 of Form 3:	Reviews the form: • ECO Number (2-18-B90945) • Unit 2 • Hazardous System – YES • Notify Fire Protection - NO • Notify Security – NO • What is being tagged? - Spent Fuel Pool Skimmer Pump 2A • TPNS - #7R212NPA202A	___	___	___
3	Reviews Page 2 of Form 3:	Reviews the form: • ECO Number (2-18-B90945) • Job Number – 1 • WAN – 584059 • Work Group – MM	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
4	Reviews Page 3 of Form 3:	Determines Line Items 1, 3, 4 and 6 are CORRECT.	___	___	___
***5**	Review page 3 of Form 3:	Determines Line Items 2 and 5 are INCORRECT: **NOTE:** • Line Item 2 – Spent Fuel Pool Skimmer Pump 2A Breaker MCC 2S1, Cubicle C3 – **Breaker should be OFF** • Line Item 5 – SFP Skimmer Pump Discharge Test Valve 2-FC-0053 – **Valve should be OPEN** **See Task Standard and KEY provided.**	___	___	___
CUE	This JPM is complete				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☒SRO

JPM Title: REVIEW AN EQUIPMENT CLEARANCE ORDER FOR SPENT FUEL POOL SKIMMER PUMP 2A

JPM Number: NRC A7 Revision Number: 0

Task Number and Title: 148210 (SRO), Authorize Equipment Clearances

K/A Number and Importance: 2.2.13 4.1/4.3

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: SRO Only ☒; RO/SRO ☐; AO/RO/SRO ☐

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 4

Reference(s): 0PGP03-ZO-ECO1A, Equipment Clearance Order Instructions, Rev. 29, 9-F-05028 #2, 9-E-PFBA-01#2, 9-E-FC02 #2

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: 25 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 5, 6, 7, 8

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS:

Unit 2 is at 100% power.

Mechanical Maintenance has requested to replace a mechanical seal assembly on the Spent Fuel Pool Skimmer Pump (WAN 584059).

ORACLE is unavailable.

INITIATING CUE:

You are the Unit Supervisor working a weekend shift.

A Reactor Operator has prepared an equipment clearance for Spent Fuel Pool Skimmer Pump 2A.

You are to perform the Technical Review of the equipment clearance in accordance with 0PGP03-ZO-EC01A, Equipment Clearance Order Instructions.

The Reactor Operator was given the following directions while preparing the ECO:

- Isolate the pump at the closest boundary valves for draining.
- Restoration positions and components listed solely for restoration purposes are NOT required.
- Only one set of vent and drain valves is required. The vent and drain path used should be as close to the pump as possible.
- Double valve protection is NOT required.
- The next ECO number will be B90945.

Review the equipment clearance order.

- **If no errors are found then sign for the 'Tech Review By' and turn in to the examiner.**
- **If errors are found then document the errors prior to turning into the examiner.**

ECO Number: *2* - *18* - *B90945* **Unit:** *2* **Page** *1* **of** *3*
Unit Year Number

Hazardous System? ☒ Yes ☐ No **Notify Fire Protection?** ☐ Yes ☒ No

Notify Security? ☐ Yes ☒ No

What Is Being Tagged? *Spent Fuel Pool Skimmer Pump 2A* **TPNS#** *7R212NPA202A*

Work Description: *Replace mechanical seal assembly*

Prepared By:	*Joe Slvotnik* Signature	*Today* Date	*Now* Time
Tech Review By:	Signature	Date	Time
Approved By:	Signature	Date	Time

Notes:

ECO Number: *2* - *18* - *B90945*

Page *2* of *3*

Unit Year Number

Job Number	Work Document WAN / CR / Procedure	Work Group	Job Addition		Ready for Work Group Acceptance	Work Group Sign ON (Print, Sign, Date Time)	Work Group Sign OFF (Print, Sign, Date Time)
			Add	SRO			
1	*584059*	*MM*					
(Work Description)							
(Work Description)							
(Work Description)							
(Work Description)							
(Work Description)							
(Work Description)							

ECO Number: 2 - 18 - B90945 (Unit - Year - Number)

Page 3 of 3

Line Number	Type	BOUNDARY	Component ID Or Instructions	Verification Required?	Action	Exe. Seq	Required Position	Performed By	Verified By
1	C		N2FCHS1403 - SPENT FUEL POOL SKIMMER PUMP 2A HANDSWITCH	Y	HANG	1	STOP		
2	D	B	MCC 2S1 CUBICLE C3 - SPENT FUEL POOL SKIMMER PUMP 2A BREAKER	Y	HANG	2	CLOSED		
3	D	B	7R212FC0104 - SFP SKIMMER PUMP DISCHARGE VALVE	Y	HANG	3	CLOSED		
4	D	B	7R212FC0001 - SFP SKIMMER PUMP SUCTION VALVE	Y	HANG	3	CLOSED		
5	D	B	7R212FC0053, SFP SKIMMER PUMP DISCHARGE TEST VALVE	Y	HANG	4	CLOSED		
6	D		7R212FC0064, SFP SKIMMER PUMP SKID DRAIN VALVE	Y	HANG	4	OPEN		

Critical Steps
Identify errors on line items 2 and 5.
Line item 2 the breaker REQUIRED POSITION should be OFF.
Line item 5 the valve REQUIRED POSITION should be OPEN.
NOTE:
1) 2-FC-0053 is the only valve that can de-pressurize the boundary. It must be tagged open with danger tag and marked as a boundary. 2-FC-0064 is a pump skid drain valve and not actually connected to the system.
2) The student should also use Form 10, ECO Technical Review Checklist, but it is not required for this JPM.

STPNOC

Job Performance Measure

DETERMINE PERSONNEL EXPOSURE LIMITS

JPM Number: NRC A8

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted JPM for use on the LOT 22 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

This is an Admin JPM – No simulator setup instructions required.

INITIAL CONDITIONS

Unit 1 is in a Site Area Emergency (SAE) due to an RCS Loss of Coolant Accident (LOCA) and Loss of Containment Integrity.

In an attempt to protect company assets, a Plant Operator will be required to go into a radiation area. The Plant Operator has worked at STP for only 4 months and previously worked as a radiation worker at another facility during this same calendar year.

INITIATING CUE

You are the Emergency Director.

Determine the MAXIMUM amount of exposure the Plant Operator can be authorized for in accordance with 0ERP01-ZV-IN06, Radiological Exposure Guidelines, for the situation given in the INITITIAL CONDITIONS.

The Plant Operators current calendar year radiation exposure is provided.

Provide the following data below to complete the JPM:

- The Plant Operator's current exposure used to determine Emergency Exposure Approval.

_____ REM TEDE

- The MAXIMUM amount of exposure the Emergency Director can authorize for the Plant Operator for the situation given in the INITIAL CONDITIONS.

_____ REM TEDE

- MAXIMUM Exposure Limit for the situation given in the INITIAL CONDITIONS.

_____ REM TEDE

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Determines the following:

- *The Plant Operator's current exposure used to determine Emergency Exposure Approval.*

___*1.095*___ *REM TEDE*

- *The MAXIMUM amount of exposure the Emergency Director can authorize for the Plant Operator for the situation given in the INITIAL CONDITIONS.*

___*8.905*___ *REM TEDE*

- *MAXIMUM Exposure Limit for the situation given in the INITIAL CONDITIONS.*

___*10*_____ *REM TEDE*

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
Note Provide Student Handouts HO1, HO2, HO3 and HO4. A KEY is not needed with this JPM. See TASK STANDARD on page 5 of 8.					
*1	Determines Emergency Exposure in accordance with 0ERP01-ZV-IN06, Radiological Exposure Guidelines.	Determines the following based on the Initiating Cue: • The Plant Operator's current exposure used to determine Emergency Exposure Approval. (Add exposure from STP AND Diablo Canyon - .240 + .855 = 1.095) ___1.095___ REM TEDE • The MAXIMUM amount of exposure the Emergency Director can authorize for the Plant Operator for the situation given in the INITIAL CONDITIONS. (Maximum Exposure Limit minus Current Exposure – 10 – 1.095 = 8.905) ___8.905___ REM TEDE • Exposure Limit for the situation given in the INITIAL CONDITIONS. (See Add 1 of 0ERP01-ZV-IN06) ___10_____ REM TEDE	___	___	___
CUE	This JPM is complete				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: DETERMINE PERSONNEL EXPOSURE LIMITS

JPM Number: A8 Revision Number: 0

Task Number and Title: SRO-12800, Activate the Emergency Plan

K/A Number and Importance: G2.3.4 3.2/3.7

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☒ SRO Only ☐ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 4

Reference(s): 0ERP01-ZV-IN06, Radiological Exposure Guidelines, Rev 7
10CFR20.1201, Occupational Dose Limits for Adults

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 1

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

Unit 1 is in a Site Area Emergency (SAE) due to an RCS Loss of Coolant Accident (LOCA) and Loss of Containment Integrity.

In an attempt to protect company assets, a Plant Operator will be required to go into a radiation area. The Plant Operator has worked at STP for only 4 months and previously worked as a radiation worker at another facility during this same calendar year.

INITIATING CUE

You are the Emergency Director.

Determine the MAXIMUM amount of exposure the Plant Operator can be authorized for in accordance with 0ERP01-ZV-IN06, Radiological Exposure Guidelines, for the situation given in the INITITIAL CONDITIONS.

The Plant Operators current calendar year radiation exposure is provided.

Provide the following data below to complete the JPM:

- The Plant Operator's current exposure used to determine Emergency Exposure Approval.

_____ REM TEDE

- The MAXIMUM amount of exposure the Emergency Director can authorize for the Plant Operator for the situation given in the INITIAL CONDITIONS.

_____ REM TEDE

- MAXIMUM Exposure Limit for the situation given in the INITIAL CONDITIONS.

_____ REM TEDE

STPNOC

Job Performance Measure

DECLARE EMERGENCY ACTION LEVELS

JPM Number: NRC A9

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted JPM for use on the LOT 22 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

This is an Admin JPM – No simulator setup instructions required.

JPM Administration:

1. Setup an area with a copy of the following references:
    - 0ERP01-ZV-SH01, Shift Manager, with an extra copy of Checklists 1 - 4
    - 0ERP01-ZV-IN01, Emergency Classification
    - Laminated Emergency Classification Charts (Fission Product Barriers, Hot Modes, All Modes, and Cold Modes)
2. Check and clean the laminated charts.
3. Inform the student this JPM is time critical.
4. Read the cue to the student and fill in the JPM Start Time when the student acknowledges the Initiating Cue.

INITIAL CONDITIONS

Unit 1 was in Mode 1 with the following activities in progress:

- A High Integrity Container (HIC) is being prepared for transport in the Rad Waste Truck Bay.
- A group of about 50 protesters have assembled just across FM 521 at the east entrance to the plant.

Subsequently the following occurs at the times listed:

- 0950 Hours – The HIC fell off of the transport truck while still in the Rad Waste Truck Bay.
- 1000 Hours – The Security Force Supervisor reports that the group of protesters are marching on the plant entrance road towards the protected area.
- 1003 Hours – The Unit 1 Crew manually initiates a Reactor Trip and Safety injection due to loss of reactor coolant in containment.
- 1005 Hours – RT-8010B, Unit Vent Radiation Monitor, is reading 2.0 E^{+07} µci/sec and slowly rising.

INITIATING CUE

You are the Emergency Director and you are to classify the event at its **MINIMUM** Emergency Action Level.

THIS JPM IS TIME CRITICAL

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

An SITE AREA EMERGENCY is declared on RS1, Release of gaseous radioactivity resulting in offsite dose greater than 100 mrem TEDE or 500 mrem THYROID CDE.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
Note Provide a copy of 0ERP01-ZV-IN01, Emergency Classification, and/or laminated copies of the Emergency Classification Charts from Addendum 4, 5, 6 and 7. The SITE AREA EMERGENCY classification is based on RS1, Release of gaseous radioactivity resulting in offsite dose greater than 100 mrem TEDE or 500 mrem THYROID CDE.					
*1	Classify the event in accordance with Addendum 1 in 0ERP01-ZV-IN01.	Classifies the event at the MINIMUM Emergency Action Level. SITE AREA EMERGENCY based on RS1 **Time Critical Stop Time _____** **NOTE:** **Two other possible classifications:** • **ALERT FA1 for loss of RCS** • **ALERT HA1 for a hostile action in the owner controlled area** **However, the SAE RS1 is the MINIMUM Emergency Action Level.**	___	___	___
2	Implement 0ERP01-ZV-SH01, Shift Manager.	0ERP01-ZV-SH01, Shift Manager, is implemented.	___	___	___
CUE	This JPM is complete (Must be completed within 15 minutes.)				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: DECLARE EMERGENCY ACTION LEVELS

JPM Number: A9 Revision Number: 0

Task Number and Title: SRO-12800, Activate the Emergency Plan

K/A Number and Importance: G2.4.41 2.9/4.6

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☒ SRO Only ☐ RO/SRO ☐ AO/RO/SRO

Time Critical: ☒ Yes ☐ No

Level of Difficulty: 4

Reference(s): 0ERP01-ZV-IN01, Emergency Classification, Rev 10
0ERP01-ZV-SH01, Shift Manager, Rev 31

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 1

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

Unit 1 was in Mode 1 with the following activities in progress:

- A High Integrity Container (HIC) is being prepared for transport in the Rad Waste Truck Bay.
- A group of about 50 protesters have assembled just across FM 521 at the east entrance to the plant.

Subsequently the following occurs at the times listed:

- 0950 Hours – The HIC fell off of the transport truck while still in the Rad Waste Truck Bay.
- 1000 Hours – The Security Force Supervisor reports that the group of protesters are marching on the plant entrance road towards the protected area.
- 1003 Hours – The Unit 1 Crew manually initiates a Reactor Trip and Safety injection due to loss of reactor coolant in containment.
- 1005 Hours – RT-8010B, Unit Vent Radiation Monitor, is reading 2.0 E^{+07} µci/sec and slowly rising.

INITIATING CUE

You are the Emergency Director and you are to classify the event at its **MINIMUM** Emergency Action Level.

THIS JPM IS TIME CRITICAL

Record MINIMUM Emergency Action Level below:

SITE AREA EMERGENCY	RS1
Initiating Condition: Release of gaseous radioactivity resulting in offsite dose greater than 100 mrem TEDE or 500 mrem THYROID CDE.	
Emergency Action Levels (1 or 2 or 3) Operating Mode Applicability: All	

Notes:

- The Emergency Director should declare the SITE AREA EMERGENCY promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.
- If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 15 minutes.
- If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer VALID for classification purposes.
- The pre-calculated effluent monitor values presented in EAL #1 should be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available.

EAL-1

Reading on **ANY** of the following radiation monitors greater than the values listed in Table R1 column "SAE" for 15 minutes or longer.

Table R1: Effluent Monitors

Release Point	Monitor	GE	SAE	ALERT	UE
Unit Vent	RT-8010B	1.50 E+08 µCi/sec	1.50 E+07 µCi/sec	1.50 E+06 µCi/sec	1.40 E+05 µCi/sec
Main Steam Lines	RT-8046 thru 8049	4.00 E+02 µCi/ml	4.00 E+01 µCi/ml	4.00 E+00 µCi/ml	5.00 E-02 µCi/ml

EAL-2

Dose assessment using actual meteorology indicates doses greater than 100 mrem TEDE or 500 mrem THYROID CDE at or beyond the SITE BOUNDARY.

EAL-3

Field survey results indicate **EITHER** of the following at or beyond the SITE BOUNDARY:

- Closed window dose rates greater than 100 mR/hr expected to continue for 60 minutes or longer.

OR

- Analyses of field survey samples indicate THYROID CDE greater than 500 mrem for one hour of inhalation.

Basis:

RS1$_B$

This IC addresses a release of gaseous radioactivity that results in projected or actual offsite doses greater than or equal to 10% of the EPA PROTECTIVE ACTION GUIDES (PAGs). It includes both monitored and un-monitored releases. Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public.

Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of plant conditions alone. The inclusion of both plant condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.

The TEDE dose is set at 10% of the EPA PAG of 1,000 mrem while the 500 mrem THYROID CDE was established in consideration of the 1:5 ratio of the EPA PAG for TEDE and THYROID CDE.

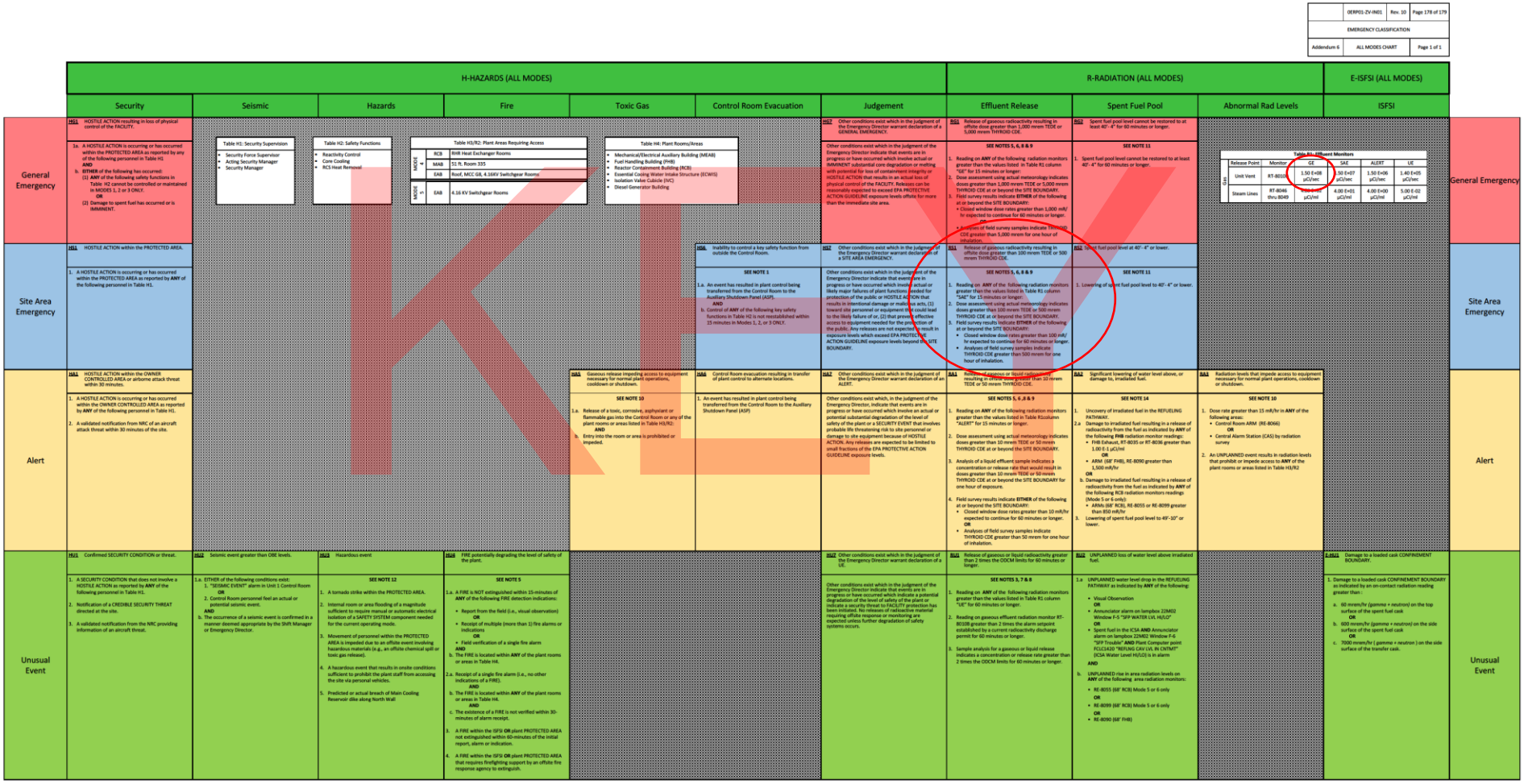
Classification based on effluent monitor readings assumes that a release path to the environment is established. If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer VALID for classification purposes.

Escalation of the EMERGENCY CLASSIFICATION LEVEL would be via IC RG1.

EAL SELECTION BASES

The Unit Vent and Main Steam Line monitor readings were included in this EAL because they give instantaneous indications of a monitored gaseous release meeting the EAL threshold values of 100 mrem TEDE or 500 mrem CDE THYROID at the SITE BOUNDARY. Gaseous releases from the plant are monitored by the Unit Vent. The Main Steam Line monitor readings correspond to a concentration that would result in a release rate meeting the EAL threshold values if there were a release via the Power Operated Relief Valves (PORVs) or Safety Relief Valves.

The Unit Vent and Main Steam Line release values are based on Calculation No. STPNOC013-CALC-002 Rev.2. The adjusted values used in this EAL were conservatively truncated by less than 1% of the calculated values to ensure they are readily assessable.


H-HAZARDS (ALL MODES)
R-RADIATION (ALL MODES)
E-ISFSI (ALL MODES)
Security
Seismic
Hazards
Fire
Toxic Gas
Control Room Evacuation
Judgement
Effluent Release
Spent Fuel Pool
Abnormal Rad Levels
ISFSI
General Emergency
Site Area Emergency
Alert
Unusual Event
Table H1: Security Supervision
Table H2: Safety Functions
Table H3/R2: Plant Areas Requiring Access
Table H4: Plant Rooms/Areas
Table R1: Effluent Monitors

ES-301 Control Room/In-Plant Systems Outline Form ES-301-2

Facility: South Texas Project Date of Examination: 10-22-18

Exam Level: RO ■ SRO-I □ SRO-U □ Operating Test No.: LOT 22 NRC

Control Room Systems:* 8 for RO, 7 for SRO-I, and 2 or 3 for SRO-U		
System / JPM Title	**Type Code***	**Safety Function**
a. (S1) Start an RCP and Respond to High Temperature KA: 002 A3.03 (4.4/4.6)	A,D,L,S	2
b. (S2) Fill and SI Accumulator KA: 006 A4.07 (4.4/4.4)	D,EN,S	3
c. (S3) On Loss of ESF BUS, Manually Start DG and Load to BUS KA: 064 A4.06 (3.9/3.9)	A,E,EN,N,S	6
d. (S4) Containment Spray Pump Performance Test KA: 026 A2.08 (3.2/3.7)	A,D,S	5
e. (S5) Start an RHR Pump during Mode 4. KA: 005 A4.01 (3.6/3.4)	L,M,S	4P
f. (S6) Perform CCW Valve Operability Test KA: 008 A4.01 (3.3/3.4)	D,P,S	8
g. (S7) Monthly Control Rod Operability Test KA: 001 A4.03(4.0/3.7)	M,S	1
h. (S8) Respond to Failed Source Range NI KA: 015 A4.03 (3.8/3.9)	D,L,S	7
In-Plant Systems:* 3 for RO, 3 for SRO-I, and 3 or 2 for SRO-U		
i. (P1) Locally Operate a SG PORV. KA: 039 A4.07(2.8/2.9)	D,E,L,P	4S
j. (P2) Commence Liquid Waste Release KA: 068 A4.02 (3.2/3.1)	A,D,P,R	9
k. (P3) Place Rod Drive MG Set in Service KA: 001 A4.08 (3.7/3.4)	A,D,E,L	1

* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions, all 5 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 RO/SRO-I/SRO-U
(A)lternate Path	4-6 / 4-6 / 2-3
(C)ontrol Room	
(D)irect from Bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN) gineered Safety Features	≥ 1 / ≥ 1 / ≥ 1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: South Texas Project Date of Examination: 10-22-18

Exam Level: RO ☐ SRO-I ■ SRO-U ☐ Operating Test No.: LOT 22 NRC

Control Room Systems:* 8 for RO, 7 for SRO-I, and 2 or 3 for SRO-U

System / JPM Title	Type Code*	Safety Function
a. (S1) Start an RCP and Respond to High Temperature KA: 002 A3.03 (4.4/4.6)	A,D,L,S	2
b. (S2) Fill and SI Accumulator KA: 006 A4.07 (4.4/4.4)	D,EN,S	3
c. (S3) On Loss of ESF BUS, Manually Start DG and Load to BUS KA: 064 A4.06 (3.9/3.9)	A,E,EN,N,S	6
d. (S4) Containment Spray Pump Performance Test KA: 026 A2.08 (3.2/3.7)	A,D,S	5
e. (S5) Start an RHR Pump during Mode 4. KA: 005 A4.01 (3.6/3.4)	L,M,S	4P
f. (S6) Perform CCW Valve Operability Test KA: 008 A4.01 (3.3/3.4)	D,P,S	8
g. (S7) Monthly Control Rod Operability Test KA: 001 A4.03(4.0/3.7)	M,S	1
h.		
In-Plant Systems:* 3 for RO, 3 for SRO-I, and 3 or 2 for SRO-U		
i. (P1) Locally Operate a SG PORV. KA: 039 A4.07(2.8/2.9)	D,E,L,P	4S
j. (P2) Commence Liquid Waste Release KA: 068 A4.02 (3.2/3.1)	A,D,P,R	9
k. (P3) Place Rod Drive MG Set in Service KA: 001 A4.08 (3.7/3.4)	A,D,E,L	1

* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions, all 5 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 RO/SRO-I/SRO-U
(A)lternate Path	4-6 / 4-6 / 2-3
(C)ontrol Room	
(D)irect from Bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN) gineered Safety Features	≥ 1 / ≥ 1 / ≥ 1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: South Texas Project Date of Examination: 10-22-18

Exam Level: RO ☐ SRO-I ☐ SRO-U ■ Operating Test No.: LOT 22 NRC

Control Room Systems:* 8 for RO, 7 for SRO-I, and 2 or 3 for SRO-U

System / JPM Title	Type Code*	Safety Function
a. (S1) Start an RCP and Respond to High Temperature KA: 002 A3.03 (4.4/4.6)	A,D,L,S	2
b. (S2) Fill and SI Accumulator KA: 006 A4.07 (4.4/4.4)	D,EN,S	3
c. (S3) On Loss of ESF BUS, Manually Start DG and Load to BUS KA: 064 A4.06 (3.9/3.9)	A,E,EN,N,S	6
d.		
e.		
f.		
g.		
h.		
In-Plant Systems:* 3 for RO, 3 for SRO-I, and 3 or 2 for SRO-U		
i. (P1) Locally Operate a SG PORV. KA: 039 A4.07(2.8/2.9)	D,E,L,P	4S
j. (P2) Commence Liquid Waste Release KA: 068 A4.02 (3.2/3.1)	A,D,P,R	9
k.		

* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions, all 5 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 RO/SRO-I/SRO-U
(A)lternate Path	4-6 / 4-6 / 2-3
(C)ontrol Room	
(D)irect from Bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN) gineered Safety Features	≥ 1 / ≥ 1 / ≥ 1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

STP LOT-22
NRC Systems JPM Description

Control Room Systems JPMs

(S1) Start RCP and Respond to High Temperature
Demonstrate the ability to start a Reactor Coolant Pump and take appropriate action when a Reactor Coolant Pump critical parameter is not within band in accordance with 0POP02-RC-0004, Operation of Reactor Coolant Pumps, and 0POP04-RC-0002, Reactor Coolant Pump Off Normal. This is an Alternate Path JPM.

(S2) Fill an SI Accumulator
Demonstrate the ability to control Safety Injection System pumps and valves in order to fill a Safety Injection Accumulator to the proper level in accordance with 0POP02-SI-0001, Safety Injection Accumulators.

(S3) On Loss of ESF Bus, Manually Start DG and Load to Bus
On a loss of power, demonstrate the ability to start an ESF DG and power the associated 4.16KV Bus in accordance with 0POP04-AE-0001, First Response to Loss of any or all 13.8 KV or 4.16 KIV Bus. This is an Alternate Path JPM.

(S4) Containment Spray Pump Performance Test
Demonstrate the ability to operate the Containment Spray Pumps in accordance with 0POP07-CS-0001, Containment Spray Pump 1A(2A) Functional Test. This is an Alternate Path JPM.

(S5) Start an RHR Pump during Mode 4
Demonstrate the ability to operate RHR pumps to control RCS temperature in accordance with 0POP02-RH-0001, Residual Heat Removal System Operation.

(S6) Perform CCW Valve Operability Test
Demonstrate the ability to perform a CCW System Valve Operability Surveillance in accordance with 0PSP03-CC-0008, Component Cooling Water System Train 1B(2B) Valve Operability Test.

(S7) Control Rod Operability Test
Demonstrate the ability to operate the Control Rod Mode Select switch in other than Auto or Manual and monitor RCS response in accordance with 0POP03-RS-0001, Control Rod Operability.

(S8) Respond to Failed Source Range NI
Demonstrate the ability to respond to the failure of a Source Range Nuclear Instrument in accordance with 0POP04-NI-0001, Nuclear Instrument Malfunction.

NOTE: All Control Room JPMs will be performed dynamically in the Simulator. The following JPMs will be performed in pairs; S1 & S2 together, S4 & S5 together and S6 & S7 together. JPMs S3 and S8 will be performed separately.

STP LOT-22
NRC Systems JPM Description

In Plant Systems JPMs

(P1) Locally Operate a SG PORV
Demonstrate the ability to locally operate a SG PORV in accordance with 0POP05-EO-EC00, Loss of All AC Power, Addendum 6.

(P2) Commence a Liquid Waste Release
Demonstrate the ability to perform a rad waste release and terminate the release when needed in accordance with 0POP02-WL-0100, Liquid Waste Release. This is an Alternate Path JPM.

(P3) Place a Rod Drive MG Set in Service
Demonstrate the ability to operate and monitor a Rod Drive MG Set in accordance with 0POP02-RS-0001, Rod Control. This is an Alternate Path JPM.

STPNOC

Job Performance Measure

START AN RCP AND RESPOND TO HIGH MOTOR WINDING TEMPERATURE

JPM Number: NRC S1

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted JPM for use on the LOT 22 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

NOTE: The following IC setup may be modified depending on JPMs that may be performed at the same time with this one.

IC Setup

1. This JPM is performed in Mode 3 at NOP/NOT. RCPs 1A, 1B and 1D will be running. RCP 1C will be secured.
2. Ensure RCP 1C seal injection flow is > 8 gpm.
3. Set 13.8KV Bus 1H to the preferred electrical lineup. (NOT CROSSTIED) Refer to NOTE prior to Step 3.10 of 0POP02-CV-0004, Operation of Reactor Coolant Pump.
4. Set H2A001_TE689CTVSP to 0.75 when RCP 1C flow is > 90% and separately set H2A001_TE689CTVSP to 0.9, 5 seconds after RCP 1C flow is > 90%, with a 5 minute ramp.
5. Save IC to a designated IC for LOT NRC/Audit Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 22 NRC Exam this JPM is scheduled to be performed with JPM S2
2. Ensure Radio volume for both stations are set to a reasonable level.
3. Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
4. Check and clean the following procedures:
   - 0POP04-RC-0002, Reactor Coolant Pump Off Normal
   - POP09 procedures for panels 2, 4 and 5

NOTE: It is okay to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.

5. Reset the simulator to IC 208 and verify the following:
6. Red light at the end of CP-010 is out
7. ICS annunciators have stopped counting up
8. FROM THE BOOTH, place simulator in run and quickly silence/acknowledge/reset alarms, **including plant computer/ICS alarms.**
9. PLACE simulator in FREEZE.
10. When the student and the examiners are ready to proceed, place the simulator in RUN.
11. There is no simulator lesson plan for this JPM.

Booth Instructor Actions

1. None

INITIAL CONDITIONS

Unit 1 is in Mode 3 at NOP/NOT. RCPs 1A, 1B and 1D are in operation.

INITIATING CUE

The Unit Supervisor directs you to start RCP 1C in accordance with Section 9.0 of 0POP02-RC-0004, Operation of Reactor Coolant Pump.

NOTE:

- All Section 3.0 Prerequisites have been met.
- Section 6.0 has been completed satisfactorily.
- RCPs 1A, 1B and 1D have been running for greater than 5 minutes.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Starts RCP 1C Oil Lift Pump, starts RCP 1C, and, in accordance with 0POP02-RC-0004, Operation of Reactor Coolant Pump, and/or 0POP04-RC-0002, Reactor Coolant Pump Off Normal, secures RCP 1C due to high stator winding temperature.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE If allowed by the examiner, handout the provided copy of 0POP02-RC-0004, Operation of Reactor Coolant Pump, to student for review of Section 3.0 Prerequisites and Section 4.0 Notes & Precautions prior to the start of the JPM.					
1	ENSURE Section 6.0 of this procedure has been completed. (Step 9.1)	Ensures section 6.0 has been completed. **Note:** Section 6.0 has been completed per the Initiating Cue.	___	___	___
2	ENSURE the Unit Supervisor/Shift Manager has reviewed 7300/SSPS normalization status. (Step 9.2) **Cue:** **If asked, as Unit Supervisor, report that 7300/SSPS normalization is not installed.**	Ensures the status of 7300/SSPS normalization.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
3	CHECK the following annunciators extinguished. IF any annunciators listed below are NOT extinguished, THEN PERFORM an evaluation of the annunciator's impact on RCP operation PRIOR to pump start: "MTR AIR CLR CCW FLOW LO" Lampbox 2M03, Window A-4 "RCP 1C SEAL WTR INJ FLOW LO" Lampbox 4M07, Window A-5 "RCP 1C NO 1 SEAL DP LO" Lampbox 4M07, Window A-6 "RCP 1C NO 1 SEAL LKF FLOW HI/LO" Lampbox 4M07, Window B-5 "RCP 1C STDPIPE LVL HI" Lampbox 4M07, Window B-6 "RCP 1C NO 2 SEAL LKF FLOW HI" Lampbox 4M07, Window C-5 "RCP 1C STDPIPE LVL LO" Lampbox 4M07, Window C-6 "RCP 1C THERM BAR CCW FLOW/TEMP TRBL" Lampbox 4M07, Window D-6 "SEAL WTR INJ TEMP HI" Lampbox 4M08, Window C-1 "RCP 1C UPPR OIL RSVR LVL HI/LO" Lampbox 5M02, Window C-3 "RCP 1C LOWR OIL RSVR LVL HI/LO" Lampbox 5M02, Window D-3 "RCP CCW FLOW LO" Lampbox 5M02, Window E-1 (Step 9.3)	Checks that all listed annunciators are clear.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
4	VERIFY RCP 1C SEAL INJ FLOW FT-0146 is between 8 and 13 gpm on "RCP 1C SEAL FLOW FR-0158". (Step 9.4)	Verifies seal injection flow between 8 and 13 gpm for RCP 1C. **NOTE:** **RCP 1C is right at 8 gpm so the operator may make an adjustment to optimize flow.**	___	___	___
5	IF RCP 1C No. 1 Seal leakoff flow is high and RCP operation to assist Number 1 Seal normal seating is desired, THEN N/A step 9.6 (Step 9.5)	Does NOT N/A step 9.6 as No. 1 Seal leakoff flow is NOT high and operation to assist the No. 1 seal is NOT desired.	___	___	___
6	VERIFY RCP 1C No. 1 seal water leakoff flow, as indicated on "RCP 1C SEAL FLOW FR-0158", is in the normal operating range per Addendum 1, RCP Number 1 Seal Leakoff Normal Operating Range. (Step 9.6)	Uses Addendum 1 to verify RCP 1C No. 1 seal leakoff flow is in the normal range.	___	___	___
7	VERIFY RCP 1C No. 1 seal differential pressure is GREATER THAN 250 psid on "SEAL 1 DP PI-0154". (Step 9.7)	Verifies RCP 1C No. 1 seal DP is > 250 psid.	___	___	___
8	ENSURE RCP 1C "SEAL NO 1 LKF ISOL FV-3156" is OPEN. (Step 9.8)	Ensures RCP 1C "SEAL NO 1 LKF ISOL FV-3156" is OPEN. **Note:** Valve will already be open.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
9	VERIFY seal water injection temperature LESS THAN 135°F on "TEMP TI-0216". (Step 9.9)	Verifies seal water injection temperature < 135°F. **Note:** TI-0216 is on CP-004.	___	___	___
10	WHEN RCS Temperature is LESS THAN 140°F, THEN ENSURE **NO** MORE THAN three RCPs are in operation. (Step 9.10)	Only 3 RCPs are in operation and RCS temperature is above 140°F.	___	___	___
*11	START RCP 1C "OIL LIFT PUMP" by momentarily turning its handswitch to the START position. (Step 9.11)	Starts RCP 1C Oil Lift Pump.	___	___	___
12	VERIFY the RCP 1C blue "START PERM" indicator light illuminates. (Step 9.12)	Verifies blue start permissive light for RCP 1C comes on.	___	___	___
*13	WHEN the RCP 1C blue "START PERM" has been ON for at least two minutes, THEN START "RCP 1C" by momentarily turning its handswitch to the START position. (Step 9.13) **CUE:** **If Operator starts to make a PA announcement then inform the operator a PA announcement has been made.**	**Note:** **Time compression may be used by the examiner if desired.** Starts RCP 1C.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
14	VERIFY loop C flow increases to GREATER THAN 90% on "LOOP C FLOW FI-0437A". (Step 9.14)	Verifies Loop 1C flow rises to > 90%. **NOTE:** **When RCS flow reaches 90% RCP 1C Motor Winding Temperature will rise above 310°F which is a requirement to secure the RCP.** **An ICS temperature alarm will come in indicating that RCP 1C motor winding temperature is rising.**	___	___	___
Start Alternate Path					
*15	STOP RCP 1C	Stops RCP 1C. **Note:** **0POP02-RC-0004, Operation of Reactor Coolant Pump, Step 4.19, has the operator GO TO 0POP04-RC-0002, Reactor Coolant Pump Off Normal, if a RCP Motor Winding Temperature is ≥ 310°F.** **The CIP of 0POP04-RC-0002, Reactor Coolant Pump Off Normal, then requires that the affected RCP be STOPPED if Motor Winding Temperature is ≥ 310°F.**	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: START AN RCP AND RESPOND TO HIGH MOTOR WINDING TEMPERATURE

JPM Number: NRC S1 Revision Number: 0

Task Number and Title: 86350, Respond to Reactor Coolant Pump Off Normal

K/A Number and Importance: 002 A3.03 4.4/4.6

Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Alternate Path: ☒ Yes ☐ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 3

Reference(s): 0POP02-RC-0004, Operation of Reactor Coolant Pump, Rev. 38
0POP04-RC-0002, Reactor Coolant Pump Off Normal, Rev. 41

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 11, 13, 15

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

Unit 1 is in Mode 3 at NOP/NOT. RCPs 1A, 1B and 1D are in operation.

INITIATING CUE

The Unit Supervisor directs you to start RCP 1C in accordance with Section 9.0 of 0POP02-RC-0004, Operation of Reactor Coolant Pump.

NOTE:

- All Section 3.0 Prerequisites have been met.
- Section 6.0 has been completed satisfactorily.
- RCPs 1A, 1B and 1D have been running for greater than 5 minutes.

STPNOC

Job Performance Measure

FILL AN SI ACCUMULATOR

JPM Number: NRC S2

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted JPM for use on the LOT 22 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

NOTE: The following IC setup may be modified depending on JPMs that may be performed at the same time with this one.

IC Setup

1. This JPM can performed in any Mode with the Accumulators filled and pressurized.
2. Using 0POP02-SI-0001, Safety Injection Accumulators, lower Accumulator Tank 1A level to about 8825 gallons and enough to bring in Accumulator Tank 1A HI/LO level alarm.
3. Save IC to a designated IC for LOT NRC/Audit Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 22 NRC Exam this JPM is scheduled to be performed with JPM S1
2. Ensure Radio volume for both stations are set to a reasonable level.
3. Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
4. Check and clean the following procedures:
   - 0POP02-SI-0001, Safety Injection Accumulators
   - POP09 procedures for panel 1

NOTE: It is okay to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.

5. Reset the simulator to IC 208 and verify the following:
6. Red light at the end of CP-010 is out
7. ICS annunciators have stopped counting up
8. FROM THE BOOTH, place simulator in run and quickly silence/acknowledge/reset alarms, **including plant computer/ICS alarms.**
9. PLACE simulator in FREEZE.
10. When the student and the examiners are ready to proceed, place the simulator in RUN.
11. There is no simulator lesson plan for this JPM.

Booth Instructor Actions

1. None

INITIAL CONDITIONS

The Unit is in Mode 3. The “ACC TK 1A LEVEL HI/LO” (1M02-B3) alarm was received. A low level in the “1A” Accumulator has been verified to be valid.

The current “1A” SI Accumulator Boron Concentration is 2850 ppm.

All other accumulator pressures and levels are in their normal green bands.

INITIATING CUE

The Unit Supervisor directs you to restore level in the “1A” Accumulator per 0POP02-SI-0001, Safety Injection Accumulators, Section 5.0, Filling Accumulators.

Prerequisites have been verified:

- 0POP02-SI-0002, Safety Injection System Initial Lineup, is complete.
- Instrument Air is in service and available per 0POP02-IA-0001, Instrument Air.
- High Pressure N2 is in service per 0POP02-NI-0001, High Pressure N2 System, Section 7.0.
- There is no maintenance in progress affecting the ability to vent RHR through the SI test lines or RHR sample lines.

A Plant Operator is available locally.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator’s Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the “Comment Number” column on the following pages. Then annotate that comment in the “Comments” section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site’s appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

See Task Standard on next page.

Task Standard:

Starts HHSI Pump 1A; opens Accumulator 1A Fill Valve, SI-FV-3973, to begin filing SI Accumulator 1A & clear "ACC TK 1A LEVEL HI/LO" annunciator; closes SI-FV-3973 prior to "ACC TK 1A LEVEL HI/LO" annunciator coming back in due to high level or exceeding the TS limit of 9100 gallons; and then secures HHSI Pump 1A.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE A student handout is NOT provided with this JPM. Use the simulator copy of the procedure ensuring that it is clean before beginning. If allowed by the examiner, handout a clean copy (from the simulator or LOR class room) of 0POP02-SI-0001, Safety Injection Accumulators, to student for review of Section 3.0 Prerequisites and Section 4.0 Notes & Precautions prior to the start of the JPM.					
1	IF Reactor Coolant System Pressure is less than 1900 psig, THEN ISOLATE the High Head Safety Injection Pump from RCS by performing the following: (Step 5.1) **CUE:** **If asked, 0PSP03-RC-0006, RCS Inventory, is NOT in progress.**	N/As all steps associated with step 5.1 due to RCS pressure > 1900 psig.	___	___	___
2	VERIFY OPEN High Head Safety Injection (HHSI) Pump "MINI FLOW ISOL" valves for the train associated with the accumulator to be filled. (Step 5.2)	Verifies SI-MOV-0011A and 0012A are both open. **NOTE:** **Both valves are already open.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
3	VERIFY OPEN High Head Safety Injection (HHSI) "PUMP DISCH ISOL" valve for the train associated with the accumulator to be filled. (Step 5.3)	Verifies SI-MOV-0004A is open. **NOTE:** **This valve is already open.**	___	___	___
4	VERIFY OPEN "RWST TO SI SUCT HDR ISOL" valve for the train associated with the accumulator to be filled. (Step 5.4)	Verifies SI-MOV-0001A is open. **NOTE:** **This valve is already open.**	___	___	___
5	ENSURE associated train's Emergency Diesel Generator for the pump to be started in the next step is **NOT** being paralleled OR operated in parallel with offsite power. (Step 5.5)	Verifies that ESF DG #11 is not running paralleled to offsite power. **NOTE:** **ESF DG #11 is not running.**	___	___	___
*6	START HHSI pump for the train associated with the accumulator to be filled. (Step 5.6) **CUE:** **Plant Operator in the field, if asked, reports that HHSI Pump 1A is good for a start.** **AND** **After the pump is started, if asked, reports that HHSI Pump 1A is running SAT.**	Starts HHSI Pump 1A. **NOTE:** **If the Operator starts to make a PA announcement tell the Operator an announcement has been made.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*7	OPEN HHSI Pump Discharge to "ACC FILL ISOL" valve for the train associated with the accumulator to be filled. (Step 5.7)	Opens Accumulator 1A Fill Valve SI-FV-3973 to begin filing SI Accumulator 1A. **NOTE:** **When this valve is opened, a BYP/INOP alarm will sound. This is an expected condition for re-positioning this valve.** **ACC TK 1A LEVEL HI/LO alarm will clear when level rises above 8858 gallons.**	___	___	___
8	MONITOR level AND pressure of the accumulator being filled to ensure that 9076.0 gallons OR 643.7 psig is **NOT** exceeded. (Step 5.8)	Monitors Accumulator 1A level and pressure on the following computer points: • Plant Computer point SILA0950 / SILA0951 • Plant Computer point SIPA0960 / SIPA0961 **NOTE:** **Accumulator pressure should not exceed 643.7 psig if level is not raised above 9074 gallons.** **The Operator may pull up these ICS Computer Points prior to getting to this step because of the short amount of time it takes to fill the accumulator.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE: **Critical Step #9 - ACC TK 1A LEVEL HI/LO alarm will come back in if level rises above 9074 gallons. The TS limit is 9100 gallons. A note prior to procedure step 5.8 states "During fill, Use conservatism to prevent actuating the alarm OR exceeding the limit of Technical Specification 3.5.1." Because of this note critical step #9 will NOT be completed satisfactorily if ACC TK 1A LEVEL HI/LO alarm comes back in due to high level (9074 gallons) or the TS limit of 9100 gallons is exceeded.**					
*9	WHEN "ACC 1A(2A), 1B(2B), 1C(2C) TK HI/LO" Annunciator is reset AND the required level is obtained for the accumulator being filled, THEN CLOSE the "ACC FILL ISOL" valve for the accumulator being filled. (Step 5.9)	Closes Accumulator 1A Fill Valve SI-FV-3973 to stop filing SI Accumulator 1A.	___	___	___
NOTE: Critical Step #10 - A note prior to procedure step 5.8 states "During fill, IF an Accumulator level reaches 9050 gallons on either of the control board indications, THEN the HHSI pump should be IMMEDIATELY secured to prevent overfill of the Accumulator." Because of this note the operator may stop HHSI Pump 1A prior to procedure step 5.10 if level rises above 9050 gallons.					
*10	STOP HHSI Pump that was used to fill the accumulator. (Step 5.10)	Stops HHSI Pump 1A.	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: FILL AN SI ACCUMULATOR

JPM Number: NRC S2 Revision Number: 0

Task Number and Title: 29650, Fill a Safety Injection Accumulator

K/A Number and Importance: 006 A4.07 4.4/4.4

Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 3

Reference(s): 0POP02-SI-0001, Safety Injection Accumulators, Rev. 39

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 6, 7, 9, 10

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

The Unit is in Mode 3. The “ACC TK 1A LEVEL HI/LO” (1M02-B3) alarm was received. A low level in the “1A” Accumulator has been verified to be valid.

The current “1A” SI Accumulator Boron Concentration is 2850 ppm.

All other accumulator pressures and levels are in their normal green bands.

INITIATING CUE

The Unit Supervisor directs you to restore level in the “1A” Accumulator per 0POP02-SI-0001, Safety Injection Accumulators, Section 5.0, Filling Accumulators.

Prerequisites have been verified:

- 0POP02-SI-0002, Safety Injection System Initial Lineup, is complete.
- Instrument Air is in service and available per 0POP02-IA-0001, Instrument Air.
- High Pressure N2 is in service per 0POP02-NI-0001, High Pressure N2 System, Section 7.0.
- There is no maintenance in progress affecting the ability to vent RHR through the SI test lines or RHR sample lines.

A Plant Operator is available locally.

STPNOC

Job Performance Measure

ON LOSS OF ESF BUS, MANUALLY START DG AND LOAD TO BUS

JPM Number: NRC S3

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted JPM for use on the LOT 22 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

NOTE: The following IC setup may be modified depending on JPMs that may be performed at the same time with this one.

IC Setup

1. This JPM can performed with any Mode 1 IC.
2. Insert ESF Load Sequencer 1B malfunction. (LA06M4-C-6 de-energizes load sequencer)
3. Open the supply breaker from 13.8 KV STBY Bus 1G to 4.16 KV E1B ESF Bus
4. Override the supply breaker handswitch. (A1_A1_S17_3 TRUE)
5. Save IC to a designated IC for LOT NRC/Audit Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 22 NRC Exam this JPM is scheduled to be performed by itself.
2. Ensure Radio volume for both stations are set to a reasonable level.
3. Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
4. Check and clean the following procedures:
   - 0POP04-AE-0001, First Response To LOSS Of Any Or All 13.8 KV Or 4.16 KV Bus
   - POP09 procedures for panel 3

NOTE: It is okay to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.

5. Reset the simulator to IC 205 and verify the following:
6. Red light at the end of CP-010 is out
7. ICS annunciators have stopped counting up
8. FROM THE BOOTH, place simulator in run and quickly silence/acknowledge/reset alarms, **including plant computer/ICS alarms.**
9. PLACE simulator in FREEZE.
10. When the student and the examiners are ready to proceed, place the simulator in RUN.
11. There is no simulator lesson plan for this JPM.

Booth Instructor Actions

1. None

INITIAL CONDITIONS

The Unit is at 100% power.
The supply breaker from 13.8 KV STBY Bus 1G unexpectedly opened causing offsite power to be lost to 4.16 KV ESF Bus 1B.

INITIATING CUE

You are the extra Reactor Operator and the Unit Supervisor directs you to respond to the event using 0POP04-AE-0001, First Response To LOSS Of Any Or All 13.8 KV Or 4.16 KV Bus, starting at Step 1.0.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Starts ESF DG #12, places 4.16 KV ESF Bus 1B SYNC switch in 'ON' and then closes ESF DG #12 to 4.16 KV Bus Output Breaker effectively energizing 4.16 KV ESF Bus 1B.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE A student handout is NOT provided with this JPM. Use the simulator copy of the procedure ensuring that it is clean before beginning.					
1	CHECK Plant Is In Mode 1 or 2 (Step 1.0)	Checks and verifies the Unit is still in Mode 1. **NOTE:** **From the CIP the operator may place SG 1B PORV in MANUAL but control of the PORV will not be required.**	___	___	___
2	CHECK All RCPs – RUNNING (Step 2.0)	Checks that all RCPs are running.	___	___	___
3	CHECK 4.16 KV ESF Bus Status: • ANY 4.16 KV ESF Bus NOT energized from offsite power (VERIFY the voltage on all three phases of each ESF Bus). • VERIFY Applicable STBY DG(s) running. (Step 3.a and b)	Verifies 4.16 KV ESF Bus 1B is NOT energized and that ESF DG #12 is NOT running. **NOTE:** **Because ESF DG #12 is NOT running the operator will perform 3.b RNO steps.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
Alternate Path Starts					
4	IF "4KV BUS O/C LOCKOUT" indicating lamp on applicable BSMP {CP003} is illuminated THEN GO TO Step 6.0. (Step 3.b.1 RNO) **CUE:** **If a Plant Operator is sent to Train B 4.16 KV ESF Bus then report back that there is no local indication that the Bus lockout has actuated.**	Verifies 4 KV Bus O/C Lockout is NOT illuminated for 4.16 KV ESF Bus 1B and does NOT GO TO step 6.0. **NOTE:** **The BSMP Bus Lockout indicating lamp is not illuminated.**	___	___	___
5	ENSURE the following protective device actuations on the affected bus and SDG logged, investigated, and reset: • 4.16 KV ESF Bus overcurrent lockout. • SDG generator differential lockout. • SDG overspeed lockout. (Step 3.b.2 RNO) **CUE:** **If a Plant Operator is sent to ESF DG #12 and/or Train B 4.16 KV ESF Bus then report back that there are no local indications that any lockouts have actuated.**	Verifies that the three lockout devices listed are NOT actuated. **NOTE:** **The Bus over current lockout is checked in the previous step and again here.** **For the other two lockouts the associated BSMP Lockout indicating lamp is not illuminated.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
6	IF the STBY DG will be used to energize the bus AND the Sequencer is Functional, THEN PERFORM the following: (Step 3.b.3 RNO) **CUE:** **If a Plant Operator is sent to the sequencer then report back that sequencer supply breakers are tripped open.**	N/As step and goes to step 3.b.4 RNO **NOTE:** **BPSM (ESF Status Monitoring Lampbox 3M31) for Sequencer B loss cont pwr is illuminated indicating that the sequencer is NOT Functional.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
7	IF the STBY DG will be used to energize the bus AND the Sequencer is NOT Functional, THEN PERFORM the following: • PERFORM Addendum 3, Equipment Placed in PTL. (Step 3.b.4.a)	Performs Addendum 3, to place Train B equipment in PTL. **NOTE:** **There are several switches to be placed in PTL, however, the step is NOT critical because placing the switches in PTL has no effect on the equipment until power is restored to the sequencer.** __ Bus Normal Supply BKR __ 480 V LC E1B1 Output BKR __ 480 V LC E1B2 Output BKR __ RCFC 11B __ RCFC 12B __ Containment Spray 1B __ CCW 1B __ ECW 1B __ HHSI 1B __ LHSI 1B __ RHR 1B __ EAB Supply Fan 11B __ EAB Return Fan 11B __ SFP Cooling Pump 1A __ Essential Chiller 12B __ AFW Pump 12	___	___	___
*8	• START the respective STBY DG (Step 3.b.4.b)	Starts ESF DG #12	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*9	• PLACE Synchronizing Switch for STBY DG in the ON position (Step 3.b.4.c)	Places Sync. Switch for ESF DG #12 on the ON position.	___	___	___
*10	• CLOSE STBY DG Output Breaker (Step 3.b.4.d)	Closes ESF DG #12 Output Breaker.	___	___	___
11	• PLACE Synchronizing Switch for STBY DG in the OFF position (Step 3.b.4.e)	Places Sync. Switch for ESF DG #12 on the OFF position.	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: ON LOSS OF ESF BUS, MANUALLY START DG AND LOAD TO BUS

JPM Number: NRC S3 Revision Number: 0

Task Number and Title: 48871, Operate the Emergency Standby Diesel Generator

K/A Number and Importance: 064 A4.06 3.9/3.9

Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Alternate Path: ☒ Yes ☐ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 3

Reference(s): 0POP04-AE-0001, First Response To LOSS Of Any Or All 13.8 KV Or 4.16 KV Bus, Rev. 44

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 12 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 8, 9, 10

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

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_____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

The Unit is at 100% power.
The supply breaker from 13.8 KV STBY Bus 1G unexpectedly opened causing offsite power to be lost to 4.16 KV ESF Bus 1B.

INITIATING CUE

You are the extra Reactor Operator and the Unit Supervisor directs you to respond to the event using 0POP04-AE-0001, First Response To LOSS Of Any Or All 13.8 KV Or 4.16 KV Bus, starting at Step 1.0.

STPNOC

Job Performance Measure

PERFORM CONTAINMENT SPRAY PUMP TEST

JPM Number: NRC S4

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted JPM for use on the LOT 22 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

NOTE: The following IC setup may be modified depending on JPMs that may be performed at the same time with this one.

IC Setup

1. This JPM needs to be performed in Mode 4 or higher with at least 1 RCP running.
2. Using Remote Functions, close 1-CS-0111A and insert 0.95 for 1-CS-0008A.
3. Save IC to a designated IC for LOT NRC/Audit Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 22 NRC Exam this JPM is scheduled to be performed with JPM S5, a Mode 4 JPM.
2. Ensure Radio volume for both stations are set to a reasonable level.
3. Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
4. Check and clean the following procedures:
   - POP09 procedures for panels 2 and 5

NOTE: It is okay to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.

5. Reset the simulator to IC 206 and verify the following:
6. Red light at the end of CP-010 is out
7. ICS annunciators have stopped counting up
8. FROM THE BOOTH, place simulator in run and quickly silence/acknowledge/reset alarms, **including plant computer/ICS alarms.**
9. PLACE simulator in FREEZE.
10. When the student and the examiners are ready to proceed, place the simulator in RUN.
11. There is no simulator lesson plan for this JPM.

Booth Instructor Actions

1. None

INITIAL CONDITIONS

The Unit is in Mode 4.

Containment Spray Pump 1A Performance Test is scheduled to be performed.

INITIATING CUE

The Unit Supervisor directs you to perform Containment Spray Pump 1A Performance Test in accordance with 0POP07-CS-0001, Containment Spray Pump 1A(2A) Functional Test, starting at Step 5.3.

NOTE:

- Administrative approval to perform test has been given by the Shift Manager.
- The prerequisites have been met and initialed in the procedure.
- There are no changes in the Work Risk Assessment.
- Section 5.1 has already been performed.
- Section 5.2 has been marked N/A.
- Non-intrusive check valve testing is NOT being performed.
- A Plant Operator is ready at CS Pump 1A.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Starts CS Pump 1A, sets CS Pump 1A flow to 560 gpm (548.8–571.2) for 5 minute test period, and then stops CS Pump 1A when flow drops below minimum requirement of 200 gpm and cannot be re-established.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE If allowed by the examiner, handout the provided copy of 0POP07-CS-0001, Containment Spray Pump 1A(2A) Functional Test, to student for review of Section 3.0, Notes & Precautions, and Section 4.0 Prerequisites prior to the start of the JPM. **A simulator booth instructor will be need for JPM steps 11 & 12 when signaled by the examiner.**					
1	NOTIFY Unit Supervisor/Shift Manager that CS Train 1A is inoperable. (Step 5.3.1) **CUE:** **As Unit Supervisor acknowledge that CS Pump 1A is Inoperable.**	Informs Unit Supervisor that CS Pump 1A is Inoperable.	___	___	___
2	ENSURE “CS PUMP 1A DISCH ISOL, MOV-0001A" is closed using the handswitch on CP002. (Step 5.3.2)	Ensures CS Pump 1A discharge valve is closed. **NOTE:** **CS Pump 1A discharge valve will already be closed.**	___	___	___
3	UNLOCK AND CLOSE “1-CS-0111A CS PUMP 1A DISCHARGE ISOL VALVE” (Step 5.3.3) **CUE:** **As a Plant Operator respond that 1-CS-0111A has been unlocked and closed.**	Calls Plant Operator to unlock and close 1-CS-0111A. **NOTE:** **This valve has already been closed as part of the IC setup.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
4	UNLOCK and OPEN "1-CS-0008A SIS CSS TEST LINE 1A ISOL VALVE". (Step 5.3.4) **CUE:** **As a Plant Operator respond that 1-CS-0008A has been unlocked and opened.**	Calls Plant Operator to unlock and open 1-CS-0008A. **NOTE:** **This valve has already been throttled to a predetermined setting of 0.95 as part of the IC setup. It is throttled instead of fully open because 1-CS-0009A is not modeled. See JPM steps 5 & 6.**	___	___	___
5	THROTTLE "1-CS-0009A SIS CSS TEST LINE 1A VALVE" to Greater Than 50% open. (Step 5.3.5) **CUE:** **As a Plant Operator respond that 1-CS-0009A has been throttled to > 50% open.**	Calls Plant Operator to throttle 1-CS-0009A to > 50% open. **NOTE:** **1-CS-0009A is not modeled.**	___	___	___
6	THROTTLE "1-CS-0009A SIS CSS TEST LINE 1A VALVE" to 25% open. (Step 5.3.6) **CUE:** **As a Plant Operator respond that 1-CS-0009A has been throttled to 25% open.**	Calls Plant Operator to throttle 1-CS-0009A to 25% open. **NOTE:** **1-CS-0009A is not modeled.**	___	___	___
7	ENSURE DG 11 is **NOT** being paralleled OR operated in parallel with offsite power. (Step 5.3.7)	Ensures DG 11 is NOT operating.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
8	IF in Modes 5, 6, or Defueled THEN RECORD the AS FOUND position of the components identified in Step 5.5.9. (Step 5.3.8)	N/As this step because plant is in Mode 4.	___	___	___
9	IF the Unit is in Mode 5, 6, or Defueled, THEN PERFORM the following: (Step 5.3.9)	N/As the steps associated with step 5.3.9 because plant is in Mode 4.	___	___	___
*10	START "CSS PUMP 1A" using the handswitch on CP002. (Step 5.3.10) **CUE:** **If asked then report as the Plant Operator that CS Pump 1A looks good for a start and then, after the start, the pump is running SAT.** **If Operator starts to make a PA announcement then inform the operator a PA announcement has been made.**	Starts CS Pump 1A. **NOTE:** **When CS Pump 1A is started system flow will be greater than the 560 gpm requirement in the next JPM step.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*11	THROTTLE "1(2)-CS-0009A SIS CSS TEST LINE 1A(2A) VALVE" until flow indicated on "1(2)-CS-FI-0815 CONTAINMENT SPRAY PUMP 1A(2A) TEST LINE FLOW INDICATOR" of 560 gpm (548.8–571.2 gpm) is established. (Step 5.3.11) **CUE:** **As a Plant Operator inform the Control Room Operator that 1-CS-0009A has been throttled to establish 560 gpm on local indicator FI-0815.**	Calls Plant Operator to throttle 1-CS-0009A to establish local flow at 560 gpm. **NOTE:** **Signal the booth operator to throttle 1-CS-0008A in two increments to the predetermined setting of 0.9 and then 0.85 so that flow is lowered to a little above 500 gpm on Control Room indicator FI-0813A.** **This critical step is performed by the Plant Operator but the Reactor Operator must direct and ensure the step is completed properly or the functional test would be invalid.**	___	___	___
12	RECORD flow indicated on "1-CS-FI-0815 CONTAINMENT SPRAY PUMP 1A TEST LINE FLOW INDICATOR" and time: (Step 5.3.12)	Records CS Pump 1A local flow and the current time. **NOTE:** **Signal the booth operator to close 1-CS-0008A to the predetermined setting of 0.5 simulating a clogged recirculation line on CS Pump 1A causing 'CNTMT SPR PUMP 1A DISCH FLOW LO' alarm to come in.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
Start Alternate Path					
13	CHECK CS Pump 1A discharge flow on 'FLOW FI-0813A' (Step 1 of 02M2-D-4)	Responds to first step of 0POP09-AN-02M2, CNTMT SPR PUMP 1A DISCH FLOW LO, D-4. **NOTE:** **Due to the non-linear scale of FI-0813A, flow will be reading 0 gpm or just above 0 gpm.**	___	___	___
14	IF CS Pump 1A is running in recirc for surveillance testing, THEN ENSURE 1-CS-0009A SIS CSS TEST LINE 1A VALVE throttled open to maintain desired flow. (Step 2 of 02M2-D-4) **CUE:** **As a Plant Operator respond that 1-CS-0009A has been fully opened and local flow on FI-0815 is reading 125 gpm.**	Calls Plant Operator to throttle 1-CS-0009A to re-establish greater than 500 gpm or about 560 gpm flow. **NOTE:** **Step 3 of 02M2-D-4 will be N/A because an actual Containment Spray signal has not actuated.**	___	___	___
*15	IF CS Pump 1A flow can NOT be maintained > 200 gpm minimum flow requirement AND NO CSS Actuation Signal exists, THEN STOP CS Pump 1A. (Step 4 of 02M2-D-4)	Stops CS Pump 1A.	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: PERFORM CONTAINMENT SPRAY PUMP TEST

JPM Number: NRC S4 Revision Number: 0

Task Number and Title: 10200, Perform Containment Spray Pump Inservice Test

K/A Number and Importance: 026 A2.08 3.2/3.7

Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Alternate Path: ☒ Yes ☐ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 3

Reference(s): 0POP07-CS-0001, Containment Spray Pump 1A(2A) Functional Test, Rev. 6

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 10, 11, 15

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

The Unit is in Mode 4.

Containment Spray Pump 1A Performance Test is scheduled to be performed.

INITIATING CUE

The Unit Supervisor directs you to perform Containment Spray Pump 1A Performance Test in accordance with 0POP07-CS-0001, Containment Spray Pump 1A(2A) Functional Test, starting at Step 5.3.

NOTE:

- Administrative approval to perform test has been given by the Shift Manager.
- The prerequisites have been met and initialed in the procedure.
- There are no changes in the Work Risk Assessment.
- Section 5.1 has already been performed.
- Section 5.2 has been marked N/A.
- Non-intrusive check valve testing is NOT being performed.
- A Plant Operator is ready at CS Pump 1A.

STPNOC

Job Performance Measure

START AN RHR PUMP DURING MODE 4

JPM Number: NRC S5

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted JPM for use on the LOT 22 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

NOTE: The following IC setup may be modified depending on JPMs that may be performed at the same time with this one.

IC Setup

1. This JPM needs to be performed in Mode 4.
2. Ensure the following in the IC:
   - 13.8 KV electrical lineup set per NOTE prior to step 6.1
   - RHR suction valves energized and open
   - SI-MOV-0031* energized and closed
   - RH-MOV-0066* energized
   - CCW/ECW Mode select switches aligned per 0POP02-CC-0001
   - CCW Outlet aligned and open to RHR HX
   - Close all RCP seal STANDPIPE FILL valves (RH-0171, 0172, 0173)
   - RHR Temperature Control and Bypass HX valves energized
3. Save IC to a designated IC for LOT NRC/Audit Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 22 NRC Exam this JPM is scheduled to be performed with JPM S4.
2. Ensure Radio volume for both stations are set to a reasonable level.
3. Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
4. Check and clean the following procedures:
   - 0POP02-RH-0001, Residual Heat Removal System Operation
   - POP09 procedures for panel 1

NOTE: It is okay to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.

5. Reset the simulator to IC 206 and verify the following:
6. Red light at the end of CP-010 is out
7. ICS annunciators have stopped counting up
8. FROM THE BOOTH, place simulator in run and quickly silence/acknowledge/reset alarms, **including plant computer/ICS alarms.**
9. PLACE simulator in FREEZE.
10. When the student and the examiners are ready to proceed, place the simulator in RUN.
11. There is no simulator lesson plan for this JPM.

Booth Instructor Actions

1. None

INITIAL CONDITIONS

The Unit is in Mode 4.

RHR Pump 1A is in service.

RHR Pump 1C is being prepared for start with Steps 6.1 through 6.12 of 0POP02-RH--0001, Residual Heat Removal System Operation, completed.

INITIATING CUE

The Unit Supervisor directs you to start RHR Pump 1C and begin warming up RHR Train 'C' in accordance with 0POP02-RH-0001, Residual Heat Removal System Operation, starting at Step 6.13.

NOTE:

- A Plant Operator is ready at RHR Pump 1C
- The prerequisites Section 3.0 of the procedure have been previously met.
- RHR Train 'C' boron concentration is equal to RCS boron concentration at 1966 ppm
- 0PSP10-ZG-0003, Shutdown Margin Verification-Modes 3, 4 and 5, has been completed SAT

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Properly aligns & starts RHR Pump 1C and then begins a warm-up of RHR Train 'C'.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE A student handout is NOT provided with this JPM. Use the simulator copy of the procedure ensuring that it is clean before beginning. If allowed by the examiner, handout a clean copy (from the simulator or LOR class room) of 0POP02-RH-0001, Residual Heat Removal System Operation, to student for review of Section 3.0 Prerequisites and Section 4.0 Notes & Precautions prior to the start of the JPM.					
1	ENSURE the RHR HX "BYP FLOW CONT" valve in manual and closed for the RHR train to be started: (Step 6.13)	Ensures the Train 'C' RHR HX Bypass Flow Control valve in manual and closed. RH-FCV-0853 **NOTE:** **RH-FCV-0853 is already in manual and closed.**	___	___	___
*2	CLOSE the RHR HX "OUTL TEMP CONT" valve for the RHR train to be started: (Step 6.14)	Closes the Train 'C' RHR HX Outlet Temperature Control valve. RH-HCV-0866 **NOTE:** **A BSMP alarm will come in when closing this valve.**	___	___	___
*3	OPEN the "MINI FLOW ISOL" valve for the RHR train to be started: (Step 6.15)	Opens the Train 'C' RHR Mini Flow Isolation valve. RH-MOV-0067C **NOTE:** **A BSMP alarm will come in when opening this valve.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
4	MONITOR Plant Computer group RH-12 (8412) OR TREND the following points for the applicable pump: "RHR PUMP 1C" RHFE0869 RHIA0882 (Step 6.16)	Using the ICS computer the operator will monitor Train 'C' flow and amps.	___	___	___
5	ENSURE the associated train's Emergency Diesel Generator for the pump to be started in the next step is **NOT** being paralleled OR operated in parallel with offsite power. (Step 6.17)	Ensures ESF DG #13 is not is service. **NOTE:** **ESF DG #13 is already secured.**	___	___	___
*6	START the desired RHR pump: (Step 6.18) **CUE:** **If asked then report as the Plant Operator that RHR Pump 1C looks good for a start and then, after the start, the pump is running SAT.** **If operator starts to make a PA announcement then inform the operator that an announcement has been made.**	Starts RHR Pump 1C	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
7	VERIFY flow greater than 950 gpm for the RHR pump started in Step 6.18 on the RHR pump "DISCH FLOW" indicator: (low alarm and pump trip after 5 seconds at 925 gpm) (Step 6.19)	Verifies Train 'C' RHR flow greater than 950 gpm. RH-FI-0869. **NOTE:** **For this JPM if critical steps 2 & 3 are performed correctly then flow will stay above 950 gpm when RHR pump 1C is started.**	___	___	___
8	VERIFY discharge pressure less than 540 psig for the RHR pump started in Step 6.18 on the "HDR PRESS" indicator: (high pressure alarm 540 psig) (Step 6.20)	Verifies Train 'C' RHR discharge pressure less than 540 psig. RH-PI-0863	___	___	___
9	RECIRCULATE the RHR train started in Step 6.18 for at least 5 minutes: (Step 6.21)	Waits 5 minutes while Train 'C' RHR is on recirc. **Note:** **Time compression may be used by the examiner if desired.**	___	___	___
10	IF the boron concentration of the RHR train started in Step 6.18 has been previously verified, THEN GO TO Step 6.26. (Step 6.22)	Operator goes to procedure step 6.26. **NOTE:** **RHR Train 'C' boron concentration and RCS boron concentration were noted in the initiating cue to be equal.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*11	WHEN the boron concentration of the RHR train started in Step 6.18 has been verified greater than or equal to RCS boron concentration OR shutdown margin has been verified adequate per 0PSP10-ZG-0003, Shutdown Margin Verification-Modes 3, 4 and 5, THEN OPEN the LHSI cold leg injection valve for the RHR train started in Step 6.18: (Step 6.26)	Opens RHR Train 'C' LOOP C Tc Injection valve. RH-MOV-0031C. **NOTE:** **A BSMP alarm will come in when opening this valve.** **RHR Train 'C' boron concentration and RCS boron concentration were noted in the initiating cue to be equal and 0PSP10-ZG-0003, Shutdown Margin Verification-Modes 3, 4 and 5, has been completed SAT.**	___	___	___
*12	THROTTLE OPEN the RHR HX "BYP FLOW CONT" valve for the RHR train started in Step 6.18 to start RHR train warm-up: (Step 6.27)	Throttles open RHR Train 'C' Bypass Flow Control valve to start RHR Train 'C' warm-up. RH-FCV-0853 **NOTE:** **A BSMP alarm will come in when opening this valve.** **When a noticeable amount of RHR flow has been raised then the JPM can be terminated.**	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: START AN RHR PUMP DURING MODE 4

JPM Number: NRC S5 Revision Number: 0

Task Number and Title: 69179, Startup the RHR System

K/A Number and Importance: 005 A4.01 3.6/3.4

Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 3

Reference(s): 0POP02-RH-0001, Residual Heat Removal System Operation, Rev. 74

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 2, 3, 6, 11, 12

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

The Unit is in Mode 4.

RHR Pump 1A is in service.

RHR Pump 1C is being prepared for start with Steps 6.1 through 6.12 of 0POP02-RH--0001, Residual Heat Removal System Operation, completed.

INITIATING CUE

The Unit Supervisor directs you to start RHR Pump 1C and begin warming up RHR Train 'C' in accordance with 0POP02-RH-0001, Residual Heat Removal System Operation, starting at Step 6.13.

NOTE:

- A Plant Operator is ready at RHR Pump 1C
- The prerequisites Section 3.0 of the procedure have been previously met.
- RHR Train 'C' boron concentration is equal to RCS boron concentration at 1966 ppm
- 0PSP10-ZG-0003, Shutdown Margin Verification-Modes 3, 4 and 5, has been completed SAT

STPNOC

Job Performance Measure

PERFORM CCW VALVE OPERABILITY SURVEILLANCE

JPM Number: NRC S6

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted JPM for use on the LOT 21 Audit exam.

SIMULATOR SETUP INSTRUCTIONS

NOTE: The following IC setup may be modified depending on JPMs that may be performed at the same time with this one.

IC Setup

1. This JPM can be performed at any power level or shutdown as long as there is no SI actuated.
2. Ensure RCFC Fans and cooling are aligned to A and C Trains and that A and/or C CCW are in service.
3. Ensure Train B CCW is secured.
4. Ensure Train B RCFC Cooling is aligned to RCB Chill Water.
5. Save IC to a designated IC for LOT NRC/Audit Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 22 NRC Exam this JPM is scheduled to be performed with JPM S7
2. Ensure Radio volume for both stations are set to a reasonable level.
3. Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
4. **A stop watch will be needed for this JPM.**
5. Check and clean the following procedures:
   - POP09 procedures for panel 2

NOTE: It is okay to use a similar IC to the IC listed above, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.

6. Reset the simulator to IC 209 and verify the following:
   - Red light at the end of CP-010 is out
   - ICS annunciators have stopped counting up
7. FROM THE BOOTH, place simulator in run and quickly silence/acknowledge/reset alarms.
8. PLACE simulator in FREEZE.
9. When the student and the examiners are ready to proceed, place the simulator in RUN.
10. There is no simulator lesson plan for this JPM.

Booth Instructor Actions

1. None

INITIAL CONDITIONS

Unit 1 is at 30% Power.

Maintenance has just been completed on CC-MOV-0136, CCW SPLY OCIV, and CC-MOV-0148, CCW RET OCIV. It has been determined that the valves need to be time stroke tested prior to declaring Operable.

INITIATING CUE

The Unit Supervisor directs you to perform 0PSP03-CC-0008, Component Cooling Water System Train 1B(2B) Valve Operability Test, Section 5.8.

NOTE:

- The Shift Manager has given permission to start the test.
- Prerequisites section 4.0 has been completed.
- Preparation Step 5.1 has been completed.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

The Reactor Operator completes Section 5.8 of 0PSP03-CC-0008, Component Cooling Water System Train 1B(2B) Valve Operability Test, with valve stroke times within Acceptance Criteria.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE If allowed by the examiner, handout the provided copy of 0PSP03-CC-0008, Component Cooling Water System Train 1B Valve Operability Test, to student for review of Section 3.0, Notes & Precautions, and Section 4.0 Prerequisites prior to the start of the JPM. **Provide the student with a stop watch for timing valve strokes.**					
1	RECORD the AS FOUND position for RCFC 11B(21B) and 12B(22B) CCW Supply Isolation Valve "CCW SPLY OCIV MOV-0136" in Step 5.8.11 (Step 5.8.1)	Records CLOSED for the as found position of CC-MOV-0136 on step 5.8.11.	___	___	___
2	RECORD the AS FOUND position for RCFC 11B(21B) and 12B(22B) CCW Return Isolation Valve "CCW RET OCIV MOV-0148" in Step 5.8.12 (Step 5.8.2)	Records CLOSED for the as found position of CC-MOV-0148 on step 5.8.12.	___	___	___
3	RECORD the AS FOUND position for RCFC 11B(21B) and 12B(22B) Chilled Water Supply Isolation Valve "CHWS SPLY OCIV MOV-0137" in Step 5.8.13 (Step 5.8.3)	Records OPEN for the as found position of CC-MOV-0137 on step 5.8.13.	___	___	___
4	RECORD the AS FOUND position for RCFC 11B(21B) and 12B(22B) Chilled Water Supply Return Isolation Valve "CHWS RET OCIV MOV-0149" in Step 5.8.14 (Step 5.8.4)	Records OPEN for the as found position of CC-MOV-0149 on step 5.8.14.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*5	ENSURE RCFC 11B(21B) and 12B(22B) Chilled Water Supply Return Isolation Valve "CHWS RET OCIV MOV-0149" closed. (Step 5.8.5)	Ensures CC-MOV-0149 is CLOSED. **NOTE:** **This valve is initially OPEN.**	___	___	___
*6	ENSURE RCFC 11B(21B) and 12B(22B) Chilled Water Supply Valve "CHWS RET OCIV MOV-0137" closed. (Step 5.8.6)	Ensures CC-MOV-0137 is CLOSED. **NOTE:** **This valve is initially OPEN.**	___	___	___
*7	Simultaneously START the stopwatch AND OPEN "CCW SPLY OCIV MOV-0136" by momentarily placing the handswitch located on CP-002 to OPEN. (Step 5.8.7.1)	Simultaneously starts the stopwatch and opens CC-MOV-0136.	___	___	___
*8	WHEN "CCW SPLY OCIV MOV-0136" is full open (red lamp illuminated and green lamp off), THEN STOP the stopwatch **AND** RECORD the valve stroke time. (Step 5.8.7.2)	Stops the stopwatch when CC-MOV-0136 is full open. Records the stroke time. **NOTE:** **Stroke time should be ≤ 17 seconds.**	___	___	___
9	VERIFY the time recorded in Step 5.8.7.2 satisfies the Acceptance Criteria. (Step 5.8.7.3)	Verifies open stroke time for CC-MOV-0136 meets acceptance criteria.	___	___	___
*10	CLOSE "CCW SPLY OCIV MOV-0136" by momentarily placing the handswitch located on CP-002 to CLOSE. (Step 5.8.8.1)	Closes CC-MOV-0136.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
11	VERIFY "CCW SPLY OCIV MOV-0136" is full closed (green lamp illuminated and red lamp off) (Step 5.8.8.2)	Verifies CC-MOV-0136 fully closed.	___	___	___
*12	Simultaneously START the stopwatch AND OPEN "CCW RET OCIV MOV-0148" by momentarily placing the handswitch located on CP-002 to OPEN. (Step 5.8.9.1)	Simultaneously starts the stopwatch and opens CC-MOV-0148.	___	___	___
*13	WHEN "CCW RET OCIV MOV-0148" is full open (red lamp illuminated and green lamp off), THEN STOP the stopwatch **AND** RECORD the valve stroke time. (Step 5.8.9.2)	Stops the stopwatch when CC-MOV-0148 is full open. Records the stroke time. **NOTE:** **Stroke time should be ≤ 17 seconds.**	___	___	___
14	VERIFY the time recorded in Step 5.8.9.2 satisfies the Acceptance Criteria. (Step 5.8.9.3)	Verifies open stroke time for CC-MOV-0148 meets acceptance criteria.	___	___	___
*15	CLOSE "CCW RET OCIV MOV-0148" by momentarily placing the handswitch located on CP-002 to CLOSE. (Step 5.8.10.1)	Closes CC-MOV-0148.	___	___	___
16	VERIFY "CCW RET OCIV MOV-0148" is full closed (green lamp illuminated and red lamp off) (Step 5.8.10.2)	Verifies CC-MOV-0148 fully closed.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
17	PLACE "CCW SPLY OCIV MOV-0136" in the as found position or a position as specified by the Shift Manager/Unit Supervisor. RECORD the AS LEFT position. (Step 5.8.11) **Cue:** **An IV is required for this step. As the US inform the student to continue with the surveillance and that another RO will provide an IV shortly.**	Records the as left position for CC-MOV-0136. **NOTE:** **As left position will be CLOSED.**	___	___	___
18	PLACE "CCW RET OCIV MOV-0148" in the as found position or a position as specified by the Shift Manager/Unit Supervisor. RECORD the AS LEFT position. (Step 5.8.12) **Cue:** **An IV is required for this step. As the US inform the student to continue with the surveillance and that another RO will provide an IV shortly.**	Records the as left position for CC-MOV-0148. **NOTE:** **As left position will be CLOSED.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*19	PLACE “CHWS SPLY OCIV MOV-0137” in the as found position or a position as specified by the Shift Manager/Unit Supervisor. RECORD the AS LEFT position. (Step 5.8.13) **Cue:** **An IV is required for this step. As the US inform the student to continue with the surveillance and that another RO will provide an IV shortly.**	Opens and records the as left position for CC-MOV-0137. **NOTE:** **As left position will be OPEN.**	___	___	___
*20	PLACE “CHWS RET OCIV MOV-0149” in the as found position or a position as specified by the Shift Manager/Unit Supervisor. RECORD the AS LEFT position. (Step 5.8.14) **Cue:** **An IV is required for this step. As the US inform the student to continue with the surveillance and that another RO will provide an IV shortly.**	Opens and records the as left position for CC-MOV-0149. **NOTE:** **As left position will be OPEN.**	___	___	___
21	NOTIFY the Shift Manager that testing is complete. (Step 5.14.1)	Notifies the SM that testing is complete.	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: PERFORM CCW VALVE OPERABILITY SURVEILLANCE

JPM Number: NRC S6 Revision Number: 0

Task Number and Title: 00101, Valve Operability Surveillances

K/A Number and Importance: 008 A4.01 3.3/3.1

Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 3

Reference(s): 0PSP03-CC-0008, Component Cooling Water System Train 1B Valve Operability Test Rev. 19

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 5 – 8, 10, 12, 13, 15, 19, 20

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

Unit 1 is at 30% Power.

Maintenance has just been completed on CC-MOV-0136, CCW SPLY OCIV, and CC-MOV-0148, CCW RET OCIV. It has been determined that the valves need to be time stroke tested prior to declaring Operable.

INITIATING CUE

The Unit Supervisor directs you to perform 0PSP03-CC-0008, Component Cooling Water System Train 1B(2B) Valve Operability Test, Section 5.8.

NOTE:

- The Shift Manager has given permission to start the test.
- Prerequisites section 4.0 has been completed.
- Preparation Step 5.1 has been completed.

STPNOC

Job Performance Measure

CONTROL ROD OPERABILITY TEST

JPM Number: NRC S7

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted JPM for use on the LOT 22 Audit exam.

SIMULATOR SETUP INSTRUCTIONS

NOTE: The following IC setup may be modified depending on JPMs that may be performed at the same time with this one.

IC Setup

1. This JPM can be performed in Mode 1 or Mode 2
2. Ensure Rod Bank Groups 1 & 2, including Control Bank D, Step Demand are at equal rod positions.
3. Ensure ROD BANK SEL switch is in MANUAL or AUTO.
4. Save IC to a designated IC for LOT NRC/Audit Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 22 NRC Exam this JPM is scheduled to be performed with JPM S6
2. Ensure Radio volume for both stations are set to a reasonable level.
3. Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
4. Check and clean the following procedures:
   - POP09 procedures for panel 5

NOTE: It is okay to use a similar IC to the IC listed above, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.

5. Reset the simulator to IC 209 and verify the following:
   - Red light at the end of CP-010 is out
   - ICS annunciators have stopped counting up
6. FROM THE BOOTH, place simulator in run and quickly silence/acknowledge/reset alarms.
7. PLACE simulator in FREEZE.
8. When the student and the examiners are ready to proceed, place the simulator in RUN.
9. There is no simulator lesson plan for this JPM.

Booth Instructor Actions

1. None

INITIAL CONDITIONS

Unit 1 is at 30% Power.

Maintenance was performed in the Control Rod logic cabinets for Control Bank 'A'.

INITIATING CUE

The Unit Supervisor directs you to perform post-maintenance testing for Control Bank 'A' ONLY in accordance with 0PSP03-RS-0001, Control Rod Operability, starting at Step 5.2.

NOTE:

- The Shift Manager has given permission to start the test.
- Prerequisites section 4.0 has been completed.
- Preparation Step 5.1 has been completed.
- For this PMT 0PSP03-RS-0003, 0PSP04-RS-0004 and 0POP07-RI-0001 will NOT be performed.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Places the ROD BANK SEL switch to Control Bank 'A', inserts Control Bank 'A' Control Rods at least 10 steps but not more than 20, withdraws Control Bank 'A' Control Rods to the As Found position and places the ROD BANK SEL switch in AUTO or MANUAL.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE If allowed by the examiner, handout the provided copy of 0PSP03-RS-0001, Control Rod Operability, to student for review of Section 3.0, Notes & Precautions, and Section 4.0 Prerequisites prior to the start of the JPM.					
1	SELECT the Computer display of rod positions on the Plant Computer. (Step 5.2.1)	The Operator will use the ICS computer to compare rod positions with DRPI.	___	___	___
2	IF moving rods individually instead of rod banks, THEN GO TO 0PSP03-RS-0003, Control Rod Operability (Single Rod). (Step 5.2.2)	Operator N/As this step. **NOTE:** **Per the Initiating Cue, Control Rods will not be moved individually.**	___	___	___
3	IF moving rod banks in 8 steps and out 8 steps prior to moving at least 10 steps in any one direction for operability, THEN GO TO 0PSP03-RS-0004, Control Rod Operability Test (Eight and Ten Steps). (Step 5.2.3)	Operator N/As this step. **NOTE:** **Per the Initiating Cue, Control Rods will not be moved in and out 8 steps first.**	___	___	___
4	COMPLETE Table 1, Rod Movement Verification concurrently while performing Steps 5.2.5 through 5.2.12. (Step 5.2.4)	Operator will use Table 1 to record Control Rod Movement for Control Bank 'A'.	___	___	___
*5	SELECT rod bank to be moved with "ROD BANK SEL" handswitch. (Step 5.2.5)	Selects Control Bank 'A' with the ROD BANK SEL switch.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
6	RECORD As Found demand position of selected rod bank on Table 1, Rod Movement Verification. (Step 5.2.6)	Records As Found demand position for Control Bank 'A' on Table 1. **NOTE:** **As Found demand position is 256**	___	___	___
*7	PERFORM the following to demonstrate control rod movement: INSERT selected rod bank at least 10 steps, but NOT more than 20 steps (Step 5.2.7) **CUE:** **If asked, as the Unit Supervisor, convey that credit is NOT being taken for 0POP03-ZG-0004, 0PSP03-RI-0001 or 0PSP10-DM-0003.**	*Using the IN/OUT switch, inserts Control Bank 'A' Groups 1 & 2 Control Rods at least 10 steps but not more than 20 steps.* Initials Table 1 **NOTE:** **Initialing Table 1 is NOT critical to this step.** **Annunciator 05M3 D-5, ROD SUPV MNTR ROD POSITION TRBL, will come in.**	___	___	___
8	VERIFY DRPI indicates each rod within selected bank moved. (Step 5.2.8)	Using DRPI, verifies that Control Bank 'A' Group 1 & 2 Control Rods moved the required number of steps. Initials Table 1	___	___	___
9	VERIFY the DRPI and "STEP DEMAND" indications on the Plant Computer display agree with the actual DRPI and Group Demand indications on CP005 for each rod within the selected bank. (Step 5.2.9)	Verifies that DRPI indication, Group Demand indication and ICS indication agree on Control Bank 'A' position and movement.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*10	MOVE selected rod bank back to As Found position on Table 1, Rod Movement Verification. (Step 5.2.10)	Using the IN/OUT switch, withdraws Control Bank 'A' Group 1 & 2 Control Rods to the As Found position recorded in Table 1. **NOTE:** **As Found demand position is 256** **Annunciator 05M3 D-5, ROD SUPV MNTR ROD POSITION TRBL, will clear.**	___	___	___
11	VERIFY from DRPI that selected bank rods are aligned within + 12 steps of group step counter demand position. (Step 5.2.11)	Verifies that Control Bank 'A' Control Rods are aligned within ± 12 steps of group step counter demand position.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
12	VERIFY the DRPI and "STEP DEMAND" indications on the Plant Computer screen agree with the actual DRPI and Group Demand indications on CP005 for each rod within the selected bank. (Step 5.2.12)	Verifies that DRPI indication, Group Demand indication and ICS indication agree on Control Bank 'A' position and movement. **NOTE:** **At the time of validation, ICS DRPI average position does not agree with control board DRPI indication after the control rods are stepped back out. The ICS indication reads 252 steps and DRPI on the control board reads 258 steps which is the positon at the start of the test.** **A note in the procedure prior to step 5.2.9 that applies to this step, 5.2.12, as well tells the operator to submit a Condition Report.** **This condition is due to an issue with ICS and NOT the simulator. However, a simulator deficiency has been written.**	___	___	___
13	REPEAT Steps 5.2.2 through 5.2.12 for each remaining rod bank to be tested. (Step 5.2.13)	N/As this step as no further Control Rods will be tested.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*14	PLACE "ROD BANK SEL" handswitch to AUTO or MANUAL as directed by Shift Manager. (Step 5.2.14) **CUE:** **If asked, the Shift Manager wants to place the "ROD BANK SEL" handswitch per procedure direction.**	Places ROD BANK SEL switch in AUTO or MANUAL. **NOTE:** **Operator must place the ROD BANK SEL switch to either AUTO or MANUAL to satisfy this critical step.** **It is OK to put the ROD BANK SEL switch in AUTO (it was originally in MANUAL), however, if Tavg deviation from Tref is more than 0.5°F then the ROD BANK SEL switch should be placed in MANUAL.**	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: CONTROL ROD OPERABILITY TEST

JPM Number: NRC S7 Revision Number: 0

Task Number and Title: 69539, Perform Monthly Control Rod Operability Test

K/A Number and Importance: 008 A4.03 4.0/3.7

Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 3

Reference(s): 0PSP03-RS-0001, Control Rod Operability, Rev. 39

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 5, 7, 10, 14

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

Unit 1 is at 30% Power.

Maintenance was performed in the Control Rod logic cabinets for Control Bank ‘A’.

INITIATING CUE

The Unit Supervisor directs you to perform post-maintenance testing for Control Bank ‘A’ ONLY in accordance with 0PSP03-RS-0001, Control Rod Operability, starting at Step 5.2.

NOTE:

- The Shift Manager has given permission to start the test.
- Prerequisites section 4.0 has been completed.
- Preparation Step 5.1 has been completed.
- For this PMT 0PSP03-RS-0003, 0PSP04-RS-0004 and 0POP07-RI-0001 will NOT be performed.

STPNOC

Job Performance Measure

RESPOND TO FAILED SOURCE RANGE NI

JPM Number: NRC S8

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted JPM for use on the LOT 22 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

NOTE: The following IC setup may be modified depending on JPMs that may be performed at the same time with this one.

IC Setup

1. This JPM can be performed in Modes 2 to Mode 6.
2. Insert NI-31 fails low, 01-31-01.
3. Save IC to a designated IC for LOT NRC/Audit Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 22 NRC Exam this JPM is scheduled to be performed by itself.
2. Ensure Radio volume for both stations are set to a reasonable level.
3. Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
4. **Ensure Audio Count Rate Channel is selected to NI-31 and that the Audio Multiplier is selected to 10. Ensure Volume is at an optimal level. (About 50% of scale.)**
5. Check and clean the following procedures:
   - 0POP04-NI-0001, Nuclear Instrument Malfunction
   - POP09 procedures for panel 5

NOTE: It is okay to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.

5. Reset the simulator to IC 207 and verify the following:
6. Red light at the end of CP-010 is out
7. ICS annunciators have stopped counting up
8. FROM THE BOOTH, place simulator in run and quickly silence/acknowledge/reset alarms, including plant computer/ICS alarms. **At the start this JPM the SR Audio Count Rate will not be heard.**
9. PLACE simulator in FREEZE.
10. When the student and the examiners are ready to proceed, place the simulator in RUN.
11. There is no simulator lesson plan for this JPM.

Booth Instructor Actions

1. None

INITIAL CONDITIONS

The Unit is Mode 4. Current RCS Boron is 1966 ppm.
The Crew has confirmed that Source Range Nuclear Instrument Channel NI 31 has failed low.

INITIATING CUE

You are the extra Reactor Operator and the Unit Supervisor directs you to respond to failure of Source Range Nuclear Instrument NI 31 Using 0POP04-NI-0001, Nuclear Instrument Malfunction, starting at step 1.0.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Places the failed Source Range Channel, NI-31, Level Trip switch to BYPASS, the High Flux at Shutdown switch to BLOCK and selects NI-32 for the Audible Count Rate.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE A student handout is NOT provided with this JPM. Use the simulator copy of the procedure ensuring that it is clean before beginning.					
1	CHECK Power Range Nuclear Instruments – NORMAL (Step 1.0)	Checks and verifies that there are no failures with the power range NIs.	___	___	___
2	CHECK Source Range Nuclear Instruments – NORMAL (Step 2.0)	Verifies Source Range Nuclear Instrument Channel NI 31 has failed low. GOes TO Addendum 1, Source Range Nuclear Instrument Malfunction. (Step 2.0 RNO)	___	___	___
3	VERIFY Plant In – MODE 2 (Add 1 Step 1.0)	Verifies plant is in Mode 4 and Goes TO Step 3.0 (Add 1 Step 1.0 RNO)	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
The following JPM step has two (2) distinct sub-steps.					
*4	BYPASS The Malfunctioning Source Range Channel (N31 Or N32) By Performing The Following: • PLACE "LEVEL TRIP" switch in BYPASS • ENSURE "HIGH FLUX AT SHUTDOWN" switch in BLOCK (Add 1 Step 3.0)	Places "LEVEL TRIP" switch in BYPASS Places "HIGH FLUX AT SHUTDOWN" switch in BLOCK **NOTE:** **This represents 2 Critical Steps.** **When the Level Trip switch is placed in BYPASS, 5M03 C-1, SR/IR TRIP BYPASS, will annunciate.** **When the High Flux at Shutdown switch is placed in BLOCK, 5M03 B-1, SR SHUTDN FLUX HI ALM BLKD, will annunciate.**	___	___	___
5	VERIFY Plant In – MODE 6	Verifies plant is in Mode 4 and Goes TO Step 7.0 (Add 1 Step 4.0 RNO)	___	___	___
6	VERIFY Plant In – MODE 3, 4, OR 5 (Add 1 Step 7.0)	Verifies plant is in Mode 4 and continues to Add step 8.0	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*7	ENSURE Audible Count Rate – IN SERVICE (Add 1 Step 8.0)	Selects NI-32 on the Source Range Audible Count Rate Channel. **NOTE:** **Operator may have to also optimize the Audio Multiplier and Volume.**	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: RESPOND TO FAILED SOURCE RANGE NI

JPM Number: NRC S8 Revision Number: 0

Task Number and Title: 73400, Respond to Nuclear Instrumentation System Alarms

K/A Number and Importance: 015 A4.03 3.8/3.9

Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 3

Reference(s): 0POP04-NI-0001, Nuclear Instrumentation Malfunction, Rev. 22

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 10 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 4 (has 2 distinct sub-steps), 7

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

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Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

The Unit is Mode 4. Current RCS Boron is 1966 ppm.
The Crew has confirmed that Source Range Nuclear Instrument Channel NI 31 has failed low.

INITIATING CUE

You are the extra Reactor Operator and the Unit Supervisor directs you to respond to failure of Source Range Nuclear Instrument NI 31 Using 0POP04-NI-0001, Nuclear Instrument Malfunction, starting at step 1.0.

STPNOC

Job Performance Measure

LOCALLY OPERATE A SG PORV

JPM Number: NRC P1

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted JPM for use on the LOT 22 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

1. This JPM is performed in the plant.

INITIAL CONDITIONS

A Loss of All AC Power has occurred. The SG PORVs must be locally controlled to establish and maintain a cooldown.

INITIATING CUE

The Unit Supervisor directs you to initially locally open 1C(2C) SG PORV to 40% open in accordance with 0POP05-EO-EC00, LOSS OF ALL AC POWER, Addendum 6, SG PORV Local Operation, starting at step 2.

NOTE:

- The EAB Plant Operator has performed Step 1 of 0POP05-EO-EC00, LOSS OF ALL AC POWER, Addendum 6, SG PORV Local Operation, which de-energizes power to the SG PORVs.
- An HP Technician reports that radiation levels in the areas of the SG PORVS are normal.
- The Unit Supervisor has authorized use of a hand held radio for communications at the SG PORVs.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

The operator simulates locally opening SG 1C(2C) PORV to 40% open and then closing SG 1C(2C) PORV to 20% open.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE The Student Handout of 0POP05-EO-EC00, LOSS OF ALL AC POWER, Addendum 6, SG PORV Local Operation, can be handed out with the Student Handout of the Initial Conditions on the last page of this JPM. SG 1C(2C) PV-7431 is located in room 501 of 58' IVC. This JPM can be performed in either Unit.					
1	ESTABLISH Communication with the Control Room. (Add 6 Step 2) **CUE:** **As the operator simulates establishing communications, as the Reactor Operator in the Control Room, direct the operator to open SG PORV 1C(2C) to 40% open.**	Establishes continuous communication with the Control Room.	___	___	___
2	CONTROL PORV position per Steps 4 and 5 of this Addendum. (Add 6 Step 3)	Continues to Addendum Steps 4 and 5	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*3	To open PORV: • Simultaneously TURN manual override knobs on solenoids A and B to the CLOSE direction (clockwise) • WHEN the desired PORV position is reached, THEN TURN knob of solenoid A to the full OPEN position (counterclockwise) (Add 6 Step 4) **CUE #1:** **SG 1C(2C) PORV will be closed to start.** **Solenoid valves A and B will be open.** **As the operator begins to simulate closing both solenoid valves give indication on the PORV valve stem indicator that the PORV is slowly opening.** **As the operator sees the simulated valve stem position nearing 40% they will simulate reopening solenoid A at which point give indication that the PORV valve position has stopped moving at about 40%.** **CUE #2: (to be given after PORV is opened to 40%)** **The Reactor Operator calls and instructs you to close SG 1C(2C) PORV to 20%.**	Simultaneously starts to close manual override knobs on solenoids A and B (clockwise) and when SG 1C PORV opens to 40%, fully reopens manual override knob for solenoid A (counterclockwise) **NOTE:** **When opening the SG PORV, if the override knobs are not operated at the same time, the PORV will not begin to move until the second override knob is operated.** **There is a CAUTION at the beginning of this Addendum to NOT open the SG PORV more than 50%.** **A picture of the manual override solenoid valves for SG 1C PORV is on the next page of this JPM.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*4	To close PORV: • TURN manual override knob for solenoid B in the OPEN direction (counterclockwise) • WHEN desired position of PORV is reached, THEN TURN knob of solenoid B to the full CLOSED position (clockwise) (Add 6 Step 5) **CUE:** **As the operator begins to simulate opening solenoid B valve give indication on the PORV valve stem indicator that the PORV is slowly closing.** **As the operator sees the simulated valve stem position nearing 20% they will simulate fully closing solenoid B at which point give indication that PORV valve position has stopped moving at about 20%.**	Starts to open manual override knob on solenoid B (counterclockwise) and when SG 1C PORV closes to 20%, then fully closes manual override knob for solenoid B. (clockwise)	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: LOCALLY OPERATE A SG PORV

JPM Number: NRC P1 Revision Number: 0

Task Number and Title: 69605, Dump Steam through the Atmospheric Relief Valves

K/A Number and Importance: 039 A4.07 2.8/2.9

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☒ In-Plant ☐ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☐ SRO Only ☐ RO/SRO ☒ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 3

Reference(s): 0POP05-EO-EC00, Loss of all AC Power, Rev. 31

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 3, 4

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

A Loss of All AC Power has occurred. The SG PORVs must be locally controlled to establish and maintain a cooldown.

INITIATING CUE

The Unit Supervisor directs you to initially locally open 1C(2C) SG PORV to 40% open in accordance with 0POP05-EO-EC00, LOSS OF ALL AC POWER, Addendum 6, SG PORV Local Operation, starting at step 2.

NOTE:

- The EAB Plant Operator has performed Step 1 of 0POP05-EO-EC00, LOSS OF ALL AC POWER, Addendum 6, SG PORV Local Operation, which de-energizes power to the SG PORVs.
- An HP Technician reports that radiation levels in the areas of the SG PORVS are normal.
- The Unit Supervisor has authorized use of a hand held radio for communications at the SG PORVs.

STPNOC

Job Performance Measure

LIQUID WASTE RELEASE WITH CW PUMP TRIP

JPM Number: NRC P2

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted JPM for use on the LOT 22 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

1. This JPM is performed in the plant.

INITIAL CONDITIONS

The Unit is at 100% Power. The following conditions have been established for the release of Waste Monitor Tank (WMT) 1(2)D:

- WMT 1(2)D is on Long Path Recirculation.
- RT-8038, Liquid Waste Monitor, is INOPERABLE
- All four (4) Circulating Water (CW) Pumps are running.
- MAB Chillers 11C(21C) and 11D(21D) are in service.
- Open Loop ACW is isolated to MAB Chiller 11A(21A) with OC-0058 and OC-0059 closed.
- RCB Chillers 11A(21A) and 11B(21B) are in service.
- Open Loop Valve 1(2)-OC-0292, Chiller Units Return Header Isolation valve is OPEN.
- The Shift Manager has 0PSP07-WL-LDP2, Liquid Effluent Permit With RT-8038 Inoperable, and is ready to authorize the release of WMT 1(2)D.
- Chemistry has just called and is ready for the release of WMT 1(2)D.

INITIATING CUE

The Unit Supervisor directs you to continue with 0POP02-WL-0100, Liquid Waste Release, at Step 5.38 for the release of WMT 1(2)D.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Initiates release of WMT 1(2)D and then secures the release after Circulating Water Pump #14(24) trips.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE **P&ID, LWPS 7R309F90021#1(2) is to ONLY be handed out if the student produces a working copy. (Example would be from Computers in the Rad Waste Control Room using FILENET or ORACLE applications. There may also be a working copy in the desk drawer in the Rad Waste Control Room.)** **A Liquid Waste Release Permit will not be available for this JPM. The JPM has all the cues needed for Liquid Waste Release Permit information. The examiner will act as the Shift Manager and supply the Liquid Waste Release Permit information when requested.** The Student Handout of 0POP02-WL-0100, Liquid Waste Release, can be handed out with the Student Handout of the Initial Conditions on the last page of this JPM. The Operator may make reference for the need to use gloves while manipulating valves and equipment in the field. If the candidate indicates that he/she will have to get a pair of gloves, acknowledge it and tell them because we will be simulating operations and that gloves will not be required. This JPM can be performed in either Unit.					
1	WHEN Chemistry indicates that the WMT is ready for release, THEN PERFORM the following: RECORD the Pre-Release Permit Number on the Procedure Performance Data Sheet. (Step 5.38.1)	Records the Pre-Release Permit Number on the Procedure Performance Data Sheet. **NOTE:** **The Pre-Release Permit number is already on the Procedure Performance Data Sheet.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
2	ENSURE the corresponding flow from the running number of CW pumps is greater than or equal to the flow recorded on the permit. 1 CW Pmp – 113,000 gpm flow 2 CW Pmp – 226,000 gpm flow 3 CW Pmp – 339,000 gpm flow 4 CW Pmp – 452,000 gpm flow (Step 5.38.2) **CUE:** **As the Shift Manager state that the permit shows 4 CW Pumps running equaling 452,000 gpm flow.**	Ensures the corresponding flow from the running number of CW Pumps is greater than or equal to the flow recorded on the permit. **NOTE: As stated earlier the Shift Manager has the release permit.**	___	___	___
3	ENSURE Section 5.1, Prerelease Instructions, of the applicable procedure below is completed: • With RT-8038 operable, Section 5.1 of 0PSP07-WL-LDP1, Liquid Effluent Permit completed. OR • With RT-8038 inoperable, Section 5.1 of 0PSP07-WL-LDP2, Liquid Effluent Permit With RT-8038 Inoperable completed. (Step 5.38.3) **CUE:** **As the Shift Manager state that Section 5.1 of 0PSP07-WL-LDP2, Liquid Effluent Permit With RT-8038 Inoperable, is completed.**	Ensures Section 5.1, Prerelease Instructions, of the applicable procedure below is completed: • With RT-8038 inoperable, Section 5.1 of 0PSP07-WL-LDP2, Liquid Effluent Permit With RT-8038 Inoperable completed. **NOTE:** **RT-8038 is Inoperable as per the Initiating Cue.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
4	ENSURE the Shift Manager has signed 0PSP07-WL-LDP1 or 0PSP07-WL-LDP2 authorizing the release (Step 5.38.4) **CUE:** **As the Shift Manager acknowledge that 0PSP07-WL-LDP2, Liquid Effluent Permit With RT-8038 Inoperable, has been signed and authorization to release has been approved.**	Ensures the Shift Manager has signed 0PSP07-WL-LDP2 authorizing the release.	___	___	___
5	IF RT-8038 is inoperable, THEN GO TO the applicable step for the tank being released to verify discharge line valving: • WMT 1D(2D) - Step 5.39.7 (Step 5.38.4)	With RT-8038 Inoperable, the operator GOes TO step 5.39.7	___	___	___

NOTE:

In the next step the location of WL-1235 is physically outside but still in the RRA. The valve is located near the sump in a concrete berm that surrounds the outside Waste Monitor Tanks.

Personnel enter and exit the south end of the MAB through a security card door that opens up to the MAB Truck Bay.

Then there is a door that opens up to the outside from the south side of the MAB Truck Bay which directs personnel to perform a hand and foot frisk. A frisking station is located just outside this door.

At this point, personnel are outside but in a fenced in area. The concrete berm around the Waste Monitor Tanks is a few steps to the West.

Frisking is not required when re-entering the MAB.

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*6	WMT 1D(2D) ENSURE the following valves CLOSED to verify WMT 1D(2D) discharge line valving with RT-8038 inoperable: • ***"WL-1235 WMT SUMP EMPTYING PUMP DISCHARGE VALVE".*** • "1(2)-WL-0279 WASTE MONITOR TANK PUMPS 1A,B&C(2A, B&C) DISCHARGE HEADER ISOLATION VALVE". • "1(2)-WL-FV-5064A WASTE MONITOR TANK PUMP 1E(2E) DISCHARGE/RECIRC FLOW CONTROL VALVE" • "1(2)-WL-FV-5070A WASTE MONITOR TANK PUMP 1F(2F) DISCHARGE FLOW CONTROL VALVE" (• "1(2)-WL-FV-5066 WASTE MONITOR TANK PUMPS 1D&E(2D&E) DISCHARGE CROSS-TIE FLOW CONTROL VALVE" • "1(2)-WL-FV-5063 WASTE MONITOR TANK PUMPS 1D&E(2D&E) SUCTION CROSS-TIE FLOW CONTROL VALVE" (Step 5.39.7) **CUE:** **WL-1235 is a manual valve with no remote position indication. Initial position is OPEN. After Operator simulates closing the valve then acknowledge that the valve is CLOSED.** **All other valves will be CLOSED with green light ON and red light OFF.**	Ensures all listed valves are closed. **NOTE:** **WL-1235 will be the only valve open. The student will have to locate this manual valve and simulate closing it.** **WL-1235 is located in the RRA but outside of the south end of the MAB in the sump area for WMTs D, E and F.** **The working procedure references P&ID, LWPS 7R309F90021. In the RWCR, using Computer ORACLE or FILENET applications, or looking through the RWCR desk drawer; if the student can pull up the referenced P&ID, then hand out the P&ID with this JPM.** **WL-1235 out of position would constitute a Configuration Management issue. If the student wants to stop at this point then as the Shift Manager instruct the student to reposition WL-1235 per the procedure and continue with the liquid waste release. The Control Room Staff will generate the CR to address WL-1235 being out of position.**	___	___	___
7	**GO TO** Step 5.40. (Step 5.39.8)	After ensuring all listed valves in the previous step are closed, the operator continues to Step 5.40.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
8	IF OC flow is aligned through MAB Chiller 11A(21A), THEN GO TO Step 5.43. (Step 5.40)	NAs this step. **NOTE:** **Per the Initiating Cue MAB Chiller Open Loop Flow is isolated for MAB Chiller 11A(21A)**	___	___	___
9	ENSURE Open Loop Auxiliary Cooling Water running through MAB Chiller 11A(21A) was not used to satisfy Prerequisite Step 3.8 prior to performing Step 5.42. (Step 5.41) **CUE:** **If asked, report as the TGB Watch that 1(2)-OC-0292, "CHILLER UNITS RETURN HEADER ISOL" is OPEN.**	Determines that current OL-ACW alignment associated with MAB Chiller 11A(21A) was NOT used to satisfy Prerequisite Step 3.8. **NOTE:** **Prerequisite Step 3.8 reads as follows:** **The Open Loop Auxiliary Cooling Water System SHALL be running when the discharge is started with Open Loop Auxiliary Cooling Water flow through at least one RCB or MAB Chiller and "1(2)-OC-0292 CHILLER UNITS RETURN HEADER ISOL" OPEN.** **MAB Chiller 11A(21A) is secured per the Initiating Cue** **This step may be a little confusing but it should be initialed and NOT NA.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
10	PERFORM one of the following: • PLACE OC to MAB Chiller 11A(21A) in service. OR • CLOSE the following valves during the release: ○ 1(2)-OC-0058, MAB CHILLER 11A(21A) OPEN LOOPACW RETURN FV-9316 INLET ISOLATION VALVE ○ 1(2)-OC-0059, MAB CHILLER 11A(21A) OPEN LOOPACW RETURN FV-9316 OUTLET ISOLATION VALVE (Step 5.42) **CUE:** **If asked report as the TGB watch that Open Loop flow to MAB Chiller 11A(21A) is isolated and OC-0058 and OC-0059 are closed.**	Determines that open loop flow is isolated to MAB Chiller 11A(21A) due to OC-0058 and OC-0059 being closed. **NOTE:** **Per the initiating cue open loop flow to MAB Chiller 11A(21A) is isolated with OC-0058 and OC-0059 Closed.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
11	IF 1(2)WL-FQI-4078 LWPS Discharge Header Flow Totalizer Indicator is operable, THEN RECORD the beginning totalizer reading: Beginning Totalizer Reading _____ (Step 5.43) **CUE:** **If asked report from the Control Room that there are no OAS entries for WL-FQI-4078 and that the Flow Totalizer is Operable.**	Records beginning totalizer reading. **NOTE:** **Operator should be able to record the reading currently on the Radwaste Control Panel.**	___	___	___
12	NOTIFY Control Room personnel the release is to commence. (Step 5.44) **CUE:** **Control Room acknowledges the release has started.**	Notifies Control Room personnel that release of WMT 1(2)D is to commence.	___	___	___
13	REQUEST Control Room to immediately notify Radwaste Control Room Operator if the number of running CW pumps is decreased during the release. (Step 5.45) **CUE:** **Control Room acknowledges the request.**	Requests Control Room assistance in monitoring CW Pump flow.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
14	REQUEST Control Room personnel to log time/date, release number and tank being released. (Step 5.46) **CUE:** **Acknowledge that Control Room personnel will make log book entry.**	Requests Control Room to log WMT 1(2)D release time, release number and tank being released..	___	___	___
*15	PLACE "1(2)WL-FV-4077 WASTE MONITOR TANK PUMPS 1A, B & C(2A, B & C) DISCHARGE DIVERT VALVE" handswitch in DISCHARGE. (Step 5.47) **CUE:** **Initially handswitch for WL-FV-4077 is in the recirc position (red light on for recirc) and after simulation of positioning the switch it is in the discharge position (red light on for discharge).** **Shortly after student has simulated placing "1(2)WL-FV-4077 WASTE MONITOR TANK PUMPS 1A, B & C(2A, B & C) DISCHARGE DIVERT VALVE" handswitch in DISCHARGE, then make a simulated PA announcement that CW Pump #14 has tripped.**	Places "1(2)WL-FV-4077 WASTE MONITOR TANK PUMPS 1A, B & C(2A, B & C) DISCHARGE DIVERT VALVE" handswitch in DISCHARGE. **NOTE:** **Steps 5.48, 5.49, 5.50, 5.51 & 5.52 may or may not be performed depending on when the examiner makes the CW Pump #14 trip announcement.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*16	IF the running number of CW pumps becomes less than that assumed on the Effluent Release Permit, OR Radiation Monitor RT-8038 trips for any reason, THEN immediately PERFORM the following: • ***PLACE "1(2)WL-FV-4077 WASTE MONITOR TANK PUMPS 1A, B & C(2A, B & C) DISCHARGE DIVERT VALVE" in RECIRC position.*** • NOTIFY the Unit Supervisor/Shift Manager the release is secured. • NOTIFY Chemistry the release is secured. • *GO TO Step 5.55.* (Step 5.53) **CUE:** **Handswitch for WL-FV-4077 is in the discharge position (red light on for discharge) and after simulation of positioning the switch it is in the recirc position (red light on for recirc).** **Inform operator that notifications have been made.**	Places "1(2)WL-FV-4077 WASTE MONITOR TANK PUMPS 1A, B & C(2A, B & C) DISCHARGE DIVERT VALVE" in RECIRC position. Notifies the Unit Supervisor or Shift Manager Notifies Chemistry the release is secured. Goes to Step 5.55. **NOTE:** **Based on the Caution prior to step 5.47 the student may secure the release as soon as the announcement of CW Pump #14 trip is made. The Critical Task is satisfied as long the student secures the release.**	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: LIQUID WASTE RELEASE WITH CW PUMP TRIP

JPM Number: NRC P2 Revision Number: 0

Task Number and Title: 30301, Determine appropriate processing flow path using processing guidelines.

K/A Number and Importance: 068 A4.02 3.2/3.1

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☒ In-Plant ☐ Other

Alternate Path: ☒ Yes ☐ No

Task Designed For: ☐ SRO Only ☐ RO/SRO ☒ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 3

Reference(s): 0POP02-WL-0100, Liquid Waste Release, Rev. 22
0PSP07-WL-LDP2, Liquid Effluent Permit With RT-8038 Inoperable, Rev. 13
P&ID, LWPS 7R309F90021#1(2) Rev. 22/19

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 20 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 6, 15, 16

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

The Unit is at 100% Power. The following conditions have been established for the release of Waste Monitor Tank (WMT) 1(2)D:

- WMT 1(2)D is on Long Path Recirculation.
- RT-8038, Liquid Waste Monitor, is INOPERABLE
- All four (4) Circulating Water (CW) Pumps are running.
- MAB Chillers 11C(21C) and 11D(21D) are in service.
- Open Loop ACW is isolated to MAB Chiller 11A(21A) with OC-0058 and OC-0059 closed.
- RCB Chillers 11A(21A) and 11B(21B) are in service.
- Open Loop Valve 1(2)-OC-0292, Chiller Units Return Header Isolation valve is OPEN.
- The Shift Manager has 0PSP07-WL-LDP2, Liquid Effluent Permit With RT-8038 Inoperable, and is ready to authorize the release of WMT 1(2)D.
- Chemistry has just called and is ready for the release of WMT 1(2)D.

INITIATING CUE

The Unit Supervisor directs you to continue with 0POP02-WL-0100, Liquid Waste Release, at Step 5.38 for the release of WMT 1(2)D.

STPNOC

Job Performance Measure

PLACE ROD CONTROL MG SET IN SERVICE

JPM Number: NRC P3

Revision Number: 0

Date: 10/22/2018

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted JPM for use on the LOT 22 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

1. This JPM is performed in the plant.

INITIAL CONDITIONS

The Unit is in MODE 5 and maintenance has just been completed on the generator portion of Rod Drive MG Set #1. Electrical Maintenance has requested that it be started and placed on the bus for voltage and current checks.

INITIATING CUE

You have been given a current copy of 0POP02-RS-0001, Rod Control, and the Unit Supervisor directs you to start Rod Control Motor Generator Set #1 and close the generator output breaker per section 6.0, Starting MG Set No. 1 with MG Set No. 2 Idle.

NOTE:

- Rod Drive MG Set #2 is secured with its output breaker racked-in & open and its supply breaker is racked in with 125VDC control power available.
- 0POP02-RS-0001, Rod Control, Section 5.0, System Preparation, has been completed.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Operator simulates starting Motor Generator Set #1 and manually close its generator output breaker. The Motor Generator set is then secured when a "ROD DRIVE MG SET TRBL" annunciator is received in the Control Room.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE The synchronizing switch handles are not normally inserted into the switch housing. In Unit 1 the switch handle must be obtained from the Control Room. In Unit 2 the switch handle is hanging off a door handle on the MG Set Control Panel. If asked, MG Set #1 Directional Overcurrent 'A' and 'C' are NOT actuated. The relays will be actuated after the student performs Step 6 of this JPM. The Student Handout of 0POP02-RS-0001, Rod Control can be handed out with the Student Handout of the Initial Conditions on the last page of this JPM. This JPM can be performed in either Unit.					
1	Ensure MG Set #1 "SYNCHRONIZE" selector switch is in "OFF" position. (Step 6.1) **Cue:** **UNIT 1: Inform the student that they have the handle and it has been inserted into the switch housing on the Control Panel.** **UNIT 2: Once the student simulates obtaining the switch handle, inform the student it has been inserted into the switch housing on the Control Panel.** **When identified, indicate that the SYNCHRONIZE selector switch is OFF**.	Ensure MG Set #1 "SYNCHRONIZE" selector switch is in "OFF" position. **NOTE:** **The Synchronize switch position will already be OFF.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
2	Ensure MG Set #1 "VOLTMETER" selector switch is NOT in the “OFF” position. (Step 6.2) **CUE:** **When identified, indicate that the VOLTMETER selector switch is in the "C-A" position.**	Ensures MG Set #1 "VOLTMETER" selector switch NOT in OFF.	___	___	___
*3	CLOSE the MG Set #1 Motor Circuit Breaker by momentarily turning the “MOTOR” handswitch to the “CLOSE” position. (Step 6.3) **CUE:** **If asked the MG Set is clear for a start.** **INITIALLY: The Red light is <u>NOT</u> LIT and the Green light is LIT** **FINALLY: The Red light is LIT and the Green light is <u>NOT</u> LIT** **(Audible) you hear the MG Set starting up.**	Closes MG Set #1 Motor Circuit Breaker by momentarily turning the “MOTOR” handswitch to the “CLOSE” position. **NOTE:** **Before simulating starting the MG Set, the operator may walk in to the MG Set room to ensure the MG Set looks good for a start.** **If the MG Sets are actually running then ear protection is required.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*4	WHEN MG Set No. 1 is up to speed (approximately 15 seconds), THEN DEPRESS and RELEASE MG Set No. 1 “GEN. FIELD FLASH” push button. (Step 6.4) **CUE:** **When the operator flashes the field, indicate that the generator output voltage is rising and then stabilizes at 260 VAC.**	When the motor is at full speed (after about 15 seconds): the operator will then depress and release MG Set #1 "GEN FIELD FLASH" pushbutton.	___	___	___
5	VERIFY generator line voltage between 255 and 265 VAC. (Step 6.5) **Cue:** **Indicate that Generator Line Voltage is about 260 VAC.**	Verifies MG Set #1 "GENERATOR LINE VOLTS" between 255 and 265 VAC.	___	___	___
*6	Close MG Set #1 Generator Circuit Breaker. (Step 6.6) **Cue:** **If examinee specifically asks - Rod Drive MG Set #2 breaker is Racked In and open.** **INITIALLY: The Red light is <u>NOT</u> LIT and the Green light is LIT** **FINALLY: The Red light is LIT and the Green light is <u>NOT</u> LIT**	Places MG Set #1 “GENERATOR” handswitch to “CLOSE”	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE In the next step the trouble alarm is expected to NOT be illuminated. Per the note prior to the next step, if the output breaker for the other MG set is racked out or has 125 Volt DC removed that could cause the alarm to be in. In this case MG Set #2 has its output breaker racked in and open with control power available. After verifying the standby MG set output breaker is normal then the annunciator is not expected to be in and the MG set is secured.					
7	IF MG Set trouble alarm on CP005 Lampbox 5M03 F5 “ROD DRIVE MG SET TRBL” is NOT illuminated, THEN GO TO Step 6.9. (Step 6.7) **Cue:** **When the Control Room Operator is contacted, inform the operator that Annunciator 5M03/F5, "ROD DRIVE MG SET TRBL" initially cleared but has just alarmed again in the Control Room and is currently in an alarm state.**	Contacts the Control Room and determines that annunciator 5M03/F5, "ROD DRIVE MG SET TRBL" is illuminated in the Control Room but should not be and continues to step 5.8.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE **Alternate path starts here**					

8	Check MG Set trouble alarm on CP005 Lampbox 5M03 F5 "ROD DRIVE MG SET TRBL" expected by performing the following:
	• IF MG Set No. 2 Output Breaker is RACKED OUT, THEN VERIFY the following:
	  • MG Set No. 1 Output Breaker – CLOSED
	  • MG Set No. 1 Switchgear relays are RESET:
	  • Directional Overcurrent A
	  • Directional Overcurrent C
	  • Ground Protective Relay
	(Step 6.8.1)
		N/As this step because MG Set #2 Output Breaker is Racked in.
		NOTE:
		This was part of the initiating cue.
			___	___	___

9	IF MG Set No. 2 Supply Breaker, LC 1L1/3D(2L1/3D) is either RACKED OUT or has 125 VDC control power removed, THEN VERIFY the following MG Set No. 1 Switchgear relays are RESET: • Directional Overcurrent A • Directional Overcurrent C • Ground Protective Relay (Step 6.8.2)	N/As this step because MG Set #2 Output Breaker is racked in and control power is available. **NOTE:** **This was part of the initiating cue.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*10	IF MG Set trouble alarm on CP005 Lampbox 5M03 F5 "ROD DRIVE MG SET TRBL" is NOT expected or MG Set No. 1 protective relays are NOT reset, THEN ENSURE MG Set No. 1 out of service by performing the following: • *OPEN MG Set No. 1 Generator Circuit Breaker by momentarily turning the "GENERATOR" handswitch to the "TRIP" position.* • *OPEN MG Set No. 1 Motor Circuit Breaker by momentarily turning the "MOTOR" handswitch to the "TRIP" position.* • CONTACT Electrical Maintenance for troubleshooting. (Step 6.8.3) **Cue:** **If asked about MG Set #2 output/supply breaker status, refer to Initial Conditions.** **If asked, MG Set #1 Directional Overcurrent 'A' and 'C' are actuated. (i.e. protective relays are NOT reset) The Directional Overcurrent relays are on the MG Set panel door.** **For both breakers:** • **INITIALLY: The Red light is LIT and the Green light is <u>NOT</u> LIT** • **FINALLY: The Red light is <u>NOT</u> LIT and the Green light is LIT**	The Operator determines that the trouble alarm is NOT expected by analysis that the MG Set #2 Output Breaker is Racked In and the Supply Breaker is Racked In with 125VDC control power available. *** The Operator Opens MG Set No. 1 Generator Circuit Breaker by momentarily turning the "GENERATOR" handswitch to the "TRIP" position.*** *** The Operator Opens MG Set No. 1 Motor Circuit Breaker by momentarily turning the "MOTOR" handswitch to the "TRIP" position.*** The Operator contacts, or has the Control Room contact, Electrical Maintenance.	___	___	___
CUE	<u>This JPM is completed</u>				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: PLACE ROD DRIVE MG SET IN SERVICE

JPM Number: NRC P3 Revision Number: 0

Task Number and Title: 2150, Startup the Control Rod Drive System

K/A Number and Importance: 001 A4.08 3.7/3.4

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☒ In-Plant ☐ Other

Alternate Path: ☒ Yes ☐ No

Task Designed For: ☐ SRO Only ☐ RO/SRO ☒ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 3

Reference(s): 0POP02-RS-0001, Rod Control, Rev 22

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 3, 4, 6, 10
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

The Unit is in MODE 5 and maintenance has just been completed on the generator portion of Rod Drive MG Set #1. Electrical Maintenance has requested that it be started and placed on the bus for voltage and current checks.

INITIATING CUE

You have been given a current copy of 0POP02-RS-0001, Rod Control, and the Unit Supervisor directs you to start Rod Control Motor Generator Set #1 and close the generator output breaker per section 6.0, Starting MG Set No. 1 with MG Set No. 2 Idle.

NOTE:

- Rod Drive MG Set #2 is secured with its output breaker racked-in & open and its supply breaker is racked in with 125VDC control power available.
- 0POP02-RS-0001, Rod Control, Section 5.0, System Preparation, has been completed.

LOT 22 NRC EXAM

SIMULATOR OPERATING TEST

SCENARIO #1

Revision 0

Week of 10/22/2018

SCENARIO OUTLINE

Facility: South Texas Project **Scenario No.: 1** **Op-Test No.: LOT 22 NRC**

Examiners: _____ **Operators:** _____

_____ _____

_____ _____

Initial Conditions:

- **Reactor is in Mode 2 at 10^{-8} Amps and Stable (IC 201)**

Turnover:

- **Condensate Pump #13 is OOS**

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	N/A	RO (R) SRO (R)	Withdraw control rods to raise reactor power to 1% - 3%
2 (10 min)	50-R3-06 1.0	BOP (I) SRO (I, TS)	Power Range Channel NI 42 Fails High
3 (25 min)	05-17-02 1.0	BOP (I) SRO (I, TS)	SG 1B PORV pressure transmitter (PT-7421) fails high.
4 (35min)	01-01-02 True	RO (I) SRO (I)	Continuous Control Rod Withdrawal Malfunction.
5 (N/A)	01-12-02 True	All (M)	ATWS – Reactor fails to trip. Enter 0POP05-EO-FRS1 **(Critical Task)** (Integral to scenario)
6 (N/A)	05-02-02 0.5	All (M)	Main Steam Line Break in Containment on SG 1B. **(Critical Task)** (Manual trigger after transition back to 0POP05-EO-EO00)
7 (N/A min)	04-09-08 True	BOP (C)	Failure of Train B Essential Chiller to start – (Integral to Scenario)

*** (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor.**

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Malfunctions after EOP entry (1–2)	1
2. Abnormal events (2–4)	4
3. Major transients (1–2)	2
4. EOPs entered/requiring substantive actions (1–2)	2
5. Entry into a contingency EOP with substantive actions (≥1 per scenario set)	1
6. Preidentified critical tasks (≥2)	2

SCENARIO MISCELLANEOUS INFORMATION

INSTRUCTOR NOTES:

- Critical Tasks are indicated by "**C-##**" in the position column and indicated in bold type. In some instances an "*" will indicate that only a portion of the task listed is considered critical.
- Shaded cells indicate procedural entry points.

RECORDED PARAMETERS:

Recorded parameters will be determined during NRC Validation week.

The parameters identified for recording may be of value in evaluating crew performance. Once the scenario is complete for each crew, printout the recorded parameters and label the printout with date, time, crew number and scenario number. See Scenario Instructions section for further details on how to save the Recorded Parameters.

- CVCS Charging Flow FI-0205A
- Alternate Boration Isolation Valve MOV-0218 positon
- AFW OCIV MOV-0065 Train B

SCENARIO OBJECTIVES

Event 1 Objective

- Perform a reactor startup to the point of adding heat in accordance with 0POP03-ZG-0004, Reactor Startup.

Event 2 Objective

- Respond to a loss of power range instrumentation per 0POP04-NI-0001.

Event 3 Objective

- Respond to excessive steam demand per 0POP04-MS-0001.

Event 4 Objective

- Operate the Control Rod Drive System in manual, automatic and group modes in accordance with 0POP03-ZG-0004 and 0POP03-ZG-0006 as applicable.

Event 5 Objective

- Respond to a Nuclear Power Generation – ATWS in accordance with 0POP05-EO-FRS1.

Event 6 Objective

- Respond to a faulted steam generator in accordance with 0POP05-EO-EO20 or 0POP05-EO-FRS1.

Event 7 Objective

- Respond to a reactor trip or safety injection in accordance with 0POP05-EO-EO00.

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 1 **Event Description:** Withdraw control rods to raise reactor power to 1% - 3%			
Time	**Position**	**Required Operator Actions**	**Notes**
	SRO	Performs step 6.33 of 0POP03-ZG-0004 by directing the RO to raise reactor power to 1% - 3% using control rods and/or dilution. *(NOTE: Using control rods would be the preferred method of reactivity control at this point.)*	
	RO	Raises reactor power to 1% - 3% using control rods and/or dilution.	
	BOP	Monitors steam generator levels as power approaches the point of adding heat to ensure proper operation of the SG level control system. *(**Event 2** can be triggered once the Crew has controlled the Reactor at the Point of adding Heat and the Reactor is between 1% and 3% Power.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 2 **(Examiner Trigger)** **Event Description:** Power range channel NI 42 fails high			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	Acknowledges and announces annunciators: • "PR CHANNEL DEV" • "PR HI SET PT FLUX HI RX TRIP ALERT" *(Alarm list is not all inclusive)*	
	SRO/RO	Determines that PR Channel NI-42 has failed high. • Places Control Rods in MANUAL and verifies that NO Low Power Feed Reg Valves are in service. *(This is an immediate action of 0POP04-NI-0001, Nuclear Instrument Malfunction, Step 1.)*	
	SRO	Enters and directs the actions of 0POP04-NI-0001, Nuclear Instrument Malfunction	
	RO	CHECK Power Range Nuclear Instruments – NORMAL **(RNO)** PERFORM the following: • ENSURE "ROD BANK SELECTOR SW" in MAN. • PLACE any Low Power Feed Regulating Valves, being used to feed Steam Generators, in Manual. • CONTROL Steam Generator Levels Between 68 and 74% NR Level Indication. • GO TO Addendum 3, Power Range Nuclear Instrumentation Malfunction. *(Step 1, RNO a. b. c. d.)*	
	BOP	STOP Any Main Turbine Load Changes *(Addendum 3, Step 1)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 2 **(Examiner Trigger)**			
Event Description: Power range channel NI 42 fails high			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	MAINTAIN RCS Tavg Within 1.5°F Of Tref Using Manual Control Rod Motion *(Addendum 3, Step 2)* *(Tavg will probably still be within 1.5°F of Tref.)*	
	RO	BYPASS The Malfunctioning Power Range Channel By Selecting The Affected Channel On The Following Switches: • "COMPARATOR CHANNEL DEFEAT" • "POWER MISMATCH BYPASS" • "ROD STOP BYPASS" • "DETECTOR CURRENT COMPARATOR" "UPPER SECTION" • "DETECTOR CURRENT COMPARATOR" "LOWER SECTION" *(Addendum 3, Step 3)* *(Performed at the NI Panel, CP-011)*	
	RO	ENSURE The Following Permissives Are In The Correct State Within One Hour Of The Power Range Channel Failure: • "P-7 POWER OPER RX TRIPS BLKD" Lampbox 5M24 Window B-2 • "P-8 THREE LOOP OPERATION PERMITTED" Lampbox 5M24 Window B-3 • "P-9 RX/TURB TRIP BLOCKED" Lampbox 5M24 Window B-4 • "P-10 MAN BLOCK INT/LO PR RX TRP PERM" Lampbox 5M24 Window A-2 *(Addendum 3, Step 4)* *(Permissives will be in the correct state)*	
	RO	CHECK Reactor Power Meets One Of the Following: • GREATER THAN 75% OR • WILL BE GREATER THAN 75% *(Addendum 3, Step 5)* *(Reactor Power is 1-3%. Performs RNO Steps)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 2 **(Examiner Trigger)**			
Event Description: Power range channel NI 42 fails high			
Time	**Position**	**Required Operator Actions**	**Notes**
	SRO	Perform the following: • RESTRICT Reactor Power to LESS THAN OR EQUAL to 75%. • DIRECT I&C personnel to reduce the operable Power Range Channel trip setpoints to LESS THAN OR EQUAL TO 85% per 0PSP02-NI-0040, Power Range Channels N-0041, N-0042, N-0043, and N-0044 Overpower Trip High Range Setpoint Adjustment, within four hours after the channel inoperability time. • GO TO Addendum 3 Step 8.0. *(Addendum 3, Step 5 RNO)* *(When called, I/C Maintenance will report that they will start making preparations to set the PR Trip Setpoints.)*	
	BOP	VERIFY Steam Generator Level Being - CONTROLLED BY LOW POWER FEED REGULATING VALVES • PLACE any Low Power Feed Regulating valves being used to feed steam generators in AUTO at discretion of the Shift Manager/Unit Supervisor • CONTROL Steam Generator levels between 68 and 74% NR level indication *(Addendum 3, Step 8)* *(Low Power FRVs were placed in Manual during the immediate actions.)*	
	RO	PLACE "ROD BANK SELECTOR SW" In AUTO At Discretion Of The Shift Manager/Unit Supervisor *(Addendum 3, Step 9)* *(The Crew will leave ROD BANK SELECTOR SW in MANUAL during low power operations.)*	
	SRO	INITIATE A Condition Report To Repair The Inoperable Channel *(Addendum 3, Step 10)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 2 **(Examiner Trigger)**

Event Description: Power range channel NI 42 fails high

Time	Position	Required Operator Actions	Notes
	SRO	REVIEW Applicable Technical Specifications. REFER TO Addendum 8 *(Addendum 3, Step 11)* *(See applicable Tech Specs below)* *(**Event 3** can be triggered after SRO has checked TS.)*	

TS 3.3.1.2 & 3.3.1.3 for Power Range Neutron Flux; Action 2a (Action 2b is NA)
With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:
For Functional Units with installed bypass test capability,
NOTE: A channel may be bypassed for up to 12 hours for surveillance testing per Specification 4.3.1.1. provided no more than one channel is in bypass at any time.

- *The inoperable channel may he placed in bypass, and must be placed in the tripped condition within 72 hours, and*
- *Either, THERMAL POWER is restricted to less than or equal to 75% of RATED THERMAL POWER and the Power Range Neutron Flux Trip Setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER within 4 hours, or the QUADRANT POWER TILT RATIO is monitored at least once per 12 hours per Specification 4.2.4.2.*

TS 3.3.1.8 for Power Range Neutron Flux associated with OTDT; Action 6a (Action 6b is NA) (Similar to Action 2a above)
With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:
a. For Functional Units with installed bypass test capability, the inoperable channel may be placed in bypass, and must be placed in the tripped condition within 72 hours.
Note: A channel may be bypassed for up to 12 hours for surveillance testing per Specification 4.3.1.1 (4.3.2.1), provided no more than one channel is in bypass at any time.

***NOTE:** Power Range Neutron Flux Inoperability associated with **TS 3.3.1.19 Action 8** is not applicable because only 1 channel out of 4 is inoperable. Permissives will be in the correct state. **TS 3.2.4** is not applicable for QPTR because the Unit is in Mode 2.*

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 3 **(Examiner Trigger)**			
Event Description: SG 1B PORV pressure transmitter (PT-7421) fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	Acknowledges and announces the following annunciator on 6M03 • SG PORV NOT CLOSE (A-1).	
	BOP	Diagnoses that PT-7421 has failed high causing 1A SG PORV to open. *(The crew may elect to use Conduct of Operations guidance for failure of an automatic control system and manually close the SG PORV at this time)*	
	RO	Lowers reactor power to less than or equal to 100% using the Main Turbine Governor Valve Limiter. *(This is an immediate action step of 0POP04-MS-0001. However, the Unit is in Mode 2 so the immediate action does not apply.)*	
	SRO	Directs performance of 0POP04-MS-0001, Excessive Steam Demand.	
	RO	CHECK Reactor Power – LESS THAN OR EQUAL TO 100% *(Step 1)* *(This is an immediate action step of 0POP04-MS-0001. However, the Unit is in Mode 2 so the immediate action does not apply.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 3 **(Examiner Trigger)**			
Event Description: SG 1B PORV pressure transmitter (PT-7421) fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**

	BOP SRO	IDENTIFY And ISOLATE Steam Leak:
		• CHECK Steam Generator PORVs – CLOSED
		(RNO)
		• ENSURE SG PORVs are responding to control SG pressures to LESS THAN OR EQUAL to 1225 psig.
		  • IF Steam Generator pressures are LESS THAN 1225 psig, THEN PERFORM the following:
		  • PLACE affected Steam Generator PORV(s) IN "MAN" AND CLOSE on MCB controller
		  • "PORV PV-7421"
		  • REFER TO Technical Specifications 3.3.5.1, 3.7.1.6.
		  • GO TO Step 3.0
		(Step 2b and 2b RNO)
		(Step 2 checks many sources of possible excess steam demand. Step 2b is applicable for this event.)
		***(TS 3.3.5.1 Action 2 [Auto control of SGPORV in Modes 1 or 2]** – With one less the required number of OPERABLE channels, within 7 days restore the inoperable channel to OPERABLE status or apply the requirements of the CRMP, or be is at least HOT STANDBY within the next 6 hours.*
		***TS 3.7.1.6 Action a** – With one less than the required atmospheric relief valves OPERABLE, within 7 days restore the required atmospheric steam relief valves to OPERABLE status or apply the requirements of the CRMP, or be is at least HOT STANDBY within the next 6 hours.*
		[Required to be met for automatic controls only in Modes 1 and 2])	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 3 **(Examiner Trigger)**			
Event Description: SG 1B PORV pressure transmitter (PT-7421) fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**

	SRO	EVALUATE Unit Shutdown As Follows:
		• DETERMINE if unit shutdown or load reduction is warranted based on the following criteria:
		  • Size of leak
		  • Location of leak
		  • Rate of depletion of secondary inventory
		  • Will a Turbine Trip isolate Steam Leak OR will MSIVs need to be closed to isolate leak
		• CHECK Unit Shutdown or Load Reduction - REQUIRED
		(RNO)
		PERFORM the following:
		• *MAINTAIN* present plant conditions until leak can be isolated or repaired.
		• GO TO the appropriate plant procedure as directed by the Shift Manager/Unit Supervisor.
		(Step 3 and Step 3 RNO)
		(There are no other steam leaks and the SRO will determine that the plant can remain at the current power level.)
		*(**Event 4 & 5** can be triggered after SRO has checked TS.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 4 **(Examiner Trigger)** and 5 (**Integral**)			
Event Description: Continuous Control Rod Withdrawal Malfunction followed by an ATWS.			
Time	**Position**	**Required Operator Actions**	**Notes**
	ALL	The Crew diagnoses the Control Rods stepping out with no other malfunctions present.	
	RO	ENSURE "ROD BANK SEL" Switch In "MAN" *(Step 1)* *(This is an immediate action step of 0POP04-RS-0001, Control Rod Malfunction.)* *(Control Rods will continue to step out even in MANUAL.)*	
	RO	VERIFY All Rods – NO ROD MOTION **(RNO)** PERFORM the following: • TRIP the Reactor • GO TO 0POP05-EO-EO00, Reactor Trip or Safety Injection. *(Step 2 and Step 2 RNO)* *(This is an immediate action step of 0POP04-RS-0001, Control Rod Malfunction)* *(The Reactor will not trip and control rods continue to step out.)*	
	SRO	Directs performance of 0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS.	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 4 **(Examiner Trigger)** and 5 (**Integral**)			
Event Description: Continuous Control Rod Withdrawal Malfunction followed by an ATWS.			
Time	**Position**	**Required Operator Actions**	**Notes**

	RO	VERIFY Reactor Trip:
		• Rod bottom lights – LIT
		• Reactor trip and bypass breakers – OPEN
		• Neutron flux – LOWERING
		(RNO)
		PERFORM the following:
		• ENSURE manual reactor trip has been attempted using both reactor trip switches.
		• IF reactor trip and bypass breakers will NOT open, THEN:
		  • ENSURE control rods are being inserted.
		  • ENSURE 480V LC 1K1 and 1L1 feeder breakers open
		  • IF reactor trip and bypass breakers DO NOT open, THEN DISPACH and operator to open the reactor trip and bypass breakers:
		  • REACTOR TRIP BREAKER ‘R’
		  • REACTOR TRIP BREAKER ‘S’
		  • BYPASS BREAKER ‘R’
		  • BYPASS BREAKER ‘S’
		  • WHEN the reactor is verified tripped, THEN CLOSE 480V LC 1K1 and 1L1 feeder breakers.
		(Step 1 and Step 1 RNO Immediate Action Step)	

	AO	*(The reactor trip breakers will not open so the crew dispatches and operator to locally manually open the reactor trip breakers.)*	
	BOP	VERIFY Turbine Trip: • VERIFY all turbine throttle valves – CLOSED • Main generator output breaker – OPEN • Main steam to deaerator valves – CLOSED *(Step 2 Immediate Action Step)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 4 **(Examiner Trigger)** and 5 (**Integral**)			
Event Description: Continuous Control Rod Withdrawal Malfunction followed by an ATWS.			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	VERIFY AFW Status: • Motor- driven pumps – RUNNING **(RNO)** • Manually START pumps • Turbine – driven pump – RUNNING **(RNO)** • Manually START pumps *(Step 3)* *(AFW Pumps will be manually started. SG levels will be above the requirement to establish AFW flow.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 4 **(Examiner Trigger)** and 5 (**Integral**)			
Event Description: Continuous Control Rod Withdrawal Malfunction followed by an ATWS.			
Time	**Position**	**Required Operator Actions**	**Notes**

	RO CT-52	INITIATE Emergency Boration of RCS:
		• **OPEN alternate Boration isolation valve.**
		• CCPs – AT LEAST ONE RUNNING.
		• Charging flow – ESTABLISHED
		• CHECK Boration source aligned to the Boric Acid Tanks.
		  • Emergency Boration flowpath
		  OR
		  • Normal Boration flowpath
		• **CONTROL charging to MAINTAIN GREATER THAN 50 GPM charging flow on 'CHG FLOW FI-0205A'**
		• **ENSURE at least one boric acid pump – RUNNING**
		• CHECK emergency boration flowpath in service:
		  • MAINTAIN emergency boration flowpath – GREATER THAN 50 GPM 'ALT BORATE FLOW FI-0120A'
		• CONTINUE boration to obtain TCS Cb GREATER THAN OR EQUAL TO shutdown margin limit per PLANT CURVE BOOK, FIGURE 5.5, 68°F CURVE.
		  • ENSURE normal letdown established
		  • CONTROL pressurizer level between – 22% and 85%
		  • MAINTAIN boration flowrate as directed by this procedure.
		• CHECK Pressurizer Pressure – LESS THAN 2335 PSIG.
		(Step 4)	

	AO	*(Plant Operator calls the control room and reports that the Reactor Trip and Bypass breakers have been manually opened.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 4 **(Examiner Trigger)** and 5 (**Integral**)			
Event Description: Continuous Control Rod Withdrawal Malfunction followed by an ATWS.			
Time	**Position**	**Required Operator Actions**	**Notes**
	SRO RO	From the CIP – IF BOTH conditions listed below occur, THEN GO TO step 18: • Extended Range NIs indicate LESS THAN 5% power. • Extended Range NIs indicate negative start-up rate. *(FRS1 TRANSITION CRITERIA from CIP)* *(After Reactor Trip Breakers have been manually opened, Reactor Power will rapidly lower to the transition criteria. A Safety Injection may occur as RCs temperature and pressure lower and pressure nears the actuation setpoint.)*	
	SRO Chem Tech	VERIFY Adequate Shutdown Margin: • CHECK emergency boration – IN SERVICE • NOTIFY Chemistry to sample the RCS for boron concentration. • Shutdown margin – RCS Cb Greater THAN OR EQUAL TO SHUTDOWN MARGIN LIMIT PER PLANT CURVE BOOK, FIGURE 5.5, 68°F CURVE. **(RNO)** PERFORM the following: • WHEN minimum shutdown margin has been verified, THEN SECURE emergency boration. • GO TO Step 20. *(Step 18)* *(Chemistry acknowledges the request for an RCS boron sample and reports that a chemical technician will perform the task as soon as possible.)* *(The crew will continue emergency boration and continue to Step 20 while waiting on RCS boron sample results.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 4 **(Examiner Trigger)** and 5 (**Integral**)			
Event Description: Continuous Control Rod Withdrawal Malfunction followed by an ATWS.			
Time	**Position**	**Required Operator Actions**	**Notes**
	SRO	RETURN TO Procedure and Step in Effect: • CONTINUE to monitor Critical Safety Functions *(Step 20)* *(The crew will transition to 0POP05-EO-EO00, Reactor Trip or Safety Injection, Step 1.)* *(**Event 6 & 7** can be triggered as soon as transition to 0POP05-EO-EO00 is made.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 6 **(Examiner Trigger)** **Event Description:** SG 1B Main Steam Line Break **(Trigger as soon as crew exits FRS1)**			
Time	**Position**	**Required Operator Actions**	**Notes**
	SRO	Due to the requirement to MONITOR Critical Safety Functions when exiting 0POP05-EO-FRS1, the crew will transition to 0POP05-EO-FRZ1, Response to High Containment Pressure, due to an Orange Path on the Containment Critical Safety Function.	

	RO	VERIFY Containment Spray – ESTABLISHED
		• Containment Pressure LESS THAN 56.5 PSIG.
		• At least one Containment Spray pump – RUNNING
		  • Discharge Valve OPEN
		  • Flow indicated
		• RETURN TO procedure step in effect and PERFORM this procedure as time permits.
		(Step 1)
		(Containment pressure will be less than 56.5 psig with containment spray pumps running.)	

	SRO	Transitions to 0POP05-EO-EO00, Reactor Trip or Safety Injection, Step 1.	
	SRO RO	The crew will perform a read through of the immediate actions of 0POP05-EO-EO00, reactor Trip or Safety Injection. • Reactor is tripped • Turbine is tripped • AC ESF Busses are energized • Safety Injection status *(Step 1, 2, 3, 4)* *(It is likely that the SG 1B Main Steam break in containment will have caused a safety injection and main steam line isolation.)* *(The crew will continue in 0POP05-EO-EO00.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 6 **(Examiner Trigger)** **Event Description:** SG 1B Main Steam Line Break **(Trigger as soon as crew exits FRS1)**			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	VERIFY Proper SI Equipment Operation Per ADDENDUM 5, VERIFICATION OF SI EQUIPMENT OPERATION *(Step 5)* *(The SRO will hand out Addendum 5 to the BOP which will perform Addendum 5 in parallel with the rest of the procedure.)* *(See Actions on pages 27-31)*	
	BOP (CT-17)	Per the CIP of 0POP05-EO-EO00, Reactor Trip or Safety Injection: IF a faulted SG(s) is NOT required to maintain at least two SGs available for RCS cooldown, THEN the US or SM may direct actions be taken to isolate the faulted SG(s). **If this action is taken the crew will place AFW Pump #12 handswitch in PTL <u>OR</u> close the Train 'B' AFW OCIV, AF-FV-7524, to isolate feedwater flow to SG 1B.** *(Also see Page 25)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 6 **(Examiner Trigger)** **Event Description:** SG 1B Main Steam Line Break **(Trigger as soon as crew exits FRS1)**			
Time	**Position**	**Required Operator Actions**	**Notes**

	RO	MONITOR If Containment Spray Is Required:
		• Containment pressure ‑ GREATER THAN 9.5 PSIG (QDPS)
		• VERIFY containment spray – INITIATED
		• VERIFY containment isolation Phase B valves - CLOSED
		  • "INL OCIV MOV-0318"
		  • "INL OCIV MOV-0291
		  • "OUTL ICIV MOV-0542"
		  • " OUTL ICIV MOV-0403"
		  • " OUTL OCIV MOV-0404"
		  • " OUTL OCIV FV-4493"
		• STOP ALL RCPs.
		(Step 6)
		(Containment pressure will be greater than 9.5 psig and the crew may stop all RCPs before this step.)
		(The crew may stop a CS Pump at this step because the CIP will require one of the CS Pumps be stopped if all three are running from the Containment Spray signal.)	

	RO	CHECK RCP Seal Cooling: • ENSURE seal injection flow between 6 and 13 gpm *(Step 7)* *(RO may have to adjust seal injection.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 6 **(Examiner Trigger)** **Event Description:** SG 1B Main Steam Line Break **(Trigger as soon as crew exits FRS1)**			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	MONITOR RCS Temperatures ‑ • WITH ANY RCP RUNNING, RCS TAVG STABLE AT OR TRENDING TO 567°F OR • **WITHOUT ANY RCP RUNNING, RCS TCOLD STABLE AT OR TRENDING TO 567°F** *(Step 8)* *(RCS temperature may be trending down at this point due to the faulted SG 1B. With Main Steam Isolated there is nothing else the crew can do.)*	
	RO	CHECK Pressurizer Status: • PORVs ‑ CLOSED • Normal pressurizer spray valves - CLOSED • Auxiliary spray valve - CLOSED • Excess letdown isolation valves – CLOSED *(Step 9)*	
	RO	MONITOR If RCPs Should Be Stopped: • HHSI pump - AT LEAST ONE RUNNING • RCS pressure - LESS THAN 1430 PSIG **(RNO)** • GO TO Step 11 *(Step 10)* *(Even if Reactor Coolant Pump Trip Criteria will is met the RCPs were stopped at Step 5.)*	
	RO	VERIFY The Following Containment Isolation Valve – CLOSED • Seal return isolation valves • Containment atmosphere radiation monitor isolation valves *(Step 11)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 6 **(Examiner Trigger)** **Event Description:** SG 1B Main Steam Line Break **(Trigger as soon as crew exits FRS1)**			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	CHECK If SG Secondary Pressure Boundary Intact: • CHECK pressures in all SGs – • CONTROLLED OR RISING • GREATER THAN CONTAINMENT PRESSURE **(RNO)** GO TO 0POP05-EO-EO20, FAULTED STEAM GENERATOR ISOLATION, Step 1. • MONITOR Critical Safety Functions • WHEN Addendum 5 of this procedure is complete, THEN Functional Restoration Procedures may be IMPLEMENTED. *(Step 12)* *(Will not transition to a Functional Recovery Procedure until Addendum 5 is complete.)*	
	SRO	Informs crew of transition to 0POP05-EO-EO20, Faulted SG Isolation, and to monitor Critical Safety Functions	
	BOP (CT-17)	**Checks MSIV's and MSIB's closed.** *(Step 1, 0POP05-EO-EO20, Faulted SG Isolation)* ***(Note: This step of the CT is only critical if the MSIVs and MSIBs have not automatically closed yet.)*** *(This step may already be performed (see page 27, performing EO00 Add 5)*	
	BOP	CHECK If Any SG Secondary Pressure Boundary Intact: • CHECK pressures in all SGs – ANY SG PRESSURE CONTROLLED OR RISING *(Step 2)* *(SG's 'A', 'C' and 'D' pressures are 'controlled'. SG 'B' pressure is NOT controlled.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 6 **(Examiner Trigger)** **Event Description:** SG 1B Main Steam Line Break **(Trigger as soon as crew exits FRS1)**			
Time	**Position**	**Required Operator Actions**	**Notes**
	SRO/BOP	IDENTIFY Faulted SG(s): • CHECK pressure in all SGs – o ANY SG PRESSURE LOWERING IN AN UNCONTROLLED MANNER OR o ANY SG COMPLETELY DEPRESSURIZED *(Step 3)* *(SG 1B is faulted)*	
	SRO/BOP (CT-17) * denotes critical steps of CT	Isolates the faulted SG (1B) • Verifies all FWIV's closed. • Verifies all FWIB's closed. • Verifies all FW Preheater bypass valves closed. • Verifies all FW Regulating and Low Power FW Regulating Valves closed. • Isolates AFW flow to 'B' SG • **Resets SI*** • **Resets ESF load sequencers*** • **Resets SG LO-LO level AFW actuations*** • Checks SG 1D intact • **Closes 'B' SG AFW OCIV, AF-MOV-0065*** • Verifies SG 'B' PORV closed • Verifies SG 'B' Blowdown and sample isolation valves closed *(Step 4)* *(All valves listed get an automatic closed signal. No malfunctions are inserted on these valves. AF-MOV-0065 is the only one that requires action by the operator to close.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 6 **(Examiner Trigger)** **Event Description:** SG 1B Main Steam Line Break **(Trigger as soon as crew exits FRS1)**			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	Check Secondary Radiation: • Resets SI • Resets SG LO-LO level AFW actuations • **Resets SG Blowdown and Sampling Isolations** • Notifies Chemistry to sample all SG's hourly for activity. • Checks the following Rad Monitors: o Main Steamline o SG Blowdown o CARS Pump • WHEN SG sample results are received, THEN VERIFY SG sample activity – NORMAL *(Step 5)* *(The first 2 resets have already been done so the operator will just check that they are still reset.)*	
	SRO	Check if SI flow should be terminated • RCS subcooling - >35°F [45°F] • Secondary heat sink – NR level in one SG > 14% [34%] OR total AFW Flow > 576 gpm. • RCS pressure > 1745 psig and stable or rising • Pressurizer level > 8% [44%] *(Step 6)* *If conditions are met, a transition to 0POP05-EO-ES11, SI Termination, will be made.* *Conditions will likely NOT be met for transition at this time.* *If not met (expected), the crew will transition to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.*	
	SRO	Announces transition from 0POP05-EO-EO20 to 0POP05-EO-ES11 or 0POP05-EO-E010, as appropriate. ***Terminate the scenario.***	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 7 (**Integral**)

Event Description: 0POP05-EO-EO00, Addendum 5 Actions.
(**Event 7** – Essential Chiller 12B fails to auto a start. Addendum 5, Step 14)

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY FW isolation: • SGFPTs – TRIPPED • SU SGFP – TRIPPED • VERIFY the following valves –CLOSED o FWIVs o FWIBs o FW preheater bypass valves o FW regulating valves o Low power FW regulating valves o SG blowdown isolation valves o SG sample isolation valves *(EO00 Addendum 5, Step 1)* *(0POP05-EO-EO00, Reactor Trip or Safety Injection, Addendum 5, Verification of Equipment Operation.)* *(This addendum is performed in parallel with Steps 5 to 14 of 0POP05-EO-EO00, Reactor Trip or Safety Injection.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 7 (**Integral**)

Event Description: 0POP05-EO-EO00, Addendum 5 Actions.
(**Event 7** – Essential Chiller 12B fails to auto a start. Addendum 5, Step 14)

Time	Position	Required Operator Actions	Notes
	BOP (CT-17)	CHECK if main steamline should be isolated: • CHECK for any of the following conditions: o Containment pressure – GREATER THAN OR EQUAL TO 3 PSIG OR o SG pressure (without low steamline pressure SI blocked) - LESS THAN OR EQUAL TO 735 PSIG OR o SG pressure (with low steamline pressure SI blocked) - LOWERING AT A RATE GREATER THAN OR EQUAL TO 100 PSI/SEC, BY OBSERVANCE OF THE STEAMLINE PRESSURE RATE BISTABLES • **VERIFY Main Steamline Isolation:** o **MSIVs – CLOSED** o **MISBs - CLOSED** *(Step 2)* ***(Note: This step of the CT is only critical if the MSIVs and MSIBs have not automatically closed yet.)***	
	BOP	VERIFY AFW system status: • Motor-driven pump – RUNNING • Turbine-driven pump – RUNNING *(Step 3)*	
	BOP	VERIFY AFW valve alignment - PROPER EMERGENCY ALIGNMENT *(Step 4)*	
	BOP	VERIFY total AFW Flow - GREATER THAN 576 GPM *(Step 5)*	
	BOP	VERIFY containment isolation phase A: • Phase A – ACTUATED • Phase A valves - CLOSED, REFER TO ADDENDUM 1, PHASE A ISOLATION VERIFICATION *(Step 6)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 7 (**Integral**)

Event Description: 0POP05-EO-EO00, Addendum 5 Actions.
(**Event 7** – Essential Chiller 12B fails to auto a start. Addendum 5, Step 14)

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY ECW status: • ECW pumps – RUNNING • ECW pump discharge isolation valves – OPEN *(Step 7)*	
	BOP	VERIFY CCW pumps – RUNNING *(Step 8)*	
	BOP	VERIFY RCFC status: • RCFCs – RUNNING • Cooling water - TRANSFERRED TO CCW *(Step 9)*	
	BOP	VERIFY SI pump status: • HHSI pumps – RUNNING • LHSI pumps – RUNNING *(Step 10)*	
	BOP	VERIFY SI valve alignment – PROPER EMERGENCY ALIGNMENT *(Step 11)*	
	BOP	VERIFY SI flow: • RCS pressure - LESS THAN 1745 PSIG • HHSI pump flow – INDICATED • RCS pressure - LESS THAN 415 PSIG **(RNO)** • GO TO Step 13 of this Addendum. *(Step 12)*	
	BOP	VERIFY containment ventilation isolation: • Containment atmosphere radiation monitor isolation valves – CLOSED • Normal purge supply and exhaust fans – STOPPED • Supplemental purge supply and exhaust fans – STOPPED • Purge Dampers – CLOSED *(Step 13)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 7 (**Integral**)

Event Description: 0POP05-EO-EO00, Addendum 5 Actions.
(**Event 7** – Essential Chiller 12B fails to auto a start. Addendum 5, Step 14)

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY ventilation actuation: • Control room HVAC – OPERATING IN EMERGENCY RECIRC • EAB HVAC - OPERATING IN EMERGENCY RECIRC • FHB HVAC - OPERATING IN EMERGENCY MODE • FHB Exhaust Fans - ONLY TWO TRAINS OPERATING o Exhaust booster fans o Main exhaust fans **(RNO)** • PERFORM the following: o IF three trains FHB exhaust fans running, THEN PLACE one train FHB exhaust fans in PULL TO LOCK. **(Back to A/ER)** • SECURE one FHB filter train by PERFORMING the following: o PLACE the outlet damper Controller in manual o Manually close the outlet damper o VERIFY proper operation of filter train in service • Essential chilled water pumps – RUNNING • **Essential chillers – RUNNING** **(RNO – Event 7)** **Perform the following:** • **WHEN the respective ESF Load Sequencer has completed its automatic sequence OR it is determined that the respective ESF Load Sequencer has failed, THEN manually START essential chiller(s).** • **IF an Essential Chiller fails to start, THEN SECURE the corresponding train of EAB HVAC.**	
	AO	*(If a Plant Operator was asked to check Ess. Chiller 12B, they will report that there a no visible issues with the chiller and it looks good for a start.)* *(Addendum 5, Step 14 is continued on the next page.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 7 (**Integral**)

Event Description: 0POP05-EO-EO00, Addendum 5 Actions.
(**Event 7** – Essential Chiller 12B fails to auto a start. Addendum 5, Step 14)

Time	Position	Required Operator Actions	Notes
	BOP	**Addendum 5 Step 14 continued.** **(Back to A/ER)** • ECCS pump room fan coolers – RUNNING • AFW pump cubicle fans – RUNNING • FHB truck bay doors – CLOSED *(Step 14)*	
	BOP	NOTIFY Unit Supervisor that Addendum 5 is COMPLETE *(Step 15)*	
	SRO	IMPLEMENT Functional Restoration Procedures as required *(Step 16)*	
	SRO	RETURN TO procedure step in effect. *(Step 17)*	

CRITICAL TASK SUMMARY

POSITION	EXPECTED RESPONSE	ACCEPTANCE CRITERIA	SAT/ UNSAT
SRO/RO	**CT-52** **ESTABLISH EMERGENCY BORATION BY PERFORMING THE FOLLOWING:** • **OPEN ALTERNATE BORATION ISOLATION VALVE. (CV-MOV-0218)** • **CONTROL CHARGING TO MAINTAIN GREATER THAN 50 GPM CHARGING FLOW ON 'CHG FLOW FI-0205A'** • **ENSURE AT LEAST ONE BORIC ACID PUMP – RUNNING**	Establish Emergency Boration before transitioning out of 0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS. Failure to insert negative reactivity constitutes "mis-operation or incorrect crew performance which leads to incorrect reactivity control.	
SRO/BOP	**CT-17** **ISOLATE FAULTED SG 1B BY PERFORMING THE FOLLOWING:** • **RESET SI** • **RESET ESF LOAD SEQUENCER** • **RESET LO-LO LEVEL AFW ACTUATION** • **CLOSE SG 1C AFW OCIV, AF-MOV-0065** **OR** **PLACE AFW PUMP 12 HANDSWITCH IN PTL OR CLOSE AFW PUMP 1B REG VALVE, AF-FV-7524** **Note: 0POP05-EO-EO00, Reactor Trip or Safety Injection CIP has a step to isolate a faulted SG early if the crew determines that a Faulted SG needs to be isolated.**	Isolate a Faulted Steam Generator before transitioning out of 0POP05-EO-EO20, Faulted Steam Generator Isolation. Failure to isolate a faulted SG that can be isolated causes challenges to CSFs beyond those irreparably introduced by the postulated conditions. Also, depending upon the plant conditions, it could constitute a demonstrated inability by the crew to recognize a failure of the automatic actuation of an ESF system or component. Failure to isolate a faulted SG can result in challenges to the following CSFs: • Integrity • Subcriticality • Containment (if the break is inside containment)	

NOTE: (Per NUREG-1021, Appendix D)
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.

EXPECTED BOOTH COMMUNICATIONS

EVENT 1:

- There are no Booth Communications for Event 1.

EVENT 2:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of the status of NI-0042, report that an I&C maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the failed Power Range NI-0042. No further action is necessary.

EVENT 3:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of the status of PT-7421, report that an I&C maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the failure of PT-7421. No further action is necessary.

EVENT 4:

- There are no Booth Communications expected for Event 4.

EVENT 5:

- As a Plant Operator, if asked to open the Reactor Trip Breakers locally, then wait until Emergency Boration has been aligned and then trigger the lesson plan step to open the Reactor Trip Breakers. This ensures the Critical Task is performed prior to opening the Reactor Trip Breakers. ***See Expected Booth Actions.***
- When contacted, Chemistry will acknowledge the need for an RCS boron sample and report that the task will be performed as soon as possible.

EVENT 6:

- There are no Booth Communications expected with Event 6.

EVENT 7:

- If asked to check Ess. Chiller 12B, wait about 1 minute and then report that there are no visible issues with the chiller and it looks good for a start.

EXPECTED BOOTH ACTIONS

1. If asked to open the DA High level Dump Valves then trigger the step for ‘DA High Level Dump Valves’.
2. If asked to fill the AFWST then trigger the step for ‘AFWST Makeup’.
3. If asked to manually locally open the reactor trip breakers then wait until Emergency Boration has been established and then trigger the step for ‘Open Reactor Trip Breakers.’

SIMULATOR SETUP

NOTE

ALL Annunciator Response Procedures (ARP's) must be checked if this scenario is the first to be run on this day. Setup for subsequent runs of this scenario only requires those ARP's that were actually marked in to be checked.

Instructors running the scenario must keep track of which ARP's these are, otherwise, all will have to be checked for subsequent scenarios as well.

Check and clean the following procedures:

- 0POP03-ZG-0004, Reactor Startup
- 0POP04-NI-0001, Nuclear Instrument Malfunction
- 0POP04-MS-0001, Excessive Steam Demand
- 0POP04-RS-0001, Control Rod Malfunction
- 0POP05-EO-FRS1, Response to Nuclear Power Generation - ATWS
- 0POP05-EO-EO00, Reactor Trip or Safety Injection
- 0POP05-EO-EO20, Faulted Steam Generator Isolation
- Additional Annunciator Response Procedures that were used by the Crew during the Scenario.

NOTE

The Scenario Lesson Plan MUST be run from the left most Instructor Station in Simulator Booth to allow for recording and storing of recorded parameter data.

- Log into Instructor Workstation as 'lotnrc' user, open Orchid (nstps server), then 'Unlock' Initial Conditions Group 'lotnrc'.
- Reset to IC #201 and perform the following:
  - Switch Check
  - Ensure red light on end of CP-010 off
  - Ensure ICS Annunciators have stopped counting up

SIMULATOR SETUP (cont'd.)

- Go to RUN and perform the following:
  - Ensure Simulator is ready by performing applicable checkoffs from LOR-GL-0006, LOR Conduct of Simulator Training Guidelines, Addendum 5, Simulator Readiness Checklist.
  - Ensure VCT Makeup Integrators are set as follows:
    - Momentarily place RC M/U CONT to STOP and then START to reset BA BATCH/GALLONS and TOT M/U BATCH/GALLONS counters to zero.
    - Reset BA BATCH/GALLONS setpoint to 0 gallons and reset TOT M/U BATCH/GALLONS setpoint to 0 gallons.
    - Verify BA Controller Pot setting is 4.40
- Hang following ECO/Caution Tags:
  - Condensate Pump #13 Handswitch in PTL
- Open lesson plan for 'Scenario 1' in 'lotnrc' directory for LOT 22, then EXECUTE lesson plan. These actions will set up any initial conditions for the scenario.
- If this scenario IC has changing conditions (i.e. Xenon is changing, etc.), then place the simulator in FREEZE, otherwise it is OK to leave in RUN.
- Run the scenario in accordance with the next section, 'Scenario Instructions'.

SCENARIO INSTRUCTIONS

NOTE
Steps 1 to 4 below can be performed in the LOR Debrief Room prior to the crew coming into the Simulator provided exam security measures are taken.

1. Provide Shift Turnover sheets to the crew and review the information.
2. Have the Crew perform a Pre-Job Brief for raising power to 1% to 3%. Ensure the crew doesn't have any other questions about the Shift Turnover.
3. Ensure the Beacon book from the simulator is available to the crew if they are in the LOR Debrief Room.
4. Review the Simulator Differences list with the crew if needed.
5. When signaled by Simulator Staff, have the crew perform their board walkdown and inform the floor instructor when ready to take the watch.
6. Ensure the simulator is in RUN and verify simulator clock is set correctly. Note the time that the Crew takes the watch. _____ Start Time.

NOTE

Malfunction Step and/or Lesson Plan Steps (Events) are triggered upon the Lead Examiners signal during the scenario unless an agreed upon time is discussed with the examiner prior to the start of the scenario.

Always 'TRIGGER' events in the Simulator Scenario Lesson Plans. This way delays associated with events will take place as intended.

Refer to 'EXPECTED BOOTH COMMUNCATIONS' and 'EXPECTED BOOTH ACTIONS' Sections for instructions for Instructor actions during the scenario.

7. Trigger the step titled 'Start Chart' and ensure specified Recorded Parameters for the scenario begin recording as the scenario runs. If the chart speed is NOT set to 5400 seconds (90 minutes) then perform the following:
   - Under 'CHARTS' click on 'SET TIME'
   - In the dialog box enter 5400 seconds (90 minutes)
   - Click OK.
8. The crew will perform Event #1 and raise reactor power to 1% to 3%.
9. Trigger **MALFUNCTION STEP –** This will insert Step #1, Event #2.
10. Trigger **STEP 2 –** Event #3
11. Trigger **STEP 3 –** Event #4
12. Trigger **STEP 4** – Event #6
13. Place simulator in FREEZE when cued by the Lead Examiner to terminate scenario.
14. DO NOT RESET simulator until the steps on the next page are completed and all Examiners have completed Follow-Up Questioning.

SCENARIO INSTRUCTIONS (cont'd.)

NOTE
Some scenarios will have more than one chart. For these, each chart file must be separately saved with a unique filename.

15. Saving Recorded Parameters Data
    - Click on the 'Charts' icon on the left side of the screen
    - Select 'Pause' icon, then select 'All'
    - Click on the 'Print Chart' icon, then select 'All'
    - This will bring up a window in the TASK BAR called PRIMOPDF.
    - Click on 'Create PDF'
    - This will bring up a File Save As window.
    - Save to folder **c:\Users\lotnrc\Desktop\LOT22 Charts**. The file name will be 'LOT22 Scenario 1' followed by a name that identifies the crew (e.g. 'Crew A).
    - Save the new file. It will be saved in a folder already on the desktop. LOT22 Charts.
16. Saving Scenario SAM (Simulator Action Monitor)
    - Under 'TOOLS' click on 'SAM'
    - In the dialog box that comes up click on 'SAVE TO'
    - Save as a 'TEXT FILE' to folder **c:\Users\lotnrc\Desktop\LOT22 Charts.** The file name will be 'LOT22 SAM INFO Scenario 1' followed by a name that identifies the crew (e.g. 'Crew A).

TURNOVER INFORMATION

Unit 1 is in Mode 2 with Reactor Power at 10^{-8} AMPS in the Intermediate Range.

- Critical Data has been taken for the Reactor Startup.
- The crew is to continue at Step 6.33 of 0POP03-ZG-0004, Reactor Startup, and raise power to 1% to 3%.
- Condensate Pump #13 is out of service for maintenance.
- Cycle Burnup is 150 MWD/MTU. (BOL)
- RCS Boron Concentration is 1610 ppm.
- Boric Acid Tank ‘A’ is at 7315 ppm and ‘B’ is at 7309 ppm.
- No liquid waste discharges are in progress or planned.
- No personnel are in containment.
- FHB Truck Bay doors are closed.
- No ESF DG FOST’s are on recirc.

LCO Actions:

None.

LOT 22 NRC EXAM

SIMULATOR OPERATING TEST

SCENARIO #2

Revision 0

Week of 10/22/2018

SCENARIO OUTLINE

Facility: South Texas Project **Scenario No.: 2** **Op-Test No.: LOT 22 NRC**

Examiners: _____ **Operators:** _____

_____ _____

_____ _____

Initial Conditions:

- **Unit 1 is at 100% Reactor Power. (IC 202)**

Turnover:

- **Train C HHSI and LHSI Pumps are OOS.**

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	CI_PDISL 9733CLSP 0.5	BOP (C) SRO (C, TS)	CRE HVAC Train C Supply Fan becomes inoperable.
2 (10 min)	02-25-02 0.0	RO (I) SRO (I, TS)	Loop 1A Cold Leg RTD T-0410B Fails Low
3 (25 min)	07-04-03 True	RO (R) BOP (R) SRO (R)	SGFPT #13 Trips and SGFP #14 fails to start. Crew will start a down power to about 80% power.
4 (N/A)	02-26-02 0.0 06-02-01 True	RO (C) SRO (C)	RTD T-420B fails low causing the reactor to trip and the Main Turbine fails to auto trip. (Triggers at 95% power) **(Critical Task)**
5 (N/A)	02-01-02 0.5	All (M)	LBLOCA. (Triggers 2 minutes after tripping SGFPT #11)
6 (N/A)	50-BF-04 & 05 True	RO (C)	LHSI Pumps 1A & 1B fail to Auto Start. (Integral to Scenario) **(Critical Task)**
7 (N/A)	01-12-04B True	BOP (C)	Train B of Phase A fails to auto actuate with CV-MOV-0023 failed open. (BM_XCV0023TVFAILSP)

*** (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor.**

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Malfunctions after EOP entry (1–2)	2
2. Abnormal events (2–4)	4
3. Major transients (1–2)	1
4. EOPs entered/requiring substantive actions (1–2)	2
5. Entry into a contingency EOP with substantive actions (≥1 per scenario set)	0
6. Preidentified critical tasks (≥2)	2

SCENARIO MISCELLANEOUS INFORMATION

INSTRUCTOR NOTES:

- Critical Tasks are indicated by "**C-##**" in the position column and indicated in bold type. In some instances an "*" will indicate that only a portion of the task listed is considered critical.
- Shaded cells indicate procedural entry points.

RECORDED PARAMETERS:

Recorded parameters will be determined during NRC Validation week.

The parameters identified for recording may be of value in evaluating crew performance. Once the scenario is complete for each crew, printout the recorded parameters and label the printout with date, time, crew number and scenario number. See Scenario Instructions section for further details on how to save the Recorded Parameters.

- Main Turbine Throttle Valve #1 position
- Core Exit T/C
- RCS Wide Range Pressure
- LHSI Pump 1A Red Light

SCENARIO OBJECTIVES

Event 1 Objective

- During all modes of plant operating conditions, operate the EAB/CRE HVAC System in accordance with the plant operating procedures and technical specifications.

Event 2 Objective

- Respond to a failure of RCS Loop RTD Protection Channel per 0POP04-RP-0004, Failure of RCS Loop RTD Protection Channel.

Event 3 Objective

- Respond to a Steam Generator Feed Pump trip per 0POP04-FW-0002, Steam Generator Feed Pump Trip.

Event 4 Objective

- Respond to a reactor trip per 0POP05-EO-ES01, Reactor Trip Response.

Event 5 Objective

- Respond to a loss of reactor coolant involving a break size in which reactor coolant system pressure drops below high head safety injection pump shutoff head per 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.

Event 6 Objective

- During all modes of plant operating conditions, operate the Safety Injection System in accordance with the plant operating procedures and technical specifications.

Event 7 Objective

- Respond to a reactor trip or safety injection in accordance with 0POP05-EO-EO00, Reactor Trip or Safety Injection.

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 1 **(One minute after crew takes watch.)**			
Event Description: CRE HVAC Train C Supply Fan becomes inoperable.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	Acknowledges and announces the following annunciators from 22M3: • CR SPLY FAN TRBL (C-5) *(NOTE: Temperature alarms may come in depending on how long it takes to swap HVAC.)*	
	SRO	Directs actions of 0POP09-AN-22M3, Window C-5, CR SPLY FAN TRBL.	
	RO	CHECK the following Plant Computer points to identify the affected CRE HVAC fan: • HEPD9612 {Train A, CRE "RET FAN 11A"} • HEPD9613 {Train B, CRE "RET FAN 11B"} • HEPD9614 {Train C, CRE "RET FAN 11C"} • HEPD9731 {Train A, CRE "SPLY AHU 11A"} • HEPD9732 {Train B, CRE "SPLY AHU 11B"} • **HEPD9733 {Train C, CRE "SPLY AHU 11C"}** *(Step 1 of annunciator response.)* *(Determines Train C CRE Supply Fan has a trouble alarm in on ICS.)*	
	RO AO	DISPATCH an Operator to the affected CRE HVAC fan to check local fan DP indication. • 1-HE-PDIS-9733 *(Step 2 of annunciator response.)* ***(When dispatched, the Plant Operator reports that Train C Supply Fan DP is barely above zero, the fan motor is hot to the touch and the fan is making abnormal noise.)***	
	SRO	INITIATE a Condition Report, as necessary, to investigate the cause of fan trouble and take corrective action. *(Step 3 of annunciator response.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 1 **(One minute after crew takes watch.)**			
Event Description: CRE HVAC Train C Supply Fan becomes inoperable.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	PERFORM the following, as necessary, per 0POP02-HE-0001, Electrical Auxiliary Building HVAC System: • START a CRE HVAC backup train. • STOP the affected CRE HVAC train. *(Step 4 of annunciator response.)* *(Operator will start CRE HVAC Train A, which already has EAB HVAC running on that train, however, CRE HVAC Train C may be secured first because of the report from the Plant Operator about the condition of CRE HVAC Train C Supply Fan.)*	
	RO	OPEN Train A "INL ISOL DMPR FV-9670" by holding handswitch in "OPEN" until the damper indicates fully OPEN. *(Step 5.1.2.1 of 0POP02-HE-0001)*	
	RO	OPEN Train A "INL ISOL DMPR FV-9671" by holding handswitch in "OPEN" until the damper indicates fully OPEN. *(Step 5.1.2.2 of 0POP02-HE-0001)*	
	RO	OPEN Train A "RET DMPR FV-9698" by holding handswitch in "OPEN" until the damper indicates fully OPEN. *(Step 5.1.2.3 of 0POP02-HE-0001)*	
	RO	START Train A "RET FAN 11A". *(Step 5.1.2.4 of 0POP02-HE-0001)*	
	RO	START Train A "SPLY AHU 11A". *(Step 5.1.2.5 of 0POP02-HE-0001)*	
	RO	ENSURE Computer Room/Relay Room Dampers are OPEN per Section 5.4. *(Step 5.1.2.6 of 0POP02-HE-0001)* *(Computer Room/Relay Room Dampers will already be open.)*	
	RO	STOP Train C "SPLY AHU 11C" by momentarily turning handswitch to the "STOP" position. *(Step 5.3.3.1 of 0POP02-HE-0001)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 1 **(One minute after crew takes watch.)**			
Event Description: CRE HVAC Train C Supply Fan becomes inoperable.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	STOP Train C "RET FAN 11C" by momentarily turning handswitch to the "STOP" position. *(Step 5.3.3.2 of 0POP02-HE-0001)*	
	RO	ENSURE Train C "RET DMPR FV-9696" is CLOSED by placing handswitch in "CLOSE" until the damper is CLOSED AND RETURN the handswitch to the "AUTO" position. *(Step 5.3.3.3 of 0POP02-HE-0001)*	
	RO	ENSURE Train C "INL ISOL DMPR FV-9664" is CLOSED by placing handswitch in "CLOSE" until the damper is CLOSED AND RETURN the handswitch to the "AUTO" position. *(Step 5.3.3.4 of 0POP02-HE-0001)*	
	RO	ENSURE Train C "INL ISOL DMPR FV-9665" is CLOSED by placing handswitch in "CLOSE" until the damper is CLOSED AND RETURN the handswitch to the "AUTO" position. *(Step 5.3.3.5 of 0POP02-HE-0001)*	
	SRO	TAKE appropriate action per Technical Specification 3.7.7. *(Step 5 of annunciator response.)* ***(TS 3.7.7 Action a [CRE HVAC INOP not because of cooling])*** ***(NOTE: CRMP is not allowed with this TS)*** ***(With one Control Room Makeup and Cleanup Filtration System inoperable for reasons other than condition b or condition e, within 7 days restore the inoperable system to OPERABLE status.)*** *(**Event 2** can be triggered after SRO has checked Tech Specs.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 2 **(Examiner Trigger)**

Event Description: Loop 1A Cold Leg RTD T-0410B Fails Low.

Time	Position	Required Operator Actions	Notes
	RO	Acknowledges and announces the following annunciators from 05M2: • OPDT RX PRETRIP (A-6) • T AVG/AUCT T AVG DEV (C-6) • DT/AUCT DT DEV (D-6)	
	SRO/RO	Determines LOOP A Cold Leg RTD T-410B failed low.	
	SRO	Directs actions of 0POP04-RP-0004, Failure of RCS Loop RTD Protection Channel.	
	RO	ENSURE "ROD BANK SEL" Switch In MANUAL *(Step 1)*	
	RO	CHECK The Following Indications - NORMAL • RCS loop temperature indicators (Tavg, Th, Tc, and ΔT) {CP005} • QDPS DETAIL DATA Page 2 for RCS Loop Th • Plant Computer **(RNO)** IF any RCS loop RTD channel is **NOT** operable, THEN PERFORM the following: {CP005} • SELECT The Failed Loop On "BYP SEL ΔT" Switch. • SELECT The Failed Loop On "BYP SEL T AVG" Switch. *(Step 2 and Step 2 RNO)*	
	RO	CHECK Tavg - WITHIN 1.5°F OF Tref (REFER TO Addendum 1) *(Step 3)* *(Tavg will probably be within 1.5°F of Tref.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 2 **(Examiner Trigger)**			
Event Description: Loop 1A Cold Leg RTD T-0410B Fails Low.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	CHECK Pressurizer Level - • AT PRESSURIZER PROGRAM LEVEL OR • TRENDING TO PRESSURIZER PROGRAM LEVEL *(Step 4)*	
	RO	Establish Automatic Rod Control: • DETERMINE if it is desired to place Rod Control System in Automatic • CHECK Tavg - WITHIN 0.5°F OF TREF • PLACE "ROD BANK SEL" Switch In AUTO • VERIFY Rod Control System - PROPER RESPONSE IN AUTOMATIC *(Step 5)* *(Placing Controls rods in Auto or leaving in Manual is at the discretion of the Unit Supervisor.)*	
	RO	CHECK "ΔT AND ΔT SETPTS TR-0412" Recorder - SELECTED TO OPERABLE CHANNEL (CP-018) • SELECT an operable channel on "ΔT AND ΔT SETPTS TR-0412" Recorder. *(Step 6)* *(Will select an operable channel for the recorder.)*	
	SRO	TAKE Appropriate Actions Per Technical Specifications. TS 3.3.1.8 & 9 OT & OPDT Action 6 TS 3.3.2.5.f LOW Tavg P4 Action 20 **Most Limiting Condition:** Place the failed channel in the tripped condition within 72 hours. *(Step 7)* *(See next page for TS details.)* *(**Event 3** can be triggered after SRO has checked Tech Specs.)*	

OPERATOR ACTIONS

Op-Test No.: 1	**Scenario No.:** 2	**Event No.:** 2 **(Examiner Trigger)**	
Event Description: Loop 1A Cold Leg RTD T-0410B Fails Low.			
Time	**Position**	**Required Operator Actions**	**Notes**
TS 3.3.1.8 & 9 Action 6 and TS 3.3.2.5.f Action 20 *NOTE: Action 6 and Action 20 are the same.* *With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:* *a. For Functional Units with installed bypass test capability, the inoperable channel may be placed in bypass, and must be placed in the tripped condition within 72 hours.* *Note: A channel may be bypassed for up to 12 hours for surveillance testing per Specification 4.3.1.1, provided no more than one channel is in bypass at any time.*			
	SRO	NOTIFY I&C To Place The Affected Channel In Trip Or Bypass. REFER TO Addendum 2, Procedure List For The Appropriate Procedure *(Step 8)*	
	SRO	INITIATE A Condition Report To Repair Failed Component *(Step 9)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 3 **(Examiner Trigger)**			
Event Description: SGFPT #13 Trips and SGFP #14 fails to start. Crew will start a down power to about 80% power.			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	Acknowledges and announces the following annunciators from 06M4: • SGFPT 13 TRIP (B-5) *(NOTE: Other alarms will come in as event progresses.)*	
	SRO	Ensures immediate actions of and directs actions of 0POP04-FW-0002, Steam Generator Feed Pump. *(NOTE: A SGFPT Trip is a direct entry condition for 0POP04-FW-0002.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 3 **(Examiner Trigger)**			
Event Description: SGFPT #13 Trips and SGFP #14 fails to start. Crew will start a down power to about 80% power.			
Time	**Position**	**Required Operator Actions**	**Notes**

	BOP	CHECK SGFPTs - REQUIRED NUMBER RUNNING
		(RNO)
		PERFORM the following:
		• ENSURE SU SGFP is running.
		• START a Standby FW Booster Pump.
		• IF a SGFPT trips with the SU SGFP already in service OR NOT available, THEN PERFORM the following:
		  • IF an idle (3300 RPM) SGFPT is available, THEN raise its speed using its individual speed controller to provide adequate Feedwater flow.
		  • IF feedwater flow is still LESS THAN required to recover SG Level, THEN GO TO Addendum 1, Turbine Load Reduction, to reduce Turbine load to match steam flow with feedwater flow.
		(Step 1, an immediate action step.)
		(The SU SGFP will start and then trip on overcurrent. At 100% power another FW pump will not be available to supply adequate FW and the crew will perform Add 1 to lower power to about 80%.)	

	AO	***(If dispatched a Plant Operator will report the following:*** • ***SGFPT 13 has no reason locally why it tripped.*** • ***SU SGFP locally looks OK*** • ***SU SGFP breaker has an overcurrent indicated*** • ***FWBP 13 is running SAT)***	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 3 **(Examiner Trigger)**

Event Description: SGFPT #13 Trips and SGFP #14 fails to start. Crew will start a down power to about 80% power.

Time	Position	Required Operator Actions	Notes

	ALL	PERFORM The Following To Reduce Turbine Load:
		• NOTIFY STP Co-Owners Using The EMS Website That Load Reduction Is Commencing
		• DETERMINE Amount Of Boric Acid To Add To Reduce Reactor Power To Desired Level AND COMMENCE RCS Boration
		• CHECK Rod Control System - IN AUTOMATIC
		• ENERGIZE Pressurizer Heaters For Boron Equalization
		• PERFORM The Following To Lower Turbine Load:
		  • CHECK Main Turbine - IN THE IMPULSE PRESSURE FEEDBACK MODE IMP IN
		  • REDUCE Turbine Load At A Rate Of Less Than Or Equal To 5% Per Minute Using Operator Auto
		(Step 1 of Addendum 1)	

	BOP	MONITOR SGFP Bearing Temperatures (Pump and Turbine) On ICS FW-011 Display: • Turbine Thrust Bearing Temperatures LESS THAN 235°F • Turbine Journal Bearing Temperatures LESS THAN 200°F • Pump Thrust Bearing Temperature LESS THAN 200°F • Pump Journal Bearing Temperature LESS THAN 235°F *(Step 2 of Addendum 1)* (*If the crew does not reduce load SGFPT bearing temperatures will begin to rise on the running pumps. However, if load is not reduced SG level will also lower fairly quickly to the trip set point. SGFPT bearing temperatures should not be a problem as long as load is expeditiously reduce. SG level will be the critical parameter to monitor.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 3 **(Examiner Trigger)**

Event Description: SGFPT #13 Trips and SGFP #14 fails to start. Crew will start a down power to about 80% power.

Time	Position	Required Operator Actions	Notes
	BOP	MAINTAIN Main Generator Reactive Load (VARs) Within The Following: • Less Than 450 MVARs • Guidelines Of The Plant Curve Book, Figure 7.1 *(Step 3 of Addendum 1)*	
	RO	MONITOR Rod Control System Responding To RCS TAVG/TREF Deviation By Ensuring The Following: • Control Rods Are Inserting AND RCS Tavg trending to within 3°F of Tref OR • RCS Tavg within 3°F of Tref *(Step 4 of Addendum 1)*	
	RO	CHECK Pressurizer Level Within One Of The Following: • Trending to Program Level • At Program Level *(Step 5 of Addendum 1)*	
	RO	CHECK Pressurizer Pressure Within One Of The Following: • Trending to between 2220 psig and 2250 psig • Between 2220 psig and 2250 psig *(Step 6 of Addendum 1)*	
	BOP	CHECK SG NR Level Within One Of The Following: • Trending to between 68% and 74% • Between to 68% and 74% *(Step 7 of Addendum 1)* *(**Event 4** will be triggered when power is reduced to 95%)* *(NOTE: If the crew manually trips the reactor earlier than 95% it will not affect the remainder of the scenario.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 4 **(Integral)**

Event Description: RTD T-420B fails low causing the reactor to trip and the Main Turbine fails to auto trip. (Triggers at 95% power).

Time	Position	Required Operator Actions	Notes
	RO BOP	Acknowledges and announces Reactor Trip	
	SRO	Ensures immediate actions of and directs actions of 0POP05-EO-EO00, Reactor Trip or safety Injection.	
	RO **CT-13** BOP	Completes immediate actions of 0POP05-EO-EO00 and determines: • Reactor is tripped (Step 1) • **Turbine is NOT tripped (Step 2)** • **(RNO) – Manually Trip the turbine.** • AC ESF Busses are energized (Step 3) • Check SI status (Step 4) *(RO will complete immediate actions. BOP Operator will monitor the plant and make an announcement of the Reactor trip.)* *(During a pause between performing immediate actions and verifying immediate actions, the BOP will throttle AFW to reduce the RCS cooldown by:* • ***Resetting the AFW Reg Valves*** • ***Throttling the AFW Reg Valves to lower total AFW flow.*** *Total AFW flow must remain above 576 gpm until at least one SG level is >14% NR {34% for adverse containment})*	
	RO **CT-13**	Notices that the Main Turbine did NOT automatically trip. **Performs a Manual Main Turbine trip using the push button on CP007.** *(Step 2 of 0POP05-EO-EO00)* ***(Action is to be completed prior a severe [orange-path] challenge develops to either the subcriticality or integrity CSF or before transitioning to EC21, whichever happens first.)***	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 4 **(Integral)**

Event Description: RTD T-420B fails low causing the reactor to trip and the Main Turbine fails to auto trip. (Triggers at 95% power).

Time	Position	Required Operator Actions	Notes
	SRO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed by performing a procedure read through of them.	
	SRO	Directs a transition to 0POP05-EO-ES01, Reactor Trip Response, and directs the MONITORING on Critical Safety Functions. *(The crew will continue in ES01 until the LB LOCA is recognized and transition is made back to EO00)*	
	RO	CHECK RCS Temperature Control: • CHECK RCPs – ANY RUNNING *(Step 1.a)*	
	RO	MONITOR RCS Temperatures • WITH ANY RCP RUNNING, RCS TAVG STABLE AT OR TRENDING TO 567ºF *(Step 1.b)* *(RCS temperature should be trending to 567ºF if AFW has been throttled to a lower rate.)*	
	BOP	Checks RCS TAVG less than 574ºF *(Step 2.a)*	
	BOP	Verifies the following valves CLOSED: • FWIVs • FWIBs • FW preheater bypass valves • FW regulating valves • Low Power FW regulating valves *(Step 2.b)*	
	BOP	Trips all SGFPTs *(Step 2.c)* *(**Event 5** - Two minutes after this step the LB LOCA will begin.)*	
	BOP	Verifies Feedwater flow to at least 3 steam generators *(Step 3)* *(AFW has actuated and Main Feedwater has isolated.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 4 **(Integral)**

Event Description: RTD T-420B fails low causing the reactor to trip and the Main Turbine fails to auto trip. (Triggers at 95% power).

Time	Position	Required Operator Actions	Notes
	RO	Verifies all Control Rods fully inserted *(Step 4)*	
	BOP	Verifies NO ESF diesel generators running *(Step 5)*	
	All	Recognize a LB LOCA has occurred. *(**Event 5** - LB LOCA will probably have occurred by this time.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Integral**) and 6 (**Integral**) **Event Description:** LB LOCA (**2 minutes after tripping SGFPT #11**.) LHSI Pumps 1A & 1B fail to Auto Start.			
Time	**Position**	**Required Operator Actions**	**Notes**
	SRO	Re-enters 0POP05-EO-EO00, Reactor Trip or Safety Injection.	
	RO SRO	Completes read through of 0POP05-EO-EO00, Reactor Trip or Safety Injection. • Reactor Tripped. • Turbine Tripped. • AC ESF Busses energized. • SI is actuated. *(0POP05-EO-EO00, Reactor Trip or Safety Injection Steps 1-4. Read through only.)*	
	RO **CT-5**	During the read through of step 1 – 4, RO notices that no LHSI pumps are running. **Manual starts LHSI Pumps 1A and 1B.** *(Step 4 of 0POP05-EO-EO00)* ***(Action is to be completed prior to transitioning out of 0POP05-EO-EO00. The action can also be accomplished while performing Addendum 5 of 0POP05-EO-EO00.)*** ***(Also see action in Add 5 on Page 26)***	
	BOP	VERIFY Proper SI Equipment Operation Per ADDENDUM 5, VERIFICATION OF SI EQUIPMENT OPERATION *(Step 5)* *(See Actions on pages 24-27)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Integral**) and 6 (**Integral**) **Event Description:** LB LOCA (**2 minutes after tripping SGFPT #11**.) LHSI Pumps 1A & 1B fail to Auto Start.			
Time	**Position**	**Required Operator Actions**	**Notes**

	RO	MONITOR If Containment Spray Is Required:
		• Containment pressure – GREATER THAN 9.5 PSIG (QDPS)
		• VERIFY containment spray – INITIATED
		• VERIFY containment isolation Phase B valves - CLOSED
		  • "INL OCIV MOV-0318"
		  • "INL OCIV MOV-0291
		  • "OUTL ICIV MOV-0542"
		  • " OUTL ICIV MOV-0403"
		  • " OUTL OCIV MOV-0404"
		  • " OUTL OCIV FV-4493"
		• STOP ALL RCPs.
		(Step 6)
		(Containment pressure will be greater than 9.5 psig and the crew may stop all RCPs before this step.)
		(The crew may stop a CS Pump at this step because the CIP will require one of the CS Pumps be stopped if all three are running from the Containment Spray signal.)	

	RO	CHECK RCP Seal Cooling: • ENSURE seal injection flow between 6 and 13 gpm *(Step 7)* *(RO may have to adjust seal injection.)*	
	RO	MONITOR RCS Temperatures – • WITH ANY RCP RUNNING, RCS TAVG STABLE AT OR TRENDING TO 567°F OR • **WITHOUT ANY RCP RUNNING, RCS TCOLD STABLE AT OR TRENDING TO 567°F** *(Step 8)* *(With Main Steam Isolated there is nothing else the crew can do.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Integral**) and 6 (**Integral**)

Event Description: LB LOCA (**2 minutes after tripping SGFPT #11**.) LHSI Pumps 1A & 1B fail to Auto Start.

Time	Position	Required Operator Actions	Notes
	RO	CHECK Pressurizer Status: • PORVs - CLOSED • Normal pressurizer spray valves - CLOSED • Auxiliary spray valve - CLOSED • Excess letdown isolation valves - CLOSED *(Step 9)*	
	RO	MONITOR If RCPs Should Be Stopped: • HHSI pump - AT LEAST ONE RUNNING • RCS pressure - LESS THAN 1430 PSIG • STOP all RCPs *(Step 10)* *(RCPs have already been stopped)*	
	RO	VERIFY The Following Containment Isolation Valve – CLOSED • Seal return isolation valves • Containment atmosphere radiation monitor isolation valves *(Step 11)*	
	RO	CHECK If SG Secondary Pressure Boundary Intact: • CHECK pressures in all SGs – • CONTROLLED OR RISING • GREATER THAN CONTAINMENT PRESSURE *(Step 12)*	
	RO	CHECK If SG Tubes Are Intact: • Main steamline radiation - NORMAL • IF SG blowdown in service, THEN SG blowdown radiation - NORMAL • CARS pump radiation - NORMAL • NO SG level rising in an uncontrolled manner *(Step 13)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Integral**) and 6 (**Integral**)

Event Description: LB LOCA (**2 minutes after tripping SGFPT #11**.) LHSI Pumps 1A & 1B fail to Auto Start.

Time	Position	Required Operator Actions	Notes
	RO	CHECK If RCS Is Intact: • Containment radiation - NORMAL • Containment pressure - NORMAL • Containment wide range water level - NORMAL **(RNO)** GO TO 0POP05-EO-EO10, LOSS OF REACTOR OR SECONDARY COOLANT, Step1. • MONITOR Critical Safety Functions. • WHEN Addendum 5 of this procedure is complete, THEN Functional Restoration Procedures may be IMPLEMENTED. *(Step 14)* *(Will not transition to a Functional Recovery Procedure until Addendum 5 is complete.)*	
	BOP	Completes 0POP05-EO-EO00, Addendum 5. *(The crew will transition to 0POP05-EO-FRP1 and FRZ1, however, both procedures will then be exited at step 1 because of the LB LOCA.)*	
	SRO	The crew will transition to 0POP05-EO-FRP1, Response to Imminent Pressurized Thermal Shock Condition, due to an Orange or Red Path on the Integrity Critical Safety Function.	
	RO	CHECK RCS pressure – GREATER THAN 415 PSIG. **(RNO)** IF LHSI pump flow GREATER THAN 500 gpm, THEN RETURN TO procedure step in effect. *(Step 1)*	
	SRO	The crew will transition to 0POP05-EO-FRZ1, Response to High Containment Pressure, due to an Orange Path on the Containment Critical Safety Function.	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Integral**) and 6 (**Integral**)

Event Description: LB LOCA (**2 minutes after tripping SGFPT #11**.) LHSI Pumps 1A & 1B fail to Auto Start.

Time	Position	Required Operator Actions	Notes

	RO	VERIFY Containment Spray – ESTABLISHED
		• Containment Pressure LESS THAN 56.5 PSIG.
		• At least one Containment Spray pump – RUNNING
		  • Discharge Valve OPEN
		  • Flow indicated
		• RETURN TO procedure step in effect and PERFORM this procedure as time permits.
		(Step 1)
		(Containment pressure will be less than 56.5 psig with containment spray pumps running.)	

	SRO	Informs crew of transition to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.	
	RO	MONITOR If RCPs Should Be Stopped: • HHSI pumps - AT LEAST ONE RUNNING • RCS pressure - LESS THAN 1430 PSIG • STOP all RCPs *(Step 1)* *(RCPs should have already been stopped.)*	
	BOP	DEPRESSURIZE Intact SGs To 1000 PSIG • CHECK RCS pressure - GREATER THAN 415 PSIG **(RNO)** • GO TO Step 3. *(Step 2)* *(Note: With LB LOCA RCS pressure will be less than 415 psig.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Integral**) and 6 (**Integral**)

Event Description: LB LOCA (**2 minutes after tripping SGFPT #11**.) LHSI Pumps 1A & 1B fail to Auto Start.

Time	Position	Required Operator Actions	Notes

	BOP	MONITOR If SG Secondary Pressure Boundary Intact:
		• CHECK pressures in all SGs –
		  • CONTROLLED OR RISING
		  • GREATER THAN CONTAINMENT PRESSURE
		(Step 3)
		(Terminate Scenario)	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** Includes Event 6 and 7

Event Description: 0POP05-EO-EO00, Addendum 5 Actions.
(**Event 6** – LHSI Pumps 1A & 1B fail to Auto Start. Addendum 5, Step 10)
(**Event 7** – Train B of Phase A fails to auto actuate with CV-MOV-0023 failed open. Addendum 5, Step 6)

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY FW isolation: • SGFPTs – TRIPPED • SU SGFP – TRIPPED • VERIFY the following valves –CLOSED o FWIVs o FWIBs o FW preheater bypass valves o FW regulating valves o Low power FW regulating valves o SG blowdown isolation valves o SG sample isolation valves *(EO00 Addendum 5, Step 1)* *(0POP05-EO-EO00, Reactor Trip or Safety Injection, Addendum 5, Verification of Equipment Operation.)* *(This addendum is performed in parallel with Steps 5 to 14 of 0POP05-EO-EO00, Reactor Trip or Safety Injection.)*	
	BOP	CHECK if main steamline should be isolated: • CHECK for any of the following conditions: o Containment pressure – GREATER THAN OR EQUAL TO 3 PSIG OR o SG pressure (without low steamline pressure SI blocked) - LESS THAN OR EQUAL TO 735 PSIG OR o SG pressure (with low steamline pressure SI blocked) - LOWERING AT A RATE GREATER THAN OR EQUAL TO 100 PSI/SEC, BY OBSERVANCE OF THE STEAMLINE PRESSURE RATE BISTABLES • VERIFY Main Steamline Isolation: o MSIVs – CLOSED o MISBs - CLOSED *(Step 2)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** Includes Event 6 and 7

Event Description: 0POP05-EO-EO00, Addendum 5 Actions.
(**Event 6** – LHSI Pumps 1A & 1B fail to Auto Start. Addendum 5, Step 10)
(**Event 7** – Train B of Phase A fails to auto actuate with CV-MOV-0023 failed open. Addendum 5, Step 6)

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY AFW system status: • Motor-driven pump – RUNNING • Turbine-driven pump – RUNNING *(Step 3)*	
	BOP	VERIFY AFW valve alignment - PROPER EMERGENCY ALIGNMENT *(Step 4)*	
	BOP	VERIFY total AFW Flow - GREATER THAN 576 GPM *(Step 5)*	
	BOP	VERIFY containment isolation phase A: • Phase A – ACTUATED **(RNO)** • Manually ACTUATE phase A. **(Back to A/ER)** • Phase A valves - CLOSED, REFER TO ADDENDUM 1, PHASE A ISOLATION VERIFICATION **(RNO)** • Manually CLOSE valves. *(Step 6)* ***(Event 7 – This event causes the CVCS letdown penetration to be unisolated. Because CV-MOV-0023 is failed open, to isolate the penetration, the operator will manually actuate Phase A and ENSURE closed all valves associated with Train B of Phase A, including CV-MOV-0024, using control board BYPASS INOP indications or EO00 Addendum 1, Phase A Isolation Verification.***	
	BOP	VERIFY ECW status: • ECW pumps – RUNNING • ECW pump discharge isolation valves – OPEN *(Step 7)*	
	BOP	VERIFY CCW pumps – RUNNING *(Step 8)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** Includes Event 6 and 7

Event Description: 0POP05-EO-EO00, Addendum 5 Actions.
(**Event 6** – LHSI Pumps 1A & 1B fail to Auto Start. Addendum 5, Step 10)
(**Event 7** – Train B of Phase A fails to auto actuate with CV-MOV-0023 failed open. Addendum 5, Step 6)

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY RCFC status: • RCFCs – RUNNING • Cooling water - TRANSFERRED TO CCW *(Step 9)*	
	BOP CT-5	VERIFY SI pump status: • HHSI pumps – RUNNING • LHSI pumps – RUNNING *(Step 10)* ***(Event 6 – With LHSI Pump 1C OOS and Pumps 1A & 1B failing to auto start on the SI, the operator will manually start LHSI Pumps 1A & 1B to supply water to the RCS on the LB LOCA. Action is to be completed prior to transitioning out of 0POP05-EO-EO00.)***	
	BOP	VERIFY SI valve alignment – PROPER EMERGENCY ALIGNMENT *(Step 11)*	
	BOP	VERIFY SI flow: • RCS pressure - LESS THAN 1745 PSIG • HHSI pump flow – INDICATED • RCS pressure - LESS THAN 415 PSIG **(RNO)** • GO TO Step 13 of this Addendum. *(Step 12)*	
	BOP	VERIFY containment ventilation isolation: • Containment atmosphere radiation monitor isolation valves – CLOSED • Normal purge supply and exhaust fans – STOPPED • Supplemental purge supply and exhaust fans – STOPPED • Purge Dampers – CLOSED *(Step 13)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** Includes Event 6 and 7

Event Description: 0POP05-EO-EO00, Addendum 5 Actions.
(**Event 6** – LHSI Pumps 1A & 1B fail to Auto Start. Addendum 5, Step 10)
(**Event 7** – Train B of Phase A fails to auto actuate with CV-MOV-0023 failed open. Addendum 5, Step 6)

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY ventilation actuation: • Control room HVAC – OPERATING IN EMERGENCY RECIRC • EAB HVAC - OPERATING IN EMERGENCY RECIRC • FHB HVAC - OPERATING IN EMERGENCY MODE • FHB Exhaust Fans - ONLY TWO TRAINS OPERATING o Exhaust booster fans o Main exhaust fans **(RNO)** • PERFORM the following: o IF three trains FHB exhaust fans running, THEN PLACE one train FHB exhaust fans in PULL TO LOCK. **(Back to A/ER)** • SECURE one FHB filter train by PERFORMING the following: o PLACE the outlet damper Controller in manual o Manually close the outlet damper o VERIFY proper operation of filter train in service • Essential chilled water pumps – RUNNING • Essential chillers – RUNNING • ECCS pump room fan coolers – RUNNING • AFW pump cubicle fans – RUNNING • FHB truck bay doors – CLOSED *(Step 14)*	
	BOP	NOTIFY Unit Supervisor that Addendum 5 is COMPLETE *(Step 15)*	
	SRO	IMPLEMENT Functional Restoration Procedures as required *(Step 16)*	
	SRO	RETURN TO procedure step in effect. *(Step 17)*	

CRITICAL TASK SUMMARY

POSITION	EXPECTED RESPONSE	ACCEPTANCE CRITERIA	SAT/ UNSAT
SRO/RO	**CT-13 MANUALLY TRIP THE MAIN TURBINE AT CP007.**	Manually trip the Main Turbine before a severe (orange-path) challenge develops to either the subcriticality or integrity CSF or before transitioning to EC21, whichever happens first. SAFETY SIGNIFICANCE -- Failure to trip the main turbine under the postulated plant conditions causes challenges to CSFs beyond those irreparably introduced by the postulated conditions. Additionally, such an omission constitutes a demonstrated inability by the crew to "take an action ... that would prevent a challenge to plant safety." Uncontrolled depressurization of all SGs via the main turbine with the governor valves in their full-load position causes an excessive rate of RCS cooldown, well beyond the conditions analyzed in the FSAR. The excessive cooldown rate creates large thermal stresses in the reactor pressure vessel and causes rapid insertion of a large amount of positive reactivity. Thus, failure to manually trip the main turbine under the postulated conditions can result in challenges to the following CSFs: • Integrity • Subcriticality	

CRITICAL TASK SUMMARY

POSITION	EXPECTED RESPONSE	ACCEPTANCE CRITERIA	SAT/ UNSAT
SRO/RO	**CT-5 MANUALLY START LHSI PUMPS 1A & 1B.**	Manually start at least one LHSI pump during a Large Break where RCS pressure decreases to less than 400 psig prior to exiting 0POP05-EO-EO00, Reactor Trip or Safety Injection. SAFETY SIGNIFICANCE -- Failure to manually start at least one low-head ECCS pump under the postulated conditions constitutes "mis-operation or incorrect crew performance which leads to degraded ECCS ... capacity." In this case, at least one LHS1 pump can be manually started from the control room. Therefore, failure to manually start a LHS1 pump also represents a "demonstrated inability by the crew to: Recognize a failure/incorrect auto actuation of an ESF system or component Effectively direct/manipulate ESF controls" Additionally, under the postulated plant conditions, failure to manually start a LHS1 pump when it is possible to do so is a "violation of the facility license condition."	

NOTE: (Per NUREG-1021, Appendix D)
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.

EXPECTED BOOTH COMMUNICATIONS

EVENT 1:

- As a Plant Operator, when dispatched to check CRE HVAC Supply Fan on Train C, report the following:
  - Fan DP is barely above zero
  - The fan motor is hot to the touch
  - The fan is making abnormal noises
- As Electrical Maintenance or the Duty Maintenance Supervisor, if notified of the status of CRE HVAC Supply Fan on Train C, report that an Electrical maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge issue with CRE HVAC Supply Fan on Train C. No further action is necessary.

EVENT 2:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of the failure of RTD-0410B, report that an I&C maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the failure of RTD-0410B. No further action is necessary.

EVENT 3:

- As a Plant Operator, if asked to check on feedwater pumps, report the following:
  - SGFPT 13 has no reason locally why it tripped.
  - SU SGFP locally looks OK
  - SU SGFP breaker has an overcurrent indicated
  - FWBP 13 is running SAT
- As the Duty Maintenance Supervisor, if notified of the status of feedwater, report that appropriate maintenance crews are being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the issues feedwater. No further action is necessary.

EVENT 4:

- There are no Booth Communications expected for Event 4.

EVENT 5:

- There are no Booth Communications expected for Event 5.

EVENT 6:

- There are no Booth Communications expected for Event 6.

EVENT 7:

- There are no Booth Communications expected for Event 7.

EXPECTED BOOTH ACTIONS

1. If asked to open the DA High level Dump Valves then trigger the step for ‘DA High Level Dump Valves’.
2. If asked to fill the AFWST then trigger the step for ‘AFWST Makeup’.

SIMULATOR SETUP

NOTE

ALL Annunciator Response Procedures (ARP's) must be checked if this scenario is the first to be run on this day. Setup for subsequent runs of this scenario only requires those ARP's that were actually marked in to be checked.

Instructors running the scenario must keep track of which ARP's these are, otherwise, all will have to be checked for subsequent scenarios as well.

Check and clean the following procedures:

- 0POP09-AN-22M3, Window C-5, CR SPLY FAN TRBL
- 0POP02-HE-0001, Electrical Auxiliary Building HVAC System
- 0POP04-RP-0004, Failure of RCS Loop RTD Protection Channel
- 0POP04-FW-0002, Steam Generator Feed Pump
- 0POP05-EO-EO00, Reactor Trip or Safety Injection
- 0POP05-EO-ES01, Reactor Trip Response
- 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant
- Additional Annunciator Response Procedures that were used by the Crew during the Scenario.

NOTE

The Scenario Lesson Plan MUST be run from the left most Instructor Station in Simulator Booth to allow for recording and storing of recorded parameter data.

- Log into Instructor Workstation as 'lotnrc' user, open Orchid (nstps server), then 'Unlock' Initial Conditions Group 'lotnrc'.
- Reset to IC #202 and perform the following:
  - Switch Check
  - Ensure red light on end of CP-010 off
  - Ensure ICS Annunciators have stopped counting up

SIMULATOR SETUP (cont'd.)

- Go to RUN and perform the following:
  - Ensure Simulator is ready by performing applicable checkoffs from LOR-GL-0006, LOR Conduct of Simulator Training Guidelines, Addendum 5, Simulator Readiness Checklist.
  - Ensure VCT Makeup Integrators are set as follows:
    - Momentarily place RC M/U CONT to STOP and then START to reset BA BATCH/GALLONS and TOT M/U BATCH/GALLONS counters to zero.
    - Reset BA BATCH/GALLONS setpoint to 0 gallons and reset TOT M/U BATCH/GALLONS setpoint to 10 gallons.
    - Verify BA Controller Pot setting is 3.85
- Hang following ECO/Caution Tags:
  - Train C HHSI Pump Handswitch in PTL
  - Train C LHSI Pump Handswitch in PTL.
- Open lesson plan for 'Scenario 2' in 'lotnrc' directory for LOT 22, then EXECUTE lesson plan. These actions will set up any initial conditions for the scenario.
- If this scenario IC has changing conditions (i.e. Xenon is changing, etc.), then place the simulator in FREEZE, otherwise it is OK to leave in RUN.
- Run the scenario in accordance with the next section, 'Scenario Instructions'.

SCENARIO INSTRUCTIONS

NOTE
Steps 1 to 4 below can be performed in the LOR Debrief Room prior to the crew coming into the Simulator provided exam security measures are taken.

1. Provide Shift Turnover sheets to the crew and review the information.
2. Have the Crew perform a Pre-Job Brief. Ensure the crew doesn't have any other questions about the Shift Turnover.
3. Ensure the Beacon book from the simulator is available to the crew if they are in the LOR Debrief Room.
4. Review the Simulator Differences list with the crew if needed.
5. When signaled by Simulator Staff, have the crew perform their board walkdown and inform the floor instructor when ready to take the watch.
6. Ensure the simulator is in RUN and verify simulator clock is set correctly. Note the time that the Crew takes the watch. _____ Start Time.

NOTE

Malfunction Step and/or Lesson Plan Steps (Events) are triggered upon the Lead Examiners signal during the scenario unless an agreed upon time is discussed with the examiner prior to the start of the scenario.

Always 'TRIGGER' events in the Simulator Scenario Lesson Plans. This way delays associated with events will take place as intended.

Refer to 'EXPECTED BOOTH COMMUNCATIONS' and 'EXPECTED BOOTH ACTIONS' Sections for instructions for Instructor actions during the scenario.

7. Trigger the step titled 'Start Chart' and ensure specified Recorded Parameters for the scenario begin recording as the scenario runs. If the chart speed is NOT set to 5400 seconds (90 minutes) then perform the following:
   - Under 'CHARTS' click on 'SET TIME'
   - In the dialog box enter 5400 seconds (90 minutes)
   - Click OK.
8. Trigger **MALFUNCTION STEP –** This will insert Step #1, Event #1.
9. Trigger **STEP 2 –** Event #2
10. Trigger **STEP 3 –** Event #3
11. Place simulator in FREEZE when cued by the Lead Examiner to terminate scenario.
12. DO NOT RESET simulator until the steps on the next page are completed and all Examiners have completed Follow-Up Questioning.

SCENARIO INSTRUCTIONS (cont'd.)

NOTE
Some scenarios will have more than one chart. For these, each chart file must be separately saved with a unique filename.

13. Saving Recorded Parameters Data
    - Click on the 'Charts' icon on the left side of the screen
    - Select 'Pause' icon, then select 'All'
    - Click on the 'Print Chart' icon, then select 'All'
    - This will bring up a window in the TASK BAR called PRIMOPDF.
    - Click on 'Create PDF'
    - This will bring up a File Save As window.
    - Save to folder **c:\Users\lotnrc\Desktop\LOT22 Charts**. The file name will be 'LOT22 Scenario 2' followed by a name that identifies the crew (e.g. 'Crew A).
    - Save the new file. It will be saved in a folder already on the desktop. LOT22 Charts.
14. Saving Scenario SAM (Simulator Action Monitor)
    - Under 'TOOLS' click on 'SAM'
    - In the dialog box that comes up click on 'SAVE TO'
    - Save as a 'TEXT FILE' to folder **c:\Users\lotnrc\Desktop\LOT22 Charts.** The file name will be 'LOT22 SAM INFO Scenario 2' followed by a name that identifies the crew (e.g. 'Crew A).

TURNOVER INFORMATION

Unit 1 is in Mode 1 at 100% Reactor Power.

- Train C HHSI and LHSI Pumps are OOS.
- Cycle Burnup is 150 MWD/MTU. (BOL)
- On the previous shift, RCS dilutions were being performed about every 2 hours with 10 gallons of makeup water.
- RCS Boron Concentration is 1408 ppm.
- Boric Acid Tank 'A' is at 7315 ppm and 'B' is at 7309 ppm.
- No liquid waste discharges are in progress or planned.
- No personnel are in containment.
- FHB Truck Bay doors are closed.
- No ESF DG FOST's are on recirc.

LCO Actions:

TS 3.5.2 Three ECCS

Action a.
With less than the above subsystems OPERABLE, but with at least two High Head Safety Injection pumps in an OPERABLE status, two Low Head Safety Injection pumps and associated RHR heat exchangers in an OPERABLE status, and sufficient flow paths to accommodate these OPERABLE Safety Injection pumps and RHR heat exchangers,within 7 days restore the inoperable subsystem(s) to OPERABLE status or apply the requirements of the CRMP, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

LOT 22 NRC EXAM

SIMULATOR OPERATING TEST

SCENARIO #3

Revision 0

Week of 10/22/2018

SCENARIO OUTLINE

Facility: South Texas Project **Scenario No.: 3** **Op-Test No.: LOT 22 NRC**

Examiners: _____ **Operators:** _____

_____ _____

_____ _____

Initial Conditions:

- **Unit 1 is at 47% Reactor Power. (IC 203)**

Turnover:

- **Commence Raising Reactor Power to 74%.**

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	N/A	RO (R) BOP (R) SRO (R)	Raise Reactor Power.
2 (15 min)	03-09-02 True	RO (C) SRO (C, TS)	Over current trip on Charging Pump 1B
3 (25 min)	01-14-08 True	BOP (I) SRO (I, TS)	DRPI indication for rod F8 fails (both channels).
4 (35 min)	03-23-05 0.125/0.15	RO (C) SRO (C)	RCP 1C #1 seal leakage ramped in over 3 minutes and then increases in severity after 7 minutes.
5 (N/A)	02-01-04 0.015/0.005	All (M)	SBLOCA (30 seconds after the reactor is tripped) **(2 Critical Tasks)**
6 (N/A)	50-AF-04 True	BOP (C)	AFWP #14 fails to auto start.

*** (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor.**

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Malfunctions after EOP entry (1–2)	1
2. Abnormal events (2–4)	3
3. Major transients (1–2)	1
4. EOPs entered/requiring substantive actions (1–2)	2
5. Entry into a contingency EOP with substantive actions (≥1 per scenario set)	1
6. Preidentified critical tasks (≥2)	2

SCENARIO MISCELLANEOUS INFORMATION

INSTRUCTOR NOTES:

- Critical Tasks are indicated by "**C-##**" in the position column and indicated in bold type. In some instances an "*" will indicate that only a portion of the task listed is considered critical.
- Shaded cells indicate procedural entry points.

RECORDED PARAMETERS:

Recorded parameters will be determined during NRC Validation week.

The parameters identified for recording may be of value in evaluating crew performance. Once the scenario is complete for each crew, printout the recorded parameters and label the printout with date, time, crew number and scenario number. See Scenario Instructions section for further details on how to save the Recorded Parameters.

- RCP Pump 1A, 1B & 1D Breaker position
- Core Exit T/C

SCENARIO OBJECTIVES

Event 1 Objective

- While acting as a Control Room Operator, perform a plant startup from Hot Standby to 100% power in accordance with the normal operating procedures.

Event 2 Objective

- Respond to CVCS alarms per the associated annunciator response procedure.

Event 3 Objective

- Respond to rod position indication trouble alarm per Annunciator Response procedure 0POP09-AN-05M3.

Event 4 Objective

- Respond to Reactor Coolant Pump alarms per appropriate annunciator response procedure.

Event 5 Objective

- Respond to a loss of reactor coolant involving a break size in which reactor coolant system pressure drops below high head safety injection pump shutoff head per 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.

Event 6 Objective

- During all modes of plant operating conditions, operate the Auxiliary Feedwater System in accordance with the plant operating procedures and technical specifications.

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 1 **Event Description:** Raise Reactor Power			
Time	**Position**	**Required Operator Actions**	**Notes**
	SRO	COMMENCE raising Reactor Power and Main Turbine to 74%. *(Starts at Step 7.46 of 0POP03-ZG-0005, Plant Startup to 100%)*	
	SRO AO	Provide oversight of reactivity manipulations. ***NOTE:*** ***While the ROs commence raising reactor power the SRO may commence with the next steps in 0POP03-ZG-0005, Plant Startup to 100%.*** ***Some of these steps have actions for plant operators. The simulator booth operator has communications for these steps if asked. See EXPECTED BOOTH COMMUNICATIONS.***	
	RO	Start a dilution per 0POP02-CV-0001, Makeup to the Reactor Coolant System. *(NOTE: Operator normally uses Form 2, Dilution Checklist, or Form 3, Alt. Dilution Checklist, to perform a dilution to the RCS. The methods are similar. Form 2 is given.)*	
	RO	DETERMINE amount of dilution water to be added. *(Form 2, Step 1.0)* *(RO will confer with SRO to determine the amount of water to add to the RCS to start raising reactor power.)*	
	RO	ENSURE VCT will accept the volume increase without initiating an auto diversion to the RHT at 68%. *(Form 2, Step 2.0)*	
	RO	TURN "RC M/U CONT SYS ON" switch to "STOP" *(Form 2, Step 3.0)*	
	RO	TURN "RC M/U CONT" to "DILUTE" *(Form 2, Step 4.0)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 1 **Event Description:** Raise Reactor Power			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	ENSURE "TOT M/U BATCH GALLONS FY-0111B" flow integrator is set for required gallons of dilution water. *(Form 2, Step 5.0)*	
	RO	ENSURE "RMW FLOW CONT FK-0111" is set for desired flowrate. *(Form 2, Step 6.0)* *(Normal dilution flow rate is set for 100 gpm [3.3 pot setting])*	
	RO	TURN "RC M/U CONT SYS ON" switch to "START". *(Form 2, Step 7.0)* *(This starts the dilution sequence.)*	
	RO	VERIFY "RMW PUMP 1A" OR "RMW PUMP 1B" is running. *(Form 2, Step 8.0)*	
	RO	WHEN the required gallons of dilution water are added, THEN ENSURE makeup is stopped. *(Form 2, Step 9.0)* *(Dilution will auto stop after set amount of water added. The RO may request to leave Reactor Makeup line up as is and just return to Form 2, Step 7.0 for additional dilutions.)*	
	BOP	RO will make Turbine Load Changes using Form 1 of 0POP03-ZG-0005, Plant Startup to 100%. *(NOTE: There are other Plant Operating Procedures that have these same steps that the Operator can use.)*	
	BOP	ENSURE the LOAD RATE - PRCT MW/MIN" Thumbwheel is set to the ".25" position OR as authorized by the Shift Manager/Unit Supervisor. *(Form 1, Step 1.0)* *(BOP will confer with SRO to determine the Thumbwheel setpoint.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 1 **Event Description:** Raise Reactor Power			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	RAISE/LOWER (ADJUST) "SETPOINT" to the desired value. *(Form 1, Step 2.0)*	
	BOP	DEPRESS the SETPOINT CONTROL **"GO"** pushbutton and **MONITOR** for the proper load changes. *(Form 1, Step 2.0)* *(**Event 2** can be triggered on a signal from the NRC Examiner.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 2 **(Examiner Trigger)** **Event Description:** Overcurrent Trip on Charging Pump 1B.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	Acknowledges and announces the following annunciators on 04M8: • LETDN HX OUTL TEMP HI (C-3) • CHG PMP HEADER PRESSURE LO (F-1) • CHG FLOW HI/LO (F-3) *(NOTE: Other alarms may come in depending on how long there is a reduced charging flow condition.)*	
	SRO/RO	Determines that CCP 1B has tripped causing low charging flow.	
	SRO	Directs the RO to respond to the failure of CCP 1B by using the steps in the annunciator response for 04M8 F-3, CHG FLOW HI/LO. *(Directing these steps is the quickest way to get charging flow reestablished.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 2 **(Examiner Trigger)**

Event Description: Overcurrent Trip on Charging Pump 1B.

Time	Position	Required Operator Actions	Notes
	RO AO	IF Centrifugal Charging Pump (CCP) START is required, THEN PERFORM the following: • IF NO CCP is running, THEN ENSURE "CHG FLOW CONT VLV FCV-0205" is CLOSED. • ENSURE the miniflow is OPEN for the applicable CCP • VERIFY the white "L.O. AVAILABLE" light is lit for the applicable CCP. • START the applicable CCP. (CCP 1A) • ADJUST Charging flow AND Seal Injection flows as necessary. • CLOSE the miniflow for the applicable CCP. • WHEN charging flow has stabilized, THEN PLACE "CHG FLOW CONT FK-0205" in Automatic. *(Step 1 of the annunciator response procedure)* *(If asked to check the Charging Pumps a Plant Operator will report the following:* • *CCP 1B Breaker as an overcurrent indicated.* • *CCP 1B locally does not appear to have any issues.* • *CCP 1A looks good for a start.)*	
	SRO	**The SRO will address TRM 3.1.2.2.a:** At least two charging pumps shall be OPERABLE. ACTION: With only one required charging pump OPERABLE, restore at least two charging pumps to OPERABLE status within 7 days or initiate action in accordance with the Corrective Action Program to restore the item to OPERABLE status as soon as practical. *(**Event 3** can be triggered after SRO has checked the TRM.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 3 **(Examiner Trigger)**			
Event Description: DRPI indication for rod F8 fails. (Both Channels)			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	Acknowledges and announces the following annunciators from 05M3: • RPI TRBL (A-5) • ROD SUPV MNTR ROD POSITION TRBL (D-5) • ROD BOTTOM (F-4)	
	SRO RO	Determines that both DRPI channels for rod H6 have failed.	
	SRO	Directs actions of 0POP09-AN-05M3, Window A-5, RPI TRBL and Window D-5, ROD SUPV MNTR ROD POSITION TRBL. *(NOTE: 0POP09-AN-05M3, Window A-5, RPI TRBL, will provide the best guidance. Window D-5, ROD SUPV MNTR ROD POSITION TRBL, will send the crew to Window A-5.)*	
	RO	CHECK the following DRPI panels to determine the type of DRPI system failure: a) Display Panel. {CP005} b) Control Panel. {In the back of CP005} *(Step 1 of the annunciator response procedure)* **(CUE:** ***Panel in back of CP005 is not modeled. If RO checks panel in back of CP005 let them look at the cue sheet provided with this scenario but do not let them have the cue sheet. See Page 12 of 37)***	
	SRO	CONTACT I&C to assist in diagnosis. *(Step 2)*	
	RO	IF DRPI non-urgent alarm for Data A or B failure, THEN SELECT "A" ONLY OR "B" ONLY position on the DRPI panel to determine rod position. *(Step 3)* (*This action may be performed early, however, an Urgent Alarm is indicated.)*	

OPERATOR ACTIONS

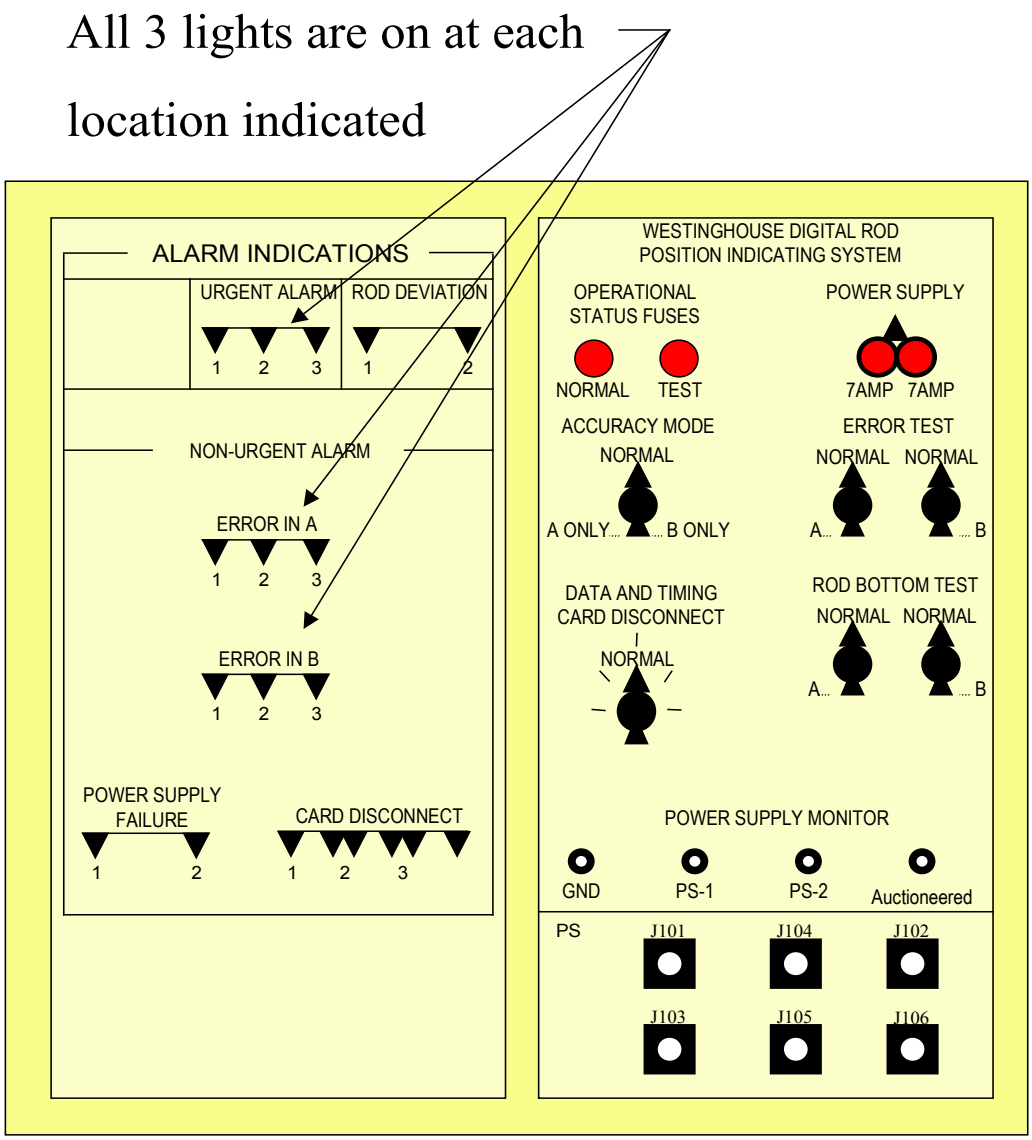
Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 3 **(Examiner Trigger)**			
Event Description: DRPI indication for rod F8 fails. (Both Channels)			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	VERIFY control rods are within 12 steps of the step counter demand position. *(Step 4)* *(Will not be able to determine position of Rod F8 due to Urgent Failure.)*	
	SRO	IF any control rod is misaligned greater than 12 steps from the step counter demand position, THEN GO TO 0POP04-RS-0001, Control Rod Malfunction. *(Step 5)* (*Only Rod indication has failed.)*	

	SRO	TAKE appropriate action per Technical Specifications.
		TS 3.1.3.2. Action a. for one rod on DRPI not indicating.
		The Digital Rod Position Indication System and the Demand Position Indication System shall be OPERABLE and capable of determining the control rod positions within ± 12 steps.
		• With a maximum of one digital rod position indicator per bank inoperable either:
		  • Determine the position of the nonindicating rod(s) indirectly by the movable incore detectors or a core power distribution measurement at least once per 8 hours and immediately after any motion of the nonindicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, OR
		  • Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within 8 hours.
		(Step 6)
		(***Event** 3 can be triggered after SRO has checked the TSs.)*	

	SRO	INITIATE a Condition Report to investigate and correct cause. *(Step 7)*	

CUE HANDOUT

If needed for Event 3



OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 4 **(Examiner Trigger)**

Event Description: RCP 1C #1 seal leakage ramped in over 3 minutes and then increases in severity after 7 minutes.

Time	Position	Required Operator Actions	Notes
	RO	Acknowledges and announces the following annunciators from 04M7: • RCP 1C NO 1 SEAL LKF FLOW HI/LO (B-5)	
	RO	Determines RCP 1C seal leakoff flow is < 6 gpm. CHECKS the following RCP 1C Number 1 Seal parameters: • Seal Leakoff flow • Seal water injection flow • Seal water injection temperature • Number 1 Seal DP • RCP Seal 1 water inlet temperature *(Step 4 of annunciator response procedure. This step is the only one that applies if seal leakoff flow remains < 6gpm.)*	
	SRO	Enters 0POP04-RC-0002, Reactor Coolant Pump Off Normal, for indications of abnormal RCP #1 seal indication.	
	RO	CHECK the following RCP(s) Operating Parameters: • Motor Upper and Lower Radial Brg. Temperatures - < 195 ºF • Lower seal water bearing temperature - <230°F • Seal 1 inlet temperature - < 230 °F • Motor Stator temperature - < 310 °F • Number 1 Seal DP - ≥ 220 psid • Case Vibration - < 5 mils • Shaft Vibration - < 20 mils • RCP Number 1 Seal Leakoff flow - ≤ 6 gpm *(Step 1.0)*	
	RO	Checks RCP Motor Upper and Lower Thrust Bearing temperatures < 195 °F *(Step 2.0)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 4 **(Examiner Trigger)**

Event Description: RCP 1C #1 seal leakage ramped in over 3 minutes and then increases in severity after 7 minutes.

Time	Position	Required Operator Actions	Notes
	RO	MONITOR the following RCP Seal Cooling and Seal Injection Parameters: • Seal injection flow > 6 gpm • Seal injection temperature ≤ 135 °F • CCW Hx Outlet Temp. ≤ 105 °F • RCP Thermal Barrier CCW flow ≥ 30 gpm. *(Step 3.0)*	
	RO	CHECK All RCP Case Vibrations - < 3 MILS: • Mtr_Accel-Vert • Mtr_Accel-Horiz *(Step 4.0)*	
	RO	CHECK All RCP Shaft Vibrations: • Brg2-Vert - < 15 MILS • Brg2-Horiz - < 15 MILS *(Step 5.0)*	
	RO	CHECK RCP Seal water injection flows – 6 to 13 gpm. *(Step 6.0)*	
	RO	CHECK RCP Seal water injection temperature - ≤135 °F. *(Step 7.0)*	
	SRO	CHECK All RCP Number 1 Seal Leakoff Flows – IN THE NORMAL OPERATING RANGE PER Addendum 2 *(Step 8.0)*	
	RO	Identifies RCP 1C trip criteria on high #1 seal leak off flow (> 6gpm) or low seal DP (< 220psid). *(By this time seal leakoff flow will have increased to > 6gpm.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 4 **(Examiner Trigger)** **Event Description:** RCP 1C #1 seal leakage ramped in over 3 minutes and then increases in severity after 7 minutes.			
Time	**Position**	**Required Operator Actions**	**Notes**
	SRO	Directs the following: • TRIP the Reactor • ENSURE Main Turbine tripped • STOP RCP 1C • IF reactor was tripped, THEN PERFORM 0POP05-EO-EO00, Reactor Trip or Safety Injection. • *Continue* actions of this procedure (0POP04-RC-0002) as resources permit. • CLOSE RCP 1C Number 1 Seal Leakoff Isolation Valve between 3-5 minutes after stopping RCP 1C. *(From CIP)* *(NOTE: Should NOT trip RCP 1C until after verifying that the RX is tripped.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Integral**) and 6 (**Integral**) **Event Description:** SB LOCA (**30 seconds after the RX is tripped**.) AFWP 14 fails to auto start.			
Time	**Position**	**Required Operator Actions**	**Notes**
	SRO	Enters 0POP05-EO-EO00, Reactor Trip or Safety Injection. *(From previous event.)*	
	RO **BOP**	Completes immediate actions of 0POP05-EO-EO00 and determines: • Reactor is tripped (Step 1) • Turbine is tripped (Step 2) • AC ESF Busses are energized (Step 3) • **SI is not actuated but should be (Step 4 See next Required Operator Action)** *(RO will complete immediate actions. BOP Operator will monitor the plant and make an announcement of the Reactor trip.)* *(During a pause between performing immediate actions and verifying immediate actions, the BOP will throttle AFW to reduce the RCS cooldown by:* • ***Resetting the AFW Reg Valves*** • ***Throttling the AFW Reg Valves to lower total AFW flow.*** • ***If the BOP notices that AFWP 14 failed to auto start, then the pump will be manually started by OPENING AF-MOV-0514, TURB TRIP/THROT valve. If NOT, then AFWP 14 will be started using Addendum 5.*** *Total AFW flow must remain above 576 gpm until at least one SG level is >14% NR {34% for adverse containment})*	
	RO **CT-2**	Notices that Safety Injection is required but did not automatically actuate. **Performs a manual actuation of Safety Injection using the manual Handswitch on CP001 or CP005.** *(Step 4 of 0POP05-EO-EO00)* ***(Action is to be completed prior to transitioning past Step 4 which includes a read through of Step 4.)***	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Integral**) and 6 (**Integral**) **Event Description:** SB LOCA (**30 seconds after the RX is tripped**.) AFWP 14 fails to auto start.			
Time	**Position**	**Required Operator Actions**	**Notes**
	SRO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed by performing a procedure read through of them.	
	ALL (CT-16)	WHEN RCS pressure is less than 1430 psig, the crew performs the following: • **Verifies at least one HHSI Pump running** • **Stops all RCPs** *(These steps can be performed using the CIP of 0POP05-EO-EO00, Reactor Trip or Safety Injection. Timing will depend on how quickly and how much AFW is throttled.)*	
	BOP	VERIFY Proper SI Equipment Operation Per ADDENDUM 5, VERIFICATION OF SI EQUIPMENT OPERATION *(Step 5)* *(The SRO will hand out Addendum 5 to the BOP which will perform Addendum 5 in parallel with the rest of the procedure.)* *(See Actions on pages 25-28)*	

	RO	MONITOR If Containment Spray Is Required:
		• Containment pressure – GREATER THAN 9.5 PSIG (QDPS)
		(RNO)
		• PERFORM the following:
		  • CHECK Containment pressure - HAS EXCEEDED 9.5 PSIG (CP - 18)
		  • "PRESS PR-0934"
		  OR
		  • "EXTD RNG PRESS PR-9759"
		  • IF containment pressure HAS EXCEEDED 9.5 PSIG, THEN GO TO Step 6.b.
		  • IF containment pressure HAS REMAINED LESS THAN 9.5 PSIG, THEN GO TO Step 7.
		(Step 6)
		(Containment pressure will be less than 9.5 psig.)	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Integral**) and 6 (**Integral**) **Event Description:** SB LOCA (**30 seconds after the RX is tripped**.) AFWP 14 fails to auto start.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	CHECK RCP Seal Cooling: • ENSURE seal injection flow between 6 and 13 gpm *(Step 7)* *(RO may have to adjust seal injection.)*	
	RO	MONITOR RCS Temperatures - • WITH ANY RCP RUNNING, RCS TAVG STABLE AT OR TRENDING TO 567°F OR • WITHOUT ANY RCP RUNNING, RCS TCOLD STABLE AT OR TRENDING TO 567°F *(Step 8)* *(Which temperature to monitor will be dependent on if the RCPs have been tripped by this time. With Main Steam Isolated there is nothing else the crew can do.)*	
	RO	CHECK Pressurizer Status: • PORVs - CLOSED • Normal pressurizer spray valves - CLOSED • Auxiliary spray valve - CLOSED • Excess letdown isolation valves - CLOSED *(Step 9)*	
	RO (CT-16)	MONITOR If RCPs Should Be Stopped: • **HHSI pump - AT LEAST ONE RUNNING** • **RCS pressure - LESS THAN 1430 PSIG** • **STOP all RCPs** *(Step 10)* *(RCPs may have already been stopped)*	
	RO	VERIFY The Following Containment Isolation Valve – CLOSED • Seal return isolation valves • Containment atmosphere radiation monitor isolation valves *(Step 11)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Integral**) and 6 (**Integral**) **Event Description:** SB LOCA (**30 seconds after the RX is tripped**.) AFWP 14 fails to auto start.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	CHECK If SG Secondary Pressure Boundary Intact: • CHECK pressures in all SGs – • CONTROLLED OR RISING • GREATER THAN CONTAINMENT PRESSURE *(Step 12)*	
	RO	CHECK If SG Tubes Are Intact: • Main steamline radiation - NORMAL • IF SG blowdown in service, THEN SG blowdown radiation - NORMAL • CARS pump radiation - NORMAL • NO SG level rising in an uncontrolled manner *(Step 13)*	
	RO	CHECK If RCS Is Intact: • Containment radiation -NORMAL • Containment pressure -NORMAL • Containment wide range water level - NORMAL **(RNO)** GO TO 0POP05-EO-EO10, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1. • MONITOR Critical Safety Functions. • WHEN Addendum 5 of this procedure is complete, THEN Functional Restoration Procedures may be IMPLEMENTED. *(Step 14)* *(Will not transition to a Functional Recovery Procedure until Addendum 5 is complete.)*	
	BOP	Completes 0POP05-EO-EO00, Addendum 5.	
	SRO	Informs crew of transition to 0POP05-EO-FRP1, Response to Imminent Pressurized Thermal Shock Condition, if an Orange or Red Path is indicated on the Critical Safety Functions. Otherwise, informs crew of transition to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Integral**) and 6 (**Integral**) **Event Description:** SB LOCA (**30 seconds after the RX is tripped**.) AFWP 14 fails to auto start.			
Time	**Position**	**Required Operator Actions**	**Notes**
NOTE: The next steps are from 0POP05-EO-FRP1, Response to Imminent Pressurized Thermal Shock Condition.			
	RO	CHECK RCS pressure – GREATER THAN 415 PSIG. *(Step 1)*	
	RO	CHECK RCS Cold Leg Temperatures – STABLE OR RISING. *(Step 2)*	

	BOP	CHECK RCS Cold Leg Temperatures – STABLE OR RISING.
		(RNO)
		TRY TO stop RCS cooldown:
		• ENSURE SG PORVs closed.
		• ENSURE condenser steam dump valves closed.
		• PERFORM the following:
		  • RESET SI
		• RESET SG LO-LO Level AFW actuations.
		• IF NR level in all intact SGs is LESS THAN 14%[34%], THEN PERFORM the following:
		  • MAINTAIN total AFW flow GREATER THAN 576 GPM until NR level is GREATER THAN 14% [34%] in at least one SG.
		  • CONTROL AFW flow to intact SGs to maintain SG NR levels GREATER THAN 14% [34%].
		(Step 2)
		(This step minimizes cooldown from other sources besides the SB LOCA)
		(Although it is not specifically stated to do so, the crew may elect to stop AFW Pump #14 and cross-connect AFW to supply SG 1D to minimize the RCS cooldown from steam driving AFWP #14.)	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Integral**) and 6 (**Integral**)

Event Description: SB LOCA (**30 seconds after the RX is tripped**.) AFWP 14 fails to auto start.

Time	Position	Required Operator Actions	Notes
	RO	CHECK Pressurizer PORV Isolation Valves: • Power to isolation valves – AVAILABLE • Isolation Valves – AT LEAST ONE OPEN *(Step 3)*	
	RO	CHECK if Pressurizer PORVs Should be Closed: • CHECK PORV Cold Overpressure Mitigation System – ARMED **(RNO)** GO TO Step 4.d. **(Back to A/ER)** • CHECK pressurizer pressure – LESS THAN 2335 PSIG • CHECK Pressurizer PORVs - CLOSED *(Step 4)*	
	RO	CHECK HHSI Pumps – ANY RUNNING *(Step 5)*	
	RO	CHECK IF SI Flow Should be Terminated: • RCS subcooling based on core exit T/Cs – GREATER THAN 85°F[95°F] • RVWL plenum level with: • NO RCP running – GREATER THAN OR EQUAL TO 20% OR • Any RCP running – GREATER THAN OR EQUAL TO 85% **(RNO)** • IF RCS subcooling based on core exit T/Cs GREATER THAN 35°F [45°F] AND NO RCP running, THEN START an RCP per 0POP02-RC-0004, Operation of Reactor Coolant Pump. • GO TO Step 26. *(Step 6)* *(Conditions will NOT allow an RCP start and crew will go to Step 26.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Integral**) and 6 (**Integral**) **Event Description:** SB LOCA (**30 seconds after the RX is tripped**.) AFWP 14 fails to auto start.			
Time	**Position**	**Required Operator Actions**	**Notes**

	SRO	DETERMINE If RCS Temperature Soak is Required:
		• COOLDOWN rate in RCS cold legs – GREATER THAN 100°F IN ANY 60 MINUTE PERIOD
		• PERFORM the following:
		  • DO NOT cooldown the RCS
		  • DO NOT raise RCS pressure
		  • **(26.b) PERFORM actions of other procedures in effect which do NOT cooldown or raise RCS pressure**
		  • RCS temperature – HAS BEEN MAINTAINED STABLE FOR GREATER THAN 1 HOUR
		(RNO)
		• RETURN TO Step 26.b
		(Step 26)
		(The crew will perform the RCS temperature soak AND return to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant, and perform steps that do NOT cooldown or raise RCS pressure.)	

NOTE: The next steps are from 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.			
	RO **(CT-16)**	MONITOR If RCPs Should Be Stopped: • **HHSI pumps - AT LEAST ONE RUNNING** • **RCS pressure - LESS THAN 1430 PSIG** • **STOP all RCPs** *(Step 1)* *(RCPs should have already been stopped.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Integral**) and 6 (**Integral**) **Event Description:** SB LOCA (**30 seconds after the RX is tripped**.) AFWP 14 fails to auto start.			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	DEPRESSURIZE Intact SGs To 1000 PSIG • CHECK RCS pressure - GREATER THAN 415 PSIG • CHECK pressurizer pressure LESS THAN 1985 PSIG • BLOCK Low Steamline Pressure SI • CHECK condenser – AVAILABLE **(RNO)** Perform the following: • USE SG PORVs to depressurize intact SGs to BETWEEN 990 PSIG and 1000 PSIG. • ADJUST intact SG PORV controller setpoints to BETWEEN 990 PSIG and 1000 PSIG • ENSURE SG PORV controllers in AUTO. • VERIFY SG PORVs controlling SG pressure LESS THAN OR EQUAL TO 1000 PSIG. • GO TO Step 3 *(Step 2)* *(Note: SG Pressures will probably already be below 1000 psig.)*	

	BOP	MONITOR If SG Secondary Pressure Boundary Intact:
		• CHECK pressures in all SGs –
		  • CONTROLLED OR RISING
		  • GREATER THAN CONTAINMENT PRESSURE
		(Step 3)	

	RO	RESET SI *(Step 4)*	
	RO	RESET ESF Load Sequencers *(Step 5)*	
	RO	RESET Containment Isolation Phase A *(Step 6)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Integral**) and 6 (**Integral**) **Event Description:** SB LOCA (**30 seconds after the RX is tripped**.) AFWP 14 fails to auto start.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	RESET Containment Isolation Phase B *(Step 7)*	
	BOP	MONITOR INTACT SG Levels: • NR levels - GREATER THAN 14% [34%] • CONTROL AFW flow to maintain NR levels BETWEEN 25% [34%] and 50% *(Step 8)* *(These steps check for a Faulted SG)*	

	BOP	CHECK Secondary Radiation:
		• PERFORM the following:
		  • RESET SG LO-LO level AFW actuations
		  • RESET SG blowdown and sample isolations
		  • NOTIFY Chemistry to sample all SGs for activity
		• PERFORM the following:
		  • MONITOR secondary systems listed below radiation levels – NORMAL
		  • Main steamline radiation – NORMAL
		  • SG blowdown radiation – NORMAL
		  • CARS pump(s) radiation – NORMAL
		  • MONITOR SG sample results - NORMAL
		(Step 9)
		(These steps check for a SGTR)
		(Terminate Scenario)	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** Includes Event 6

Event Description: 0POP05-EO-EO00, Addendum 5 Actions.
(**Event 6** – AFW Pump 14 fails to auto start. Addendum 5, Step 3)

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY FW isolation: • SGFPTs – TRIPPED • SU SGFP – TRIPPED • VERIFY the following valves –CLOSED o FWIVs o FWIBs o FW preheater bypass valves o FW regulating valves o Low power FW regulating valves o SG blowdown isolation valves o SG sample isolation valves *(EO00 Addendum 5, Step 1)* *(0POP05-EO-EO00, Reactor Trip or Safety Injection, Addendum 5, Verification of Equipment Operation.)* *(This addendum is performed in parallel with Steps 5 to 14 of 0POP05-EO-EO00, Reactor Trip or Safety Injection.)*	
	BOP	CHECK if main steamline should be isolated: • CHECK for any of the following conditions: o Containment pressure – GREATER THAN OR EQUAL TO 3 PSIG OR o SG pressure (without low steamline pressure SI blocked) - LESS THAN OR EQUAL TO 735 PSIG OR o SG pressure (with low steamline pressure SI blocked) - LOWERING AT A RATE GREATER THAN OR EQUAL TO 100 PSI/SEC, BY OBSERVANCE OF THE STEAMLINE PRESSURE RATE BISTABLES • VERIFY Main Steamline Isolation: o MSIVs – CLOSED o MISBs - CLOSED *(Step 2)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** Includes Event 6

Event Description: 0POP05-EO-EO00, Addendum 5 Actions.
(**Event 6** – AFW Pump 14 fails to auto start. Addendum 5, Step 3)

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY AFW system status: • Motor-driven pump – RUNNING • Turbine-driven pump – RUNNING *(Step 3)* ***(AFWP 14 did NOT auto start. Operator will manually start AFWP 14 by OPENING AF-MOV-0514, TURB TRIP/THROT valve.)***	
	AO	***(If a Plant Operator is asked, they will report that AFWP 14 looks good for a start.)***	
	BOP	VERIFY AFW valve alignment - PROPER EMERGENCY ALIGNMENT *(Step 4)*	
	BOP	VERIFY total AFW Flow - GREATER THAN 576 GPM *(Step 5)*	
	BOP	VERIFY containment isolation phase A: • Phase A – ACTUATED • Phase A valves - CLOSED, REFER TO ADDENDUM 1, PHASE A ISOLATION VERIFICATION *(Step 6)*	
	BOP	VERIFY ECW status: • ECW pumps – RUNNING • ECW pump discharge isolation valves – OPEN *(Step 7)*	
	BOP	VERIFY CCW pumps – RUNNING *(Step 8)*	
	BOP	VERIFY RCFC status: • RCFCs – RUNNING • Cooling water - TRANSFERRED TO CCW *(Step 9)*	
	BOP	VERIFY SI pump status: • HHSI pumps – RUNNING • LHSI pumps – RUNNING *(Step 10)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** Includes Event 6

Event Description: 0POP05-EO-EO00, Addendum 5 Actions.
(**Event 6** – AFW Pump 14 fails to auto start. Addendum 5, Step 3)

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY SI valve alignment – PROPER EMERGENCY ALIGNMENT *(Step 11)*	
	BOP	VERIFY SI flow: • RCS pressure - LESS THAN 1745 PSIG • HHSI pump flow – INDICATED • RCS pressure - LESS THAN 415 PSIG **(RNO)** • GO TO Step 13 of this Addendum. *(Step 12)*	
	BOP	VERIFY containment ventilation isolation: • Containment atmosphere radiation monitor isolation valves – CLOSED • Normal purge supply and exhaust fans – STOPPED • Supplemental purge supply and exhaust fans – STOPPED • Purge Dampers – CLOSED *(Step 13)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** Includes Event 6

Event Description: 0POP05-EO-EO00, Addendum 5 Actions.
(**Event 6** – AFW Pump 14 fails to auto start. Addendum 5, Step 3)

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY ventilation actuation: • Control room HVAC – OPERATING IN EMERGENCY RECIRC • EAB HVAC - OPERATING IN EMERGENCY RECIRC • FHB HVAC - OPERATING IN EMERGENCY MODE • FHB Exhaust Fans - ONLY TWO TRAINS OPERATING o Exhaust booster fans o Main exhaust fans **(RNO)** • PERFORM the following: o IF three trains FHB exhaust fans running, THEN PLACE one train FHB exhaust fans in PULL TO LOCK. **(Back to A/ER)** • SECURE one FHB filter train by PERFORMING the following: o PLACE the outlet damper Controller in manual o Manually close the outlet damper o VERIFY proper operation of filter train in service • Essential chilled water pumps – RUNNING • Essential chillers – RUNNING • ECCS pump room fan coolers – RUNNING • AFW pump cubicle fans – RUNNING • FHB truck bay doors – CLOSED *(Step 14)*	
	BOP	NOTIFY Unit Supervisor that Addendum 5 is COMPLETE *(Step 15)*	
	SRO	IMPLEMENT Functional Restoration Procedures as required *(Step 16)*	
	SRO	RETURN TO procedure step in effect. *(Step 17)*	

CRITICAL TASK SUMMARY

POSITION	EXPECTED RESPONSE	ACCEPTANCE CRITERIA	SAT/ UNSAT
SRO/RO	**CT-2** **PERFORM A MANUAL ACTUATION OF SAFETY INJECTION USING THE MANUAL HANDSWITCH ON CP001 OR CP005.**	Manually actuate SI prior to transitioning past Step 4 of 0POP05-EO-EO00, including a read through of the step. SAFETY SIGNIFICANCE: Failure to manually actuate SI under the postulated conditions constitutes "mis-operation or incorrect crew performance that leads to degraded ECCS capacity." In this case, SI can be manually actuated from the control room. Therefore, failure to manually actuate SI also represents a "demonstrated inability by the crew to: • Take an action or combination of actions that would prevent a challenge to plant safety • Effectively direct/manipulate ESF controls • Recognize a failure/incorrect auto actuation of an ESF system or component" Additionally, under the postulated plant conditions, failure to manually actuate SI (when it is possible to do so) results in a "significant reduction of safety margin beyond that irreparably introduced by the scenario." Finally, failure to manually actuate SI under the postulated conditions is a "violation of the facility license condition."	

CRITICAL TASK SUMMARY

POSITION	EXPECTED RESPONSE	ACCEPTANCE CRITERIA	SAT/ UNSAT
SRO/BOP	**CT-16** **MANUALLY TRIP THE REACTOR COOLANT PUMPS WHEN RCS PRESSURE IS LESS THAN 1430 PSIG AND AT LEAST ONE HHSI PUMP IS INJECTING DURING A SBLOCA.**	Trip all RCPs so that an Orange Path on Core Cooling (CET temperatures >707°F) does not occur when forced circulation in the RCS stops. SAFETY SIGNIFICANCE -- Failure to trip the RCPs under the postulated plant conditions leads to core uncovery and to fuel cladding temperatures in excess of 2200°F, which is the limit specified in the ECCS acceptance criteria. Thus, failure to perform the task represents "mis-operation or incorrect crew performance which leads to degradation of the fuel cladding barrier to fission product release" and to "violation of the facility license condition."	

NOTE: (Per NUREG-1021, Appendix D)
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.

EXPECTED BOOTH COMMUNICATIONS

EVENT 1:

- The following communications are part of raising reactor power starting at step 7.46 of 0POP03-ZG-0005, Plant Startup to 100%.
  - If asked, as a plant operator, report that you will check Gland Steam pressure and Gland Steam Spillover pressure per 0POP02-GS-0001, Turbine Gland Seal Steam System. (This would take a while so no further action is required.)
  - If asked to manually open 1-HD-MOV-0365 MSR 11 N STM VENT to 20% open, as a plant operator wait a couple of minutes and then report back that the valve is 20% open. (There is no actual action required for the simulator.)
  - If asked, as a Plant Operator, report that TGB HVAC TXFR AIR FAN FN005 is in service. (There is no actual action required for the simulator.)
  - If asked to open 1-HD-0577. 78, 79 & 80, as a plant operator wait a couple of minutes and then report that the valves are open. (There is no actual action required for the simulator.)

EVENT 2:

- As a Plant Operator, if asked to check CCPs, report the following.
  - CCP 1B Breaker has an overcurrent indicated.
  - CCP 1B locally doesn't appear to have any issues.
  - CCP 1A looks good for a start.
- As Electrical Maintenance or the Duty Maintenance Supervisor, if notified of the status of CCP 1B, report that an Electrical maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the trip of CCP 1B. No further action is necessary.

EVENT 3:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of the status of DRPI indication for control rod F8, report that an I&C maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the issues with DRPI indication for control rod F8. No further action is necessary.

EVENT 4:

- There are no Booth Communications expected for Event 4.

EVENT 5:

- There are no Booth Communications expected for Event 5.

EVENT 6:

- As a Plant Operator, if asked to check AFWP 14, report that the pump looks good locally and, if asked, the pump looks good for a start.

EXPECTED BOOTH ACTIONS

1. If asked to open the DA High level Dump Valves then trigger the step for ‘DA High Level Dump Valves’.
2. If asked to fill the AFWST then trigger the step for ‘AFWST Makeup’.

SIMULATOR SETUP

NOTE

ALL Annunciator Response Procedures (ARP's) must be checked if this scenario is the first to be run on this day. Setup for subsequent runs of this scenario only requires those ARP's that were actually marked in to be checked.

Instructors running the scenario must keep track of which ARP's these are, otherwise, all will have to be checked for subsequent scenarios as well.

Check and clean the following procedures:

- 0POP03-ZG-0005, Plant Startup to 100%
- 0POP09-AN-04M8, F-3, CHG FLOW HI/LO
- 0POP09-AN-05M3, A-5, RPI TRBL
- 0POP09-AN-05M3, D-5, ROD SUPV MNTR ROD POSITION TRBL
- 0POP09-AN-04M7, B-5, RCP 1C NO 1 SEAL LKF FLOW HI/LO
- 0POP04-RC-0002, RCP Off Normal
- 0POP05-EO-EO00, Reactor Trip or Safety Injection
- 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant
- 0POP05-EO-FRP1, Response to Imminent Pressurized Thermal Shock Condition
- Additional Annunciator Response Procedures that were used by the Crew during the Scenario.

NOTE

The Scenario Lesson Plan MUST be run from the left most Instructor Station in Simulator Booth to allow for recording and storing of recorded parameter data.

- Log into Instructor Workstation as 'lotnrc' user, open Orchid (nstps server), then 'Unlock' Initial Conditions Group 'lotnrc'.
- Reset to IC #203 and perform the following:
  - Switch Check
  - Ensure red light on end of CP-010 off
  - Ensure ICS Annunciators have stopped counting up

SIMULATOR SETUP (cont'd.)

- Go to RUN and perform the following:
  - Ensure Simulator is ready by performing applicable checkoffs from LOR-GL-0006, LOR Conduct of Simulator Training Guidelines, Addendum 5, Simulator Readiness Checklist.
  - Ensure VCT Makeup Integrators are set as follows:
    - Momentarily place RC M/U CONT to STOP and then START to reset BA BATCH/GALLONS and TOT M/U BATCH/GALLONS counters to zero.
    - Reset BA BATCH/GALLONS setpoint to 0 gallons and reset TOT M/U BATCH/GALLONS setpoint to 0 gallons.
    - Verify BA Controller Pot setting is 4.37
- Open lesson plan for 'Scenario 3' in 'lotnrc' directory for LOT 22, then EXECUTE lesson plan. These actions will set up any initial conditions for the scenario.
- If this scenario IC has changing conditions (i.e. Xenon is changing, etc.), then place the simulator in FREEZE, otherwise it is OK to leave in RUN.
- Run the scenario in accordance with the next section, 'Scenario Instructions'.

SCENARIO INSTRUCTIONS

NOTE
Steps 1 to 4 below can be performed in the LOR Debrief Room prior to the crew coming into the Simulator provided exam security measures are taken.

1. Provide Shift Turnover sheets to the crew and review the information.
2. Have the Crew perform a Pre-Job Brief. Ensure the crew doesn't have any other questions about the Shift Turnover.
3. Ensure the Beacon book from the simulator is available to the crew if they are in the LOR Debrief Room.
4. Review the Simulator Differences list with the crew if needed.
5. When signaled by Simulator Staff, have the crew perform their board walkdown and inform the floor instructor when ready to take the watch.
6. Ensure the simulator is in RUN and verify simulator clock is set correctly. Note the time that the Crew takes the watch. _____ Start Time.

NOTE

Malfunction Step and/or Lesson Plan Steps (Events) are triggered upon the Lead Examiners signal during the scenario unless an agreed upon time is discussed with the examiner prior to the start of the scenario.

Always 'TRIGGER' events in the Simulator Scenario Lesson Plans. This way delays associated with events will take place as intended.

Refer to 'EXPECTED BOOTH COMMUNCATIONS' and 'EXPECTED BOOTH ACTIONS' Sections for instructions for Instructor actions during the scenario.

7. Trigger the step titled 'Start Chart' and ensure specified Recorded Parameters for the scenario begin recording as the scenario runs. If the chart speed is NOT set to 5400 seconds (90 minutes) then perform the following:
   - Under 'CHARTS' click on 'SET TIME'
   - In the dialog box enter 5400 seconds (90 minutes)
   - Click OK.
8. The crew will perform Event #1 and raise reactor power.
9. Trigger **MALFUNCTION STEP –** This will insert Step #1, Event #2.
10. Trigger **STEP 2 –** Event #3
11. Trigger **STEP 3 –** Event #4
12. Place simulator in FREEZE when cued by the Lead Examiner to terminate scenario.
13. DO NOT RESET simulator until the steps on the next page are completed and all Examiners have completed Follow-Up Questioning.

SCENARIO INSTRUCTIONS (cont'd.)

NOTE
Some scenarios will have more than one chart. For these, each chart file must be separately saved with a unique filename.

14. Saving Recorded Parameters Data
    - Click on the 'Charts' icon on the left side of the screen
    - Select 'Pause' icon, then select 'All'
    - Click on the 'Print Chart' icon, then select 'All'
    - This will bring up a window in the TASK BAR called PRIMOPDF.
    - Click on 'Create PDF'
    - This will bring up a File Save As window.
    - Save to folder **c:\Users\lotnrc\Desktop\LOT22 Charts**. The file name will be 'LOT22 Scenario 3' followed by a name that identifies the crew (e.g. 'Crew A).
    - Save the new file. It will be saved in a folder already on the desktop. LOT22 Charts.
15. Saving Scenario SAM (Simulator Action Monitor)
    - Under 'TOOLS' click on 'SAM'
    - In the dialog box that comes up click on 'SAVE TO'
    - Save as a 'TEXT FILE' to folder **c:\Users\lotnrc\Desktop\LOT22 Charts.** The file name will be 'LOT22 SAM INFO Scenario 3' followed by a name that identifies the crew (e.g. 'Crew A).

TURNOVER INFORMATION

Unit 1 is in Mode 1 at 46% Reactor Power.

- The crew is to continue at Step 7.46 of 0POP03-ZG-0005, Plant Startup to 100%, and raise power to 74%.
- Cycle Burnup is 150 MWD/MTU. (BOL)
- RCS Boron Concentration is 1596 ppm.
- Boric Acid Tank ‘A’ is at 7315 ppm and ‘B’ is at 7309 ppm.
- No liquid waste discharges are in progress or planned.
- No personnel are in containment.
- FHB Truck Bay doors are closed.
- No ESF DG FOST’s are on recirc.

LCO Actions:

None.

LOT 22 NRC EXAM

SIMULATOR OPERATING TEST

SCENARIO #4

Revision 0

Week of 10/22/2018

SCENARIO OUTLINE

Facility: South Texas Project **Scenario No.: 4** **Op-Test No.: LOT 22 NRC**

Examiners: _____ **Operators:** _____

_____ _____

_____ _____

Initial Conditions:

- **Reactor Power 12% (IC 204)**

Turnover:

- **Perform OPC Test**

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	N/A	BOP (N)	Perform OPC Test on Main Turbine and then continue with Plant Startup. (0POP03-ZG-0005 Step 6.39)
2 (10 min)	02-20-01 0.0	RO (I) SRO (I, TS)	PZR level channel LT-0465 fails high
3 (20 min)	03-05-01 1.0	RO (I) SRO (I)	VCT Level Transmitter LT-0112 fails high.
4 (30 min)	05-12-02A 1.0	BOP (I) SRO (I, TS)	SG 1B Level Channel LT-0572 fails high.
5 (40 min)	12-12-01 .06/.012	All (M)	PZR Steam Space SBLOCA **(Critical Task)**
6 (N/A)	Various Malfunctions	RO (C) SRO (C)	On the Reactor Trip and SI, a Loss of offsite power will occur with the following: Train A 4160V bus lockout, Train B Sequencer fails to actuate and ECW Pump 1C fails to auto start. The crew will manually start the ECW Pumps on Train B and C to supply cooling water to the respective ESF DGs. **(Critical Task)**
7 (N/A)	C-291-M3Delay	BOP (C)	RCFC Fans on Train B did not auto start because of Train B Sequencer and RCFC Fans on Train C fail to auto start.

*** (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor.**

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Malfunctions after EOP entry (1–2)	2
2. Abnormal events (2–4)	4
3. Major transients (1–2)	1
4. EOPs entered/requiring substantive actions (1–2)	1
5. Entry into a contingency EOP with substantive actions (≥1 per scenario set)	0
6. Preidentified critical tasks (≥2)	2

SCENARIO MISCELLANEOUS INFORMATION

INSTRUCTOR NOTES:

- Critical Tasks are indicated by "**C-##**" in the position column and indicated in bold type. In some instances an "*" will indicate that only a portion of the task listed is considered critical.
- Shaded cells indicate procedural entry points.

RECORDED PARAMETERS:

Recorded parameters will be determined during NRC Validation week.

The parameters identified for recording may be of value in evaluating crew performance. Once the scenario is complete for each crew, printout the recorded parameters and label the printout with date, time, crew number and scenario number. See Scenario Instructions section for further details on how to save the Recorded Parameters.

- RCS Wide Range Pressure
- SG 1B Pressure
- SG 1C Pressure

SCENARIO OBJECTIVES

Event 1 Objective

- DESCRIBE the general sequence of operation of components in the referenced procedure. (In this case 0POP03-ZG-0005, Plant Startup to 100%)

Event 2 Objective

- Respond to a pressurizer level control malfunction in accordance with per 0POP04-RP-0002, Loss of Automatic Pressurizer Level Control.

Event 3 Objective

- Respond to CVCS alarms per the associated annunciator response procedure.

Event 4 Objective

- Respond to a loss of steam generator level control per 0POP04-FW-0001, Loss of Steam Generator Level Control.

Event 5 Objective

- Respond to a loss of reactor coolant accident involving a break size in which reactor coolant system pressure remains above high head safety injection pump shutoff head per 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.

Event 6 Objective

- During all modes of plant operating conditions, operate the Emergency Standby Diesel Generator System in accordance with the plant operating procedures and technical specifications.

Event 7 Objective

- Given that the load sequencer fails to automatically sequence loads on a valid safety injection signal, manually start loads per 0POP05-EO-EO00, Reactor Trip or Safety Injection.

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 1

Event Description: Perform OPC Test on Main Turbine and then continue with Plant Startup. (0POP03-ZG-0005 Step 6.39)

Time	Position	Required Operator Actions	Notes
	SRO	Uses 0POP03-ZG-0005, Plant Startup to 100%, to perform the Main Turbine OPC System test. Will start at step 6.39.	
	BOP	ENSURE CONTROL MODE SELECT is in the "OPER AUTO" mode. *(Step 6.39.1)*	
	BOP	DEPRESS the "GOV VLV LIMIT CONT" raise pushbutton until the governor valve position limit indicates 100%. *(Step 6.39.2)*	
	BOP	TURN the "OVERSP PROT CONT" three-position keyswitch counter-clockwise to the "TEST" position. (Refer to Figure 3, 0POP01-TM-0001) *(Step 6.39.3)* *(BOP may refer to Figure 3, 0POP01-TM-0001)*	
	BOP AO	OBSERVE all Main Turbine Governor and Intercept Valves close rapidly. {CP007 or locally} *(Step 6.39.4)* *(If contacted, a Plant Operator will report that all Main Turbine Governor and Intercept Valves closed rapidly.)*	
	BOP	TURN the "OVERSP PROT CONT" Three-position keyswitch to the "IN SVC" position. *(Step 6.39.5)*	
	BOP AO	OBSERVE all Main Turbine Governor and Intercept Valves open. {CP007 or locally} *(Step 6.39.6)* *(If contacted, a Plant Operator will report that all Main Turbine Governor and Intercept Valves are open.)* *(OPC testing is completed with this step.)* ***(Event 2** will be triggered when the Main Turbine is tripped in next step after a 30 sec. delay.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 1

Event Description: Perform OPC Test on Main Turbine and then continue with Plant Startup. (0POP03-ZG-0005 Step 6.39)

Time	Position	Required Operator Actions	Notes
	BOP	DEPRESS the "TURB TRIP" pushbutton. *(Step 6.40)*	
	BOP AO	VERIFY the following valves closed: {CP007 or locally} • All Reheat Stop and Intercept Valves • Main Turbine Governor Valves • Extraction Steam Block Valves *(Step 6.41)* *(If contacted, a Plant Operator will report the following:* • *All Reheat Stop and Intercept Valves ate CLOSED* • *Main Turbine Governor Valves are CLOSED* • *Extraction Steam Block Valves are CLOSED)* *(NOTE: Extraction Steam Block Valves take a while to close.)*	
	BOP	DEPRESS the "GOV VLV LIMIT CONT" lower pushbutton until the valve position limit indicates 0%. *(Step 6.41)* *(**Event 2** should have been initiated by now.)*	

OPERATOR ACTIONS

Op-Test No.: 1	**Scenario No.:** 4	**Event No.:** 2 **(30 seconds after main turbine is tripped in Event 1)**	
Event Description: PZR level channel LT-0465 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	Acknowledges and announces the following annunciators on 04M8: • PRZR LEVEL HI RX TRIP ALERT (A-6) • PRZR LEVEL DEV HI B/U HTRS ON (C-6) *(NOTE: Other alarms may come in as the event progresses.)*	
	SRO/RO	Determines that Pressurizer Level Channel LT-0465 failed high. Performs immediate actions of 0POP04-RP-0002: • PLACES "CHG FLOW CONT FK-0205" in Manual and controls PZR Level on Program. *(Immediate Action of 0POP04-RP-0002, Loss of Automatic Pressurizer Level Control.)*	
	SRO	Directs action of 0POP04-RP-0002, Loss of Automatic Pressurizer Level Control.	
	RO	PLACE "CHG FLOW CONT FK-0205" Controller In MANUAL *(Step 1 immediate action)*	
	RO	ADJUST "CHG FLOW CONT FK-0205" To Maintain Pressurizer Program Level *(Step 2 immediate action)*	
	RO	VERIFY Letdown – IN SERVICE *(Step 3)* *(Letdown will still be in service.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 2 **(30 seconds after main turbine is tripped in Event 1)**			
Event Description: PZR level channel LT-0465 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	CHECK All Pressurizer Level Channels - OPERABLE **(RNO)** PERFORM the following: • POSITION Pressurizer level control selector switch to remove failed channel from service: Failed Channel Select **RC-LT-0465 L467/466** RC-LT-0466 L465/467 RC-LT-0467 L465/466 • POSITION Pressurizer level recorder selector switch to an operable channel. • PLACE Pressurizer "HTR CONT GRP 1C" to ON. • IF normal letdown has isolated, THEN PLACE excess letdown in service as necessary per Addendum 3 to maintain Pressurizer level on Pressurizer Program Level. • NOTIFY I&C to bypass or trip the Pressurizer low level for the failed channel, using plant surveillance procedure listed in Addendum 4. *(Step 4)* *(Selects channel L467/466)*	
	RO	CHECK All Tavg Channels – OPERABLE *(Step 5)*	
	RO	CHECK Tavg – WITHIN 1.5°F OF Tref *(Step 6)*	
	RO	CHECK Pressurizer Level - GREATER THAN 17% *(Step 7)*	
	RO	CHECK Normal Letdown – IN SERVICE *(Step 8)*	
	RO	CHECK "CHG FLOW CONT FK-0205" - OPERABLE *(Step 9)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 2 **(30 seconds after main turbine is tripped in Event 1)**

Event Description: PZR level channel LT-0465 fails high.

Time	Position	Required Operator Actions	Notes
	RO	CHECK PZR Level Controller: • CHECK PZR Level Controller LK- 0665 "LEVEL CONT." – OPERABLE • PLACE PZR Level Controller LK- 0665 "LEVEL CONT." in MANUAL AND ADJUST output to match "CHG FLOW CONT FK-0205" output • PLACE PZR Level Controller LK- 0665 "LEVEL CONT." in AUTO *(Step 10)*	
	RO	CHECK PZR Level Controller LK- 0665 "LEVEL CONT." Output Is Stable *(Step 11)*	
	RO	PLACE "CHG FLOW CONT FK-0205" In Automatic *(Step 12)*	
	RO	CHECK Pressurizer Level – MAINTAINED ON PRESSURIZER PROGRAM LEVEL *(Step 13)*	
	RO	CHECK Excess Letdown – ISOLATED *(Step 14)*	
	SRO	REFER TO Addendum 7 For Applicable Technical Specifications *(Step 15)* *(TS 3.3.1.12 Action 6 - Place the failed channel in the tripped condition within 72 hours. See below for details.)*	

TS 3.3.1.12 Action 6
With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:
a. For Functional Units with installed bypass test capability, the inoperable channel may be placed in bypass, and must be placed in the tripped condition within 72 hours.
Note: A channel may be bypassed for up to 12 hours for surveillance testing per Specification 4.3.1.1, provided no more than one channel is in bypass at any time.

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 2 **(30 seconds after main turbine is tripped in Event 1)** **Event Description:** PZR level channel LT-0465 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	SRO	INITIATE Corrective Action For Failed Component *(Step 16)* *(**Event 3** can be triggered after the SRO has checked TSs.)* ***(NOTE: Event 3 takes a couple of minutes to develop. The Lead Examiner may want to signal the start of the event earlier than at the end of the SRO checking TSs.)***	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 3 **(Examiner Trigger)**			
Event Description: VCT Level Transmitter LT-0112 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	Acknowledges and announces the following annunciators from 04M8: • VCT LEVEL HI/LO (E-2) *(The RO may be able to diagnose this event prior to the alarm coming in by observing VCT trends.)* *(VCT level of 15% and lowering brings in alarm.)*	
	SRO RO	Determines VCT Level Transmitter LT-0112 has failed high.	
	SRO	Directs actions of 0POP09-AN-04M8, Window E-2, VCT LEVEL HI/LO.	
	RO	CHECK VCT level. *(Step 1 of annunciator response.)*	
	RO	VERIFY VCT level by checking the following Plant Computer Points: • CVLA0112 • CVLA0113 *(Step 2)* *(CVLA0112 will be indicating HI.* *CVLA0113 will be lowering due to Divert Valve LCV-0112A being fully diverted to the RHT.)*	
	RO	IF a VCT level transmitter is failed, THEN CONTROL VCT level by closely monitoring Plant Computer Points. *(Step 3)*	
	RO	IF annunciator window "VCT LEVEL LO-LO" F-2 is alarming, THEN RESPOND to that annunciator. *(Step 4)* *(If VCT level lowers to 3% or less then the crew will respond to this alarm.)*	
	RO	IF VCT level is greater than 95%, THEN ENSURE the following: • Divert valve LCV-0112A fully diverted to RHT. • Reactor Coolant Makeup stopped. *(Step 5)* (*Actual VCT level will be lowering.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 3 **(Examiner Trigger)** **Event Description:** VCT Level Transmitter LT-0112 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	IF VCT level is less than 28%, THEN PERFORM the following: • ENSURE Divert valve LCV-0112A is aligned to the VCT. • ENSURE Reactor Water Makeup System started in AUTO. • IF makeup can NOT be started in AUTO, THEN Manually INITIATE makeup to the RCS per 0POP02-CV-0001, Makeup to the Reactor System. • IF VCT level decreases to 3%, THEN ENSURE charging pump suction aligns to the RWST. *(Step 6)* *(The crew will align LCV-0112A to the VCT due to the failure of LT-0112.)* *(The VCT level may not get below 28% prior to diverting flow back to the VCT.* *However, if level does go below 28% the crew should perform a manual make up to the VCT. See next page.)*	
	RO	IF a VCT level transmitter (LT-0112 or LT-0113) is failing low, THEN PERFORM the following: *(Step 7)* *(LT-0112 failed high so this step is N/A, however, the SRO may still contact I&C.)*	
	RO	IF VCT low level is due to excessive RCS leakage, THEN GO TO the leakage procedure appropriate for plant conditions: *(Step 8)* *(This step is N/A.)* *(**Event 4** can be triggered on a signal from the Lead Examiner.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 3 **(Examiner Trigger)**			
Event Description: VCT Level Transmitter LT-0112 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	SRO	REFER TO TRM 3.1.2.1 and 3.1.2.2. *(Step 9)* *(These requirements are not applicable for this event.)* *(The next steps are included if the crew has to perform a manual makeup to the RCS.)*	
	RO	VERIFY the following switches in "AUTO": • "BA FLOW CONT VLV FCV-0110A" valve • "RMW FLOW CONT VLV FCV-0111A" valve *(Step 12.1 of 0POP02-CV-0001)*	
	RO	ENSURE the following switches in "CLOSE": • Makeup stop to Charging Pumps "TO VCT OUTL FCV-0110B" Valve • Makeup stop to VCT "FILL FCV-0111B" valve *(Step 12.2 of 0POP02-CV-0001)*	
	RO	TURN "RC M/U CONT SYS ON" switch to "STOP". *(Step 12.3 of 0POP02-CV-0001)*	
	RO	PLACE the "RC M/U CONT" in "MAN". *(Step 12.4 of 0POP02-CV-0001)*	

	RO	SET "BA BATCH/GALLONS FY-0110B" flow integrator as follows:
		• IF this is the first Manual Makeup for this evolution, THEN PERFORM the following:
		  • SET "BA BATCH/GALLONS FY-0110B" flow integrator using formula is step 12.5.2.
		  • GO TO step 12.6.
		(Step 12.5 of 0POP02-CV-0001)
		(Formula for step 12.5.2 - BA batch/gallons = $\frac{\text{Tot M/U batch gallons x RCS Concentration}}{\text{BAT Concentration}}$	

	RO	SET "TOT M/U BATCH GALLONS FY-0111B" flow integrator for desired gallons. *(Step 12.6 of 0POP02-CV-0001)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 3 **(Examiner Trigger)** **Event Description:** VCT Level Transmitter LT-0112 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	SET "BA FLOW CONT FK-0110" setpoint, using the following formula: *Setpoint =* $\frac{\{K\} \times \text{Boron Concentration of RCS}}{\text{Boron Concentration of BAT}}$ *(Step 12.7 of 0POP02-CV-0001)* *(For Mode 1, 2, 3 & 4 K=20)*	
	RO	TURN "RC M/U CONT SYS ON" switch to "START". *(Step 12.8 of 0POP02-CV-0001)*	
	RO	VERIFY "BA XFER PUMP 1A" OR "BA XFER PUMP 1B" starts. *(Step 12.9 of 0POP02-CV-0001)*	
	RO	VERIFY "RMW PUMP 1A" OR "RMW PUMP 1B" starts. *(Step 12.10 of 0POP02-CV-0001)*	
	RO	OPEN makeup stop to charging pumps "TO VCT OUTL FCV-0110B" or makeup stop to VCT "FILL FCV-0111B" as desired. *(Step 12.11 of 0POP02-CV-0001)*	
	RO	IF additional makeup required ENSURE makeup is stopped and go back to Step 12.5. IF NOT THEN ENSURE the following: • Makeup has stopped. • "TO VCT OUTL FCV-011B" valve CLOSED. • "FILL FCV-0111B valve CLOSED • Return makeup to Automatic using Form 4 OR Section 8.0. *(Step 12.12 & 12.13 of 0POP02-CV-0001)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 4 **(Examiner Trigger)** **Event Description:** SG 1B Level Channel LT-0572 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	Acknowledges and announces the following annunciators from 06M3: • SG 1B(2B) LVL HI-HI ALERT (A-6) • SG 1B(2B) LVL DEV HI/LO (B-6) • SG 1B(2B) STM/FW FLOW MSMTCH (E-7) *(NOTE: Other alarms may come in as the event progresses.)*	
	BOP	Determines that SG 1B LT-0572 has failed high and takes the following immediate action: • PLACE SG 1B NORMAL FRV (FCV-0552) in manual and adjusts as necessary to restore SG NR level to between 68% and 74%. *(Step 1 of 0POP04-FW-0001 is an immediate action step and applies to this event.)*	
	SRO	Directs action of 0POP04-FW-0001, Loss of Steam Generator Level Control.	
	BOP	CHECK SG Feedwater Regulating Valve(s) - RESPONDING IN AUTOMATIC • SG 1B(2B) "NORM FCV-0552" **(RNO)** PLACE any SG Feedwater Regulating Valve(s) not properly responding in MANUAL AND ADJUST as necessary to restore affected SG NR level(s) to between 68% and 74%. *(Step 1.0 is an immediate action step.)*	
	BOP	CHECK SGFP Speed Controllers - RESPONDING IN AUTOMATIC • SGFP Master Speed Controller • SGFP 11(21) Speed Controller • SGFP 12(22) Speed Controller • SGFP 13(23) Speed Controller *(Step 2.0 is an immediate action step but there are no failures associated with SGFP Speed Control)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 4 **(Examiner Trigger)** **Event Description:** SG 1B Level Channel LT-0572 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**

	BOP	CHECK Main Feedwater Regulating Valves:
		• CHECK Main Feedwater Regulating Valve(s) - IN SERVICE
		  • SG 1A(2A) "NORM FCV-0551"
		  • SG 1B(2B) "NORM FCV-0552"
		  • SG 1C(2C) "NORM FCV-0553"
		  • SG 1D(2D) "NORM FCV-0554"
		• CHECK Main Feedwater Regulating Valves(s) – ANY IN MANUAL
		• CHECK Affected Main Feedwater Regulating Valve(s) – RESPONDING IN MANUAL
		(Step 3.0)	

	BOP	CHECK Low Power Feedwater Regulating Valves: • CHECK Low Power Feedwater Regulating Valve(s) - IN SERVICE **(RNO)** • GO TO Step 5.0 *(Step 4.0)*	
	BOP	CHECK SGFP Master Speed Controller - IN MANUAL **(RNO)** GO TO Step 7.0 *(Step 5.0)*	
	BOP	CHECK Individual SGFP Speed Controllers – ANY IN MANUAL **(RNO)** GO TO Step 9.0 *(Step 7.0)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 4 **(Examiner Trigger)** **Event Description:** SG 1B Level Channel LT-0572 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	MONITOR Feedwater/Steam Header DP - • GREATER THAN OR EQUAL TO DP REQUIRED BY Addendum 1 OR • SGFP Master Speed Controller At 100% Demand In Auto *(Step 9.0)* *(SGFP Master Speed Controller should be in Auto and controlling DP at greater than 169 psid.*	
	BOP	RESTORE Affected SG NR Level(s) To Between 68% And 74% *(Step 10.0)*	
	BOP	MONITOR SG NR Levels - GREATER THAN 20% *(Step 11.0)*	
	BOP	MONITOR SG NR Levels - LESS THAN 87.5% *(Step 12.0)*	
	BOP	CHECK SG NR Level Indicators - ALL OPERABLE **(RNO)** PERFORM the following: • SELECT the operable SG level channel for affected SG(s) level control. • CHECK status of "QDPS ALARM SGWLCS" Annunciator Lampbox 6M03, Window A-8. • IF Annunciator Lampbox 6M03, Window A-8 is illuminated, THEN DETERMINE the alarming channels(s) using the QDPS DETAIL DATA Menu, Page 5 display. *(Step 13.0)* *(Operator will select level channel LT-0529 for SG 1B.)* *(06M3 A-8 "QDPS ALARM SGWLCS" will not be illuminated.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 4 **(Examiner Trigger)**

Event Description: SG 1B Level Channel LT-0572 fails high.

Time	Position	Required Operator Actions	Notes
	BOP	CHECK Feedwater Flow Transmitters - ALL OPERABLE *(Step 14.0)*	
	BOP	CHECK Steam Flow Transmitters - ALL OPERABLE *(Step 15.0)*	
	BOP	CHECK Steam Pressure Transmitters - ALL OPERABLE *(Step 16.0)*	
	BOP	CHECK SG NR Levels - BETWEEN 68% And 74% *(Step 17.0)*	
	BOP	CHECK Main Feedwater Regulating And Low Power Feedwater Regulating Valves Automatic Control – OPERABLE • SG 1B(2B) "NORM FCV-0552" *(Step 18.0)*	
	BOP	CHECK Main Feedwater Regulating OR Low Power Feedwater Regulating Valve(s) - IN AUTO • SG 1B(2B) "NORM FCV-0552" **(RNO)** WHEN SG levels return to between 68% and 74%, THEN PERFORM the following: • PLACE in-service Feedwater Regulating Valve(s) with operable Automatic Control in Auto. • *MONITOR* proper operation of Feedwater Regulating Valve(s) in Auto. *(Step 19.0)* *(Operator will place SG 1B Main FRV back in Auto.)*	
	BOP	CHECK SGFP Master Speed Controller - IN AUTO *(Step 20.0)* *(SGFP Master Speed Controller should still be in Auto.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 4 **(Examiner Trigger)** **Event Description:** SG 1B Level Channel LT-0572 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	TAKE Appropriate Actions Per Technical Specifications 3.3.1, 3.3.2, 3.3.3.6 and TRM 3.7.1.7 *(Step 21.0)* *(See TS Actions Below)* *(**Event 5** can be triggered after the SRO has checked TSs.)*	
Most Limiting TS: *3.3.1.14 Action 6 and 3.3.2.5.b & 3.3.2.6.d Action 20* *With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:* *a. For Functional Units with installed bypass test capability, the inoperable channel may be placed in bypass, and must be placed in the tripped condition within 72 hours.* *Note: A channel may be bypassed for up to 12 hours for surveillance testing per Specification 4.3.1.1, provided no more than one channel is in bypass at any time.* ***NOTE: TS 3.3.3.6 and TRM 3.7.1.7 do NOT apply.***			
	BOP	NOTIFY I&C To Place The Affected Channel In Trip Or Bypass. REFER TO Addendum 2, Procedure List For The Appropriate Procedure *(Step 22.0)*	
	BOP	INITIATE Corrective Actions For Failed Component *(Step 23.0)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Examiner Trigger)** and 6 (**Integral**) **Event Description:** PZR Steam Space SBLOCA. Loss of Off-Site Power.			
Time	**Position**	**Required Operator Actions**	**Notes**
	ALL	Notices trends of lowering pressurizer level and pressure with RM-11 indicating rising radiation levels in containment.	
	SRO	Directs a Manual Reactor Trip & Safety Injection and enters 0POP05-EO-EO00, Reactor Trip or Safety Injection. *(NOTE: On the Reactor Trip and SI a Loss of Off-Site Power occurs.)*	
	RO	Completes immediate actions of 0POP05-EO-EO00 and determines: • Reactor is tripped (Step 1) • Turbine is tripped (Step 2) • **AC ESF Busses are NOT energized (Step 3 See next Required Operator Action)** • SI is actuated (Step 4) *(RO will complete immediate actions. BOP Operator will monitor the plant and make an announcement of the Reactor trip.)*	
	BOP	During a pause between performing immediate actions and verifying immediate actions, the BOP will throttle AFW to reduce the RCS cooldown by: • Resetting the AFW Reg Valves • Throttling the AFW Reg Valves to lower total AFW flow. AND • Perform a Main Steam Line Isolation due to the LOOP. (CIP Action) • Place SG 1A & 1D PORVs in Manual, press close for 20 seconds and dispatch plant operator to place the associated Blackout switches to BYPASS. (Due to lockout on E1A 4.16 KV Bus) *(NOTE: Total AFW flow must remain above 576 gpm until at least one SG level is >14% NR {34% for adverse containment})*	
	AO		

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Examiner Trigger)** and 6 (**Integral**) **Event Description:** PZR Steam Space SBLOCA. Loss of Off-Site Power.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO **CT-9** AO	Notices that LOOP has occurred and not all AC ESF Buses are energized. Performs the following actions for Step 3: • **Secures ESF DG #11 due to a lock out on Train A 4.16KV ESF Bus.** • **Manually CLOSES the "4.16KV/480V XFMR" breakers on Train B due to a sequencer failure and manually starts ECW Pump 1B.** • **Manually starts ECW Pump 1C due to it failing to automatically start.** *(Step 3 of 0POP05-EO-EO00)* *(If dispatched to Train A 4.16KV ESF Bus, a Plant Operator will report back that the Bus has an 86 lock out relay actuated.)* ***(Actions are to be completed prior to the following:*** • ***ESF DG Trip*** • ***Exiting EO00 during a LOCA, Steam Break or SGTR*** ***AND*** • ***For this scenario, Train B OR Train C ECW Pump must be started to preclude transition to 0POP05-EO-EC00, Loss of All AC Power)***	
	SRO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed by performing a procedure read through of them.	
	BOP	VERIFY Proper SI Equipment Operation Per ADDENDUM 5, VERIFICATION OF SI EQUIPMENT OPERATION *(Step 5)* *(The SRO will hand out Addendum 5 to the BOP which will perform Addendum 5 in parallel with the rest of the procedure.)* *(See Actions on pages 27-30)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Examiner Trigger)** and 6 (**Integral**) **Event Description:** PZR Steam Space SBLOCA. Loss of Off-Site Power.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	MONITOR If Containment Spray Is Required: • Containment pressure – GREATER THAN 9.5 PSIG (QDPS) **(RNO)** • PERFORM the following: • CHECK Containment pressure - HAS EXCEEDED 9.5 PSIG (CP - 18) • "PRESS PR-0934" OR • "EXTD RNG PRESS PR-9759" • IF containment pressure HAS EXCEEDED 9.5 PSIG, THEN GO TO Step 6.b. • IF containment pressure HAS REMAINED LESS THAN 9.5 PSIG, THEN GO TO Step 7. *(Step 6)* *(Containment pressure will be less than 9.5 psig.)*	
	RO	CHECK RCP Seal Cooling: • ENSURE seal injection flow between 6 and 13 gpm *(Step 7)* *(RO may have to adjust seal injection.)*	
	RO	MONITOR RCS Temperatures – • WITH ANY RCP RUNNING, RCS TAVG STABLE AT OR TRENDING TO 567°F OR • WITHOUT ANY RCP RUNNING, RCS TCOLD STABLE AT OR TRENDING TO 567°F *(Step 8)* *(RCPs will NOT be running due to the LOOP.)*	
	RO	CHECK Pressurizer Status: • PORVs – CLOSED • Normal pressurizer spray valves - CLOSED • Auxiliary spray valve - CLOSED • Excess letdown isolation valves - CLOSED *(Step 9)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Examiner Trigger)** and 6 (**Integral**) **Event Description:** PZR Steam Space SBLOCA. Loss of Off-Site Power.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	MONITOR If RCPs Should Be Stopped: • HHSI pump - AT LEAST ONE RUNNING • RCS pressure - LESS THAN 1430 PSIG • STOP all RCPs *(Step 10)* *(RCPs will NOT be running due to the LOOP.)*	
	RO	VERIFY The Following Containment Isolation Valve – CLOSED • Seal return isolation valves • Containment atmosphere radiation monitor isolation valves *(Step 11)*	
	RO	CHECK If SG Secondary Pressure Boundary Intact: • CHECK pressures in all SGs – • CONTROLLED OR RISING • GREATER THAN CONTAINMENT PRESSURE *(Step 12)*	
	RO	CHECK If SG Tubes Are Intact: • Main steamline radiation ‑ NORMAL • IF SG blowdown in service, THEN SG blowdown radiation ‑ NORMAL • CARS pump radiation ‑ NORMAL • NO SG level rising in an uncontrolled manner *(Step 13)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Examiner Trigger)** and 6 (**Integral**) **Event Description:** PZR Steam Space SBLOCA. Loss of Off-Site Power.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	CHECK If RCS Is Intact: • Containment radiation - NORMAL • Containment pressure - NORMAL • Containment wide range water level - NORMAL **(RNO)** GO TO 0POP05-EO-EO10, LOSS OF REACTOR OR SECONDARY COOLANT, Step1. • MONITOR Critical Safety Functions. • WHEN Addendum 5 of this procedure is complete, THEN Functional Restoration Procedures may be IMPLEMENTED. *(Step 14)* *(Will not transition to a Functional Recovery Procedure until Addendum 5 is complete.)*	
	BOP	Completes 0POP05-EO-EO00, Addendum 5.	
	SRO	Informs crew of transition to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.	
	RO	MONITOR If RCPs Should Be Stopped: • HHSI pumps - AT LEAST ONE RUNNING • RCS pressure - LESS THAN 1430 PSIG • STOP all RCPs *(Step 1)* *(RCPs will NOT be running due to the LOOP.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Examiner Trigger)** and 6 (**Integral**) **Event Description:** PZR Steam Space SBLOCA. Loss of Off-Site Power.			
Time	**Position**	**Required Operator Actions**	**Notes**

	BOP
	CT
	EO10-D-STP
		DEPRESSURIZE Intact SGs To 1000 PSIG
		• CHECK RCS pressure - GREATER THAN 415 PSIG
		• CHECK pressurizer pressure LESS THAN 1985 PSIG
		• BLOCK Low Steamline Pressure SI
		• CHECK condenser – AVAILABLE
		(RNO)
		• **USE SG PORVs to depressurize intact SGs to BETWEEN 990 and 1000 PSIG.**
		• ADJUST intact SG PORV controller setpoints to BETWEEN 990 PSIG and 1000 PSIG
		• ENSURE SG PORV controllers in AUTO.
		• VERIFY steam dumps controlling SG pressures LESS THAN OR EQUAL TO 1000 PSIG
		• For MCCs that are De-energized, then PERFORM the following: (SG PORVS 'A' & 'D')
		  • PLACE affected SG PORV controller in MANUAL
		  • DEPRESS and HOLD SG PORV down arrow pushbutton for GREATER THAN 20 SECONDS.
		  • DISPATCH operator to place affected SG PORV STATION BLACKOUT PWR switch to "BYP"
		  • SG 1A PORV (ZLP653) EAB 10'
		  • SG 1D PORV (ZLP100) EAB 10'
		  • CONTROL SG pressure LESS THAN OR EQUAL TO 1000 PSIG while minimizing PORV strokes to LESS THAN one and half strokes.
		• GO TO Step 3.
		(Step 2)
		(Note: Actions on at least two SGs are to be completed within 45 minutes of initiation of SB LOCA.)	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 (**Examiner Trigger)** and 6 (**Integral**) **Event Description:** PZR Steam Space SBLOCA. Loss of Off-Site Power.			
Time	**Position**	**Required Operator Actions**	**Notes**

	BOP	MONITOR If SG Secondary Pressure Boundary Intact:
		• CHECK pressures in all SGs –
		  • CONTROLLED OR RISING
		  • GREATER THAN CONTAINMENT PRESSURE
		(Step 3)
		(Terminate Scenario)	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** Includes Event 7

Event Description: 0POP05-EO-EO00, Addendum 5 Actions.
(**Event 7** – RCFC Fans on Train B did not auto start because of Train B Sequencer and RCFC Fans on Train C fail to auto start. Addendum 5, Step 9)

Time	Position	Required Operator Actions	Notes
(NOTE: All Train B equipment will have to be manually started. The RCFCs in Step 9 are highlighted because of the failure of Train C to auto start. No RCFCs are running. Event 7)			
	BOP	VERIFY FW isolation: • SGFPTs – TRIPPED • SU SGFP – TRIPPED • VERIFY the following valves –CLOSED o FWIVs o FWIBs o FW preheater bypass valves o FW regulating valves o Low power FW regulating valves o SG blowdown isolation valves o SG sample isolation valves *(EO00 Addendum 5, Step 1)* *(0POP05-EO-EO00, Reactor Trip or Safety Injection, Addendum 5, Verification of Equipment Operation.)* *(This addendum is performed in parallel with Steps 5 to 14 of 0POP05-EO-EO00, Reactor Trip or Safety Injection.)*	
	BOP	CHECK if main steamline should be isolated: • CHECK for any of the following conditions: o Containment pressure – GREATER THAN OR EQUAL TO 3 PSIG OR o SG pressure (without low steamline pressure SI blocked) - LESS THAN OR EQUAL TO 735 PSIG OR o SG pressure (with low steamline pressure SI blocked) - LOWERING AT A RATE GREATER THAN OR EQUAL TO 100 PSI/SEC, BY OBSERVANCE OF THE STEAMLINE PRESSURE RATE BISTABLES *(Step 2)* *(NOTE: Main Steam was isolated earlier due to the LOOPO.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** Includes Event 7

Event Description: 0POP05-EO-EO00, Addendum 5 Actions.
(**Event 7** – RCFC Fans on Train B did not auto start because of Train B Sequencer and RCFC Fans on Train C fail to auto start. Addendum 5, Step 9)

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY AFW system status: • Motor-driven pump – RUNNING • Turbine-driven pump – RUNNING *(Step 3)*	
	BOP	VERIFY AFW valve alignment - PROPER EMERGENCY ALIGNMENT *(Step 4)*	
	BOP	VERIFY total AFW Flow - GREATER THAN 576 GPM *(Step 5)*	
	BOP	VERIFY containment isolation phase A: • Phase A – ACTUATED • Phase A valves - CLOSED, REFER TO ADDENDUM 1, PHASE A ISOLATION VERIFICATION *(Step 6)* *(Due to the LOOP, the operator may elect to go ahead and use Addendum 1 to help verify all penetrations have at least one valve closed.)*	
	BOP	VERIFY ECW status: • ECW pumps – RUNNING • ECW pump discharge isolation valves – OPEN *(Step 7)*	
	BOP	VERIFY CCW pumps – RUNNING *(Step 8)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** Includes Event 7

Event Description: 0POP05-EO-EO00, Addendum 5 Actions.
(**Event 7** – RCFC Fans on Train B did not auto start because of Train B Sequencer and RCFC Fans on Train C fail to auto start. Addendum 5, Step 9)

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY RCFC status: • RCFCs – RUNNING (RNO) • **WHEN the respective ESF Load Sequencer has completed its automatic sequence OR it is determined that the respective ESF Load Sequencer has failed, THEN manually START RCFC(s).** • Cooling water - TRANSFERRED TO CCW *(Step 9)* ***(Event 7 – Operator will have to manually start RCFCs on Train B and C.)***	
	BOP	VERIFY SI pump status: • HHSI pumps – RUNNING • LHSI pumps – RUNNING *(Step 10)*	
	BOP	VERIFY SI valve alignment – PROPER EMERGENCY ALIGNMENT *(Step 11)*	
	BOP	VERIFY SI flow: • RCS pressure - LESS THAN 1745 PSIG • HHSI pump flow – INDICATED • RCS pressure - LESS THAN 415 PSIG **(RNO)** • GO TO Step 13 of this Addendum. *(Step 12)*	
	BOP	VERIFY containment ventilation isolation: • Containment atmosphere radiation monitor isolation valves – CLOSED • Normal purge supply and exhaust fans – STOPPED • Supplemental purge supply and exhaust fans – STOPPED • Purge Dampers – CLOSED *(Step 13)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** Includes Event 7

Event Description: 0POP05-EO-EO00, Addendum 5 Actions.
(**Event 7** – RCFC Fans on Train B did not auto start because of Train B Sequencer and RCFC Fans on Train C fail to auto start. Addendum 5, Step 9)

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY ventilation actuation: • Control room HVAC – OPERATING IN EMERGENCY RECIRC • EAB HVAC - OPERATING IN EMERGENCY RECIRC • FHB HVAC - OPERATING IN EMERGENCY MODE • FHB Exhaust Fans - ONLY TWO TRAINS OPERATING o Exhaust booster fans o Main exhaust fans **(RNO)** • PERFORM the following: o IF three trains FHB exhaust fans running, THEN PLACE one train FHB exhaust fans in PULL TO LOCK. **(Back to A/ER)** • SECURE one FHB filter train by PERFORMING the following: o PLACE the outlet damper Controller in manual o Manually close the outlet damper o VERIFY proper operation of filter train in service • Essential chilled water pumps – RUNNING • Essential chillers – RUNNING • ECCS pump room fan coolers – RUNNING • AFW pump cubicle fans – RUNNING • FHB truck bay doors – CLOSED *(Step 14)*	
	BOP	NOTIFY Unit Supervisor that Addendum 5 is COMPLETE *(Step 15)*	
	SRO	IMPLEMENT Functional Restoration Procedures as required *(Step 16)*	
	SRO	RETURN TO procedure step in effect. *(Step 17)*	

CRITICAL TASK SUMMARY

POSITION	EXPECTED RESPONSE	ACCEPTANCE CRITERIA	SAT/ UNSAT
SRO/RO	**CT-EO10-D-STP REDUCE STEAM DUMP SETPOINT (PREFERED) OR SG PORVS SETPOINT TO 1000 PSIG.**	Reduce at least 2 SG PORV or Steam Dump setpoint to 1000 psig within 45 minutes of initiation of the SBLOCA. SAFETY SIGNIFICANCE: Small break LOCA flow is inadequate to provide core cooling, additional heat removal from the steam generators is required. If at least 2 SG PORV setpoints are not reduced to 1000 psig within 45 minutes the peak clad temperature can or will exceed the 10CFR50.46 criteria.	

CRITICAL TASK SUMMARY

POSITION	EXPECTED RESPONSE	ACCEPTANCE CRITERIA	SAT/ UNSAT
SRO/BOP	**CT-9** **PERFORM THE FOLLOWING:** • **MANUALLY TRIP ESF DG 11 DUE TO TRAIN A 4.16KV ESF BUS LOCKOUT.** • **CLOSE THE 4.160KV/480V LOAD CENTER BREAKERS FOR TRAIN B ESF BUS AND MANUALLY START ECW PUMP 1B SUE TO A FAILED SEQUENCER FOR TRAIN B.** • **MANUALLY START ECW PUMP 1C DUE TO THE PUMP NOT AUTO STARTING.**	Manually start ECW Pump per available train or manually trip the associated ESF DG prior to any of the following occurring: • Diesel Generator Trip • Exiting EO00 during a LOCA, Steam Break or SGTR AND For this scenario, Train B OR Train C ECW Pump must be started to preclude transition to 0POP05-EO-EC00, Loss of All AC Power. SAFETY SIGNIFICANCE: Failure to manually start the ECW pump in an operating safeguards train represents a "demonstrated inability by the crew to: • Recognize a failure/incorrect auto actuation of an ESF system or component • Effectively direct/manipulate ESF controls" Additionally, under the postulated plant conditions, failure to manually start at least the minimum required number of ECW pumps (when it is possible to do so) is a "violation of the facility license condition." Performance of the critical task would return the plant to a condition for which analysis shows acceptable results. Because compliance with the assumptions of the FSAR is part of the facility license condition, failure to perform the critical task (under the postulated plant conditions) constitutes a violation of the license condition.	

NOTE: (Per NUREG-1021, Appendix D)
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.

EXPECTED BOOTH COMMUNICATIONS

EVENT 1:

- As a Plant Operator, if asked, report the positions of the Main Turbine Reheat Stop, Intercept, Governor and Throttle Valves as the RO performs the OPC Test.

EVENT 2:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of the failure of PZR LT-0465, report that an I&C maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the failure of PZR LT-0465. No further action is necessary.

EVENT 3:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of the failure of VCT LT-0112, report that an I&C maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the failure of VCT LT-0112. No further action is necessary.

EVENT 4:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of the failure of SB 1B LT-0572, report that an I&C maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the failure of SB 1B LT-0572. No further action is necessary.

EVENT 5:

- There are no Booth Communications expected for Event 5.

EVENT 6:

- As a Plant Operator, if asked to check Train A 4.16KV ESF Bus, report that the Bus has an 86 lock out relay actuated.
- As a Plant Operator, if asked to place SG 1A and 1D PORV Blackout Switches to BYPASS, wait 1 to 2 minutes and then report that the switches are in BYPASS. See Expected Booth Actions for putting the switches in BYPASS.

EVENT 7:

- There are no Booth Communications expected for Event 7.

EXPECTED BOOTH ACTIONS

1. If asked to open the DA High level Dump Valves then trigger the step for ‘DA High Level Dump Valves’.
2. If asked to fill the AFWST then trigger the step for ‘AFWST Makeup’.
3. If asked to place SG 1A and 1D PORV Blackout Switches to BYPASS, then trigger the steps for SG 1A & 1D PORV PWR LO to Bypass.

SIMULATOR SETUP

NOTE

ALL Annunciator Response Procedures (ARP's) must be checked if this scenario is the first to be run on this day. Setup for subsequent runs of this scenario only requires those ARP's that were actually marked in to be checked.

Instructors running the scenario must keep track of which ARP's these are, otherwise, all will have to be checked for subsequent scenarios as well.

Check and clean the following procedures:

- 0POP03-ZG-0005, Plant Startup to 100%
- 0POP04-RP-0002, Loss of Automatic Pressurizer Level Control
- 0POP09-AN-04M8, Window E-2, VCT LEVEL HI/LO
- 0POP04-FW-0001, Loss of Steam Generator Level Control
- 0POP05-EO-EO00, Reactor Trip or Safety Injection
- 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant
- Additional Annunciator Response Procedures that were used by the Crew during the Scenario.

NOTE

The Scenario Lesson Plan MUST be run from the left most Instructor Station in Simulator Booth to allow for recording and storing of recorded parameter data.

- Log into Instructor Workstation as 'lotnrc' user, open Orchid (nstps server), then 'Unlock' Initial Conditions Group 'lotnrc'.
- Reset to IC #204 and perform the following:
  - Switch Check
  - Ensure red light on end of CP-010 off
  - Ensure ICS Annunciators have stopped counting up

SIMULATOR SETUP (cont'd.)

- Go to RUN and perform the following:
  - Ensure Simulator is ready by performing applicable checkoffs from LOR-GL-0006, LOR Conduct of Simulator Training Guidelines, Addendum 5, Simulator Readiness Checklist.
  - Ensure VCT Makeup Integrators are set as follows:
    - Momentarily place RC M/U CONT to STOP and then START to reset BA BATCH/GALLONS and TOT M/U BATCH/GALLONS counters to zero.
    - Reset BA BATCH/GALLONS setpoint to 0 gallons and reset TOT M/U BATCH/GALLONS setpoint to 0 gallons.
    - Verify BA Controller Pot setting is 5.00
- Open lesson plan for 'Scenario 4' in 'lotnrc' directory for LOT 22, then EXECUTE lesson plan. These actions will set up any initial conditions for the scenario.
- If this scenario IC has changing conditions (i.e. Xenon is changing, etc.), then place the simulator in FREEZE, otherwise it is OK to leave in RUN.
- Run the scenario in accordance with the next section, 'Scenario Instructions'.

SCENARIO INSTRUCTIONS

NOTE
Steps 1 to 4 below can be performed in the LOR Debrief Room prior to the crew coming into the Simulator provided exam security measures are taken.

1. Provide Shift Turnover sheets to the crew and review the information.
2. Have the Crew perform a Pre-Job Brief for the OPC test. Ensure the crew doesn't have any other questions about the Shift Turnover.
3. Ensure the Beacon book from the simulator is available to the crew if they are in the LOR Debrief Room.
4. Review the Simulator Differences list with the crew if needed.
5. When signaled by Simulator Staff, have the crew perform their board walkdown and inform the floor instructor when ready to take the watch.
6. Ensure the simulator is in RUN and verify simulator clock is set correctly. Note the time that the Crew takes the watch. _____ Start Time.

NOTE

Malfunction Step and/or Lesson Plan Steps (Events) are triggered upon the Lead Examiners signal during the scenario unless an agreed upon time is discussed with the examiner prior to the start of the scenario.

Always 'TRIGGER' events in the Simulator Scenario Lesson Plans. This way delays associated with events will take place as intended.

Refer to 'EXPECTED BOOTH COMMUNCATIONS' and 'EXPECTED BOOTH ACTIONS' Sections for instructions for Instructor actions during the scenario.

7. Trigger the step titled 'Start Chart' and ensure specified Recorded Parameters for the scenario begin recording as the scenario runs. If the chart speed is NOT set to 5400 seconds (90 minutes) then perform the following:
   - Under 'CHARTS' click on 'SET TIME'
   - In the dialog box enter 5400 seconds (90 minutes)
   - Click OK.
8. Trigger **MALFUNCTION STEP –** This will insert a conditional step with a 30 second time delay (When the Main Turbine is manually tripped during the OPC Test, Event 1) for Step #1, Event #2.
9. The crew will perform Event #1 (Main Turbine OPC Test)
10. Trigger **STEP 2 –** Event #3
11. Trigger **STEP 3 –** Event #4
12. Trigger **STEP 4 –** Event #5
13. Place simulator in FREEZE when cued by the Lead Examiner to terminate scenario.
14. DO NOT RESET simulator until the steps on the next page are completed and all Examiners have completed Follow-Up Questioning.

SCENARIO INSTRUCTIONS (cont'd.)

NOTE
Some scenarios will have more than one chart. For these, each chart file must be separately saved with a unique filename.

15. Saving Recorded Parameters Data
    - Click on the 'Charts' icon on the left side of the screen
    - Select 'Pause' icon, then select 'All'
    - Click on the 'Print Chart' icon, then select 'All'
    - This will bring up a window in the TASK BAR called PRIMOPDF.
    - Click on 'Create PDF'
    - This will bring up a File Save As window.
    - Save to folder **c:\Users\lotnrc\Desktop\LOT22 Charts**. The file name will be 'LOT22 Scenario 4' followed by a name that identifies the crew (e.g. 'Crew A).
    - Save the new file. It will be saved in a folder already on the desktop. LOT22 Charts.
16. Saving Scenario SAM (Simulator Action Monitor)
    - Under 'TOOLS' click on 'SAM'
    - In the dialog box that comes up click on 'SAVE TO'
    - Save as a 'TEXT FILE' to folder **c:\Users\lotnrc\Desktop\LOT22 Charts.** The file name will be 'LOT22 SAM INFO Scenario 4' followed by a name that identifies the crew (e.g. 'Crew A).

TURNOVER INFORMATION

Unit 1 is in Mode 1 at 12% Reactor Power.

- The crew is to continue at Step 6.39 of 0POP03-ZG-0005, Plant Startup to 100%, and perform the Main Turbine OPC test.
- Cycle Burnup is 150 MWD/MTU. (BOL)
- RCS Boron Concentration is 1830 ppm.
- Boric Acid Tank ‘A’ is at 7315 ppm and ‘B’ is at 7309 ppm.
- No liquid waste discharges are in progress or planned.
- No personnel are in containment.
- FHB Truck Bay doors are closed.
- No ESF DG FOST’s are on recirc.

LCO Actions:

None.

Facility: South Texas Project		Date of Exam: 10-22-18												Operating Test No.: LOT 22			
APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
Crew A		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
RO ☐ SRO-I1 ■ SRO-U ☐	RX	1					3		1					3	1	1	0
	NOR													0	1	1	1
	I/C	2,3, 4					1,7		2,4					7	4	4	2
	MAJ	5,6					5		5					4	2	2	1
	TS	2,3												2	0	2	2
RO ☐ SRO-I2 ■ SRO-U ☐	RX		1		3			1						3	1	1	0
	NOR													0	1	1	1
	I/C		4		1,2, 4			2,3, 4						7	4	4	2
	MAJ		5,6		5			5						4	2	2	1
	TS				1,2			2,3						4	0	2	2
RO-1 ■ SRO-I ☐ SRO-U ☐	RX					3				1				2	1	1	0
	NOR													0	1	1	1
	I/C			2,3, 7		2,4, 6				3,6				8	4	4	2
	MAJ			5,6		5				5				4	2	2	1
	TS													0	0	2	2

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls" (ATC) and "balance-of-plant" (BOP) positions. Instant SROs (SRO-I) must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an SRO-I *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a one-for-one basis.
3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.
4. For licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

Facility: South Texas Project	Date of Exam: 10-22-18	Operating Test No.: LOT 22

APPLICANT Crew B	EVENT TYPE	Scenarios 1 CREW POSITION SRO	1 ATC	1 BOP	2 CREW POSITION SRO	2 ATC	2 BOP	3 CREW POSITION SRO	3 ATC	3 BOP	4 CREW POSITION SRO	4 ATC	4 BOP	TOTAL	MINIMUM(*) R	I	U
RO ☐ SRO-I ☐ SRO-U1 ■	RX	1				3								2	1	1	0
	NOR													0	1	1	1
	I/C	2,3, 4				2,4, 6								6	4	4	2
	MAJ	5,7				5								3	2	2	1
	TS	2,3												2	0	2	2
RO ☐ SRO-I3 ■ SRO-U ☐	RX		1		3					1				3	1	1	0
	NOR													0	1	1	1
	I/C		4		1,2, 4					3,6				6	4	4	2
	MAJ		5,7		5					5				4	2	2	1
	TS				1,2									2	0	2	2

Instructions:

5. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls" (ATC) and "balance-of-plant" (BOP) positions. Instant SROs (SRO-I) must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an SRO-I *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
6. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a one-for-one basis.
7. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.
8. For licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

Facility: South Texas Project	Date of Exam: 10-22-18	Operating Test No.: LOT 22

APPLICANT Crew C	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
RO ☐ SRO-I ☐ SRO-U2 ■	RX	1					3							2	1	1	0
	NOR													0	1	1	1
	I/C	2,3, 4					1,7							5	4	4	2
	MAJ	5,7					5							3	2	2	1
	TS	2,3												2	0	2	2
RO ☐ SRO-I4 ■ SRO-U ☐	RX		1		3				1					3	1	1	0
	NOR													0	1	1	1
	I/C		4		1,2, 4				2,4					6	4	4	2
	MAJ		5,7		5				5					4	2	2	1
	TS				1,2									2	0	2	2
RO ☐ SRO-I5 ■ SRO-U ☐	RX					3		1						2	1	1	0
	NOR													0	1	1	1
	I/C			2,3, 6		2,4, 6		2,3, 4						9	4	4	2
	MAJ			5,7		5		5						4	2	2	1
	TS							2,3						2	0	2	2

Instructions:

9. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls" (ATC) and "balance-of-plant" (BOP) positions. Instant SROs (SRO-I) must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an SRO-I *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
10. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a one-for-one basis.
11. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.
12. For licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

Facility: South Texas Project		Date of Exam: 10-22-18												Operating Test No.: LOT 22			
APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
Crew D		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
RO ☐ SRO-I6 ■ SRO-U ☐	RX	1					3		1					3	1	1	0
	NOR													0	1	1	1
	I/C	2,3, 4					1,7		2,4					7	4	4	2
	MAJ	5,7					5		5					4	2	2	1
	TS	2,3												2	0	2	2
RO ☐ SRO-I7 ■ SRO-U ☐	RX		1		3					1				3	1	1	0
	NOR													0	1	1	1
	I/C		4		1,2, 4					3,6				6	4	4	2
	MAJ		5,7		5					5				4	2	2	1
	TS				1,2									2	0	2	2
RO ☐ SRO-I8 ■ SRO-U ☐	RX					3		1						2	1	1	0
	NOR													0	1	1	1
	I/C			2,3, 6		2,4, 6		2,3, 4						9	4	4	2
	MAJ			5,7		5		5						4	2	2	1
	TS							2,3						2	0	2	2

Instructions:

13. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls" (ATC) and "balance-of-plant" (BOP) positions. Instant SROs (SRO-I) must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an SRO-I *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
14. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a one-for-one basis.
15. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.
16. For licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

Facility: South Texas Project	Date of Examination: 10-22-18				Operating Test No.: LOT 22											
Competencies	APPLICANTS – Crew A															
	RO ☐ SRO-I1 ■ SRO-U ☐				RO ☐ SRO-I2 ■ SRO-U ☐				RO-1 ■ SRO-I ☐ SRO-U ☐							
	SCENARIO				SCENARIO				SCENARIO							
	1u	2b	3p	4	1p	2u	3u	4	1b	2p	3b	4				
Interpret/Diagnose Events and Conditions	2,3, 4	1	2,4		4	1,2, 4	2,3, 4		2,3	2,4	3					
Comply With and Use Procedures (1)	All	1,3	1,2, 4		1,4	All	All		2,3	2,3, 4	1,3					
Operate Control Boards (2)	N/A	1,3, 5,7	1,2, 4,5		1,4, 5	N/A	N/A		2,3, 5,6, 7	2,3, 4,5, 6	1,3, 5,6					
Communicate and Interact	All	All	All		All	All	All		All	All	All					
Demonstrate Supervisory Ability (3)	All	N/A	N/A		N/A	All	All		N/A	N/A	N/A					
Comply With and Use Tech. Specs. (3)	2,3	N/A	N/A		N/A	1,2	2,3		N/A	N/A	N/A					

Notes:
(1) Includes Technical Specification compliance for an RO.
(2) Optional for an SRO-U.
(3) Only applicable to SROs.

Instructions:

Check the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant. (This includes all rating factors for each competency.) (Forms ES-303-1 and ES-303-3 describe the competency rating factors.)

Facility: South Texas Project	Date of Examination: 10-22-18	Operating Test No.: LOT 22

Competencies	APPLICANTS – Crew B															
	RO ☐ SRO-I ☐ SRO-U1 ■				RO ☐ SRO-I3 ■ SRO-U ☐											
	SCENARIO				SCENARIO											
	1	2	3	4	1	2	3	4								
Interpret/Diagnose Events and Conditions	2,3, 4	2,4			4	1,2, 4	3									
Comply With and Use Procedures (1)	All	2,3, 4			1,4	All	1,3									
Operate Control Boards (2)	N/A	2,3, 4,5, 6			1,4, 5	N/A	1,3, 5,6									
Communicate and Interact	All	All			All	All	All									
Demonstrate Supervisory Ability (3)	All	N/A			N/A	All	N/A									
Comply With and Use Tech. Specs. (3)	2,3	N/A			N/A	1,2	N/A									

Notes:
(1) Includes Technical Specification compliance for an RO.
(2) Optional for an SRO-U.
(3) Only applicable to SROs.

Instructions:

Check the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant. (This includes all rating factors for each competency.) (Forms ES-303-1 and ES-303-3 describe the competency rating factors.)

Facility: South Texas Project	Date of Examination: 10-22-18	Operating Test No.: LOT 22

Competencies	APPLICANTS – Crew C															
	RO ☐ SRO-I ☐ SRO-U2 ■				RO ☐ SRO-I4 ■ SRO-U ☐				RO ☐ SRO-I5 ■ SRO-U ☐				RO ☐ SRO-I ☐ SRO-U ☐			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions	2,3, 4	1			4	1,2, 4	2,4		2,3	2,4	2,3, 4					
Comply With and Use Procedures (1)	All	1,3			1,4	All	1,2, 4		2,3	2,3, 4	All					
Operate Control Boards (2)	N/A	1,3, 5,7			1,4, 5	N/A	1,2, 4,5		2,3, 5,6, 7	2,3, 4,5, 6	N/A					
Communicate and Interact	All	All			All	All	All		All	All	All					
Demonstrate Supervisory Ability (3)	All	N/A			N/A	All	N/A		N/A	N/A	All					
Comply With and Use Tech. Specs. (3)	2,3	N/A			N/A	1,2	N/A		N/A	N/A	2,3					

Notes:
(1) Includes Technical Specification compliance for an RO.
(2) Optional for an SRO-U.
(3) Only applicable to SROs.

Instructions:

Check the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant. (This includes all rating factors for each competency.) (Forms ES-303-1 and ES-303-3 describe the competency rating factors.)

Facility: South Texas Project	Date of Examination: 10-22-18	Operating Test No.: LOT 22

Competencies	APPLICANTS – Crew D															
	RO ☐ SRO-I6 ■ SRO-U ☐				RO ☐ SRO-I7 ■ SRO-U ☐				RO ☐ SRO-I8 ■ SRO-U ☐							
	SCENARIO				SCENARIO				SCENARIO							
	1	2	3	4	1	2	3	4	1	2	3	4				
Interpret/Diagnose Events and Conditions	2,3, 4	1	2,4		4	1,2, 4	3		2,3	2,4	2,3, 4					
Comply With and Use Procedures (1)	All	1,3	1,2, 4		1,4	All	1,3		2,3	2,3, 4	All					
Operate Control Boards (2)	N/A	1,3, 5,7	1,2, 4,5		1,4, 5	N/A	1,3, 5,6		2,3, 5,6, 7	2,3, 4,5, 6	N/A					
Communicate and Interact	All	All	All		All	All	All		All	All	All					
Demonstrate Supervisory Ability (3)	All	N/A	N/A		N/A	All	N/A		N/A	N/A	All					
Comply With and Use Tech. Specs. (3)	2,3	N/A	N/A		N/A	1,2	N/A		N/A	N/A	2,3					

Notes:
(1) Includes Technical Specification compliance for an RO.
(2) Optional for an SRO-U.
(3) Only applicable to SROs.

Instructions:

Check the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant. (This includes all rating factors for each competency.) (Forms ES-303-1 and ES-303-3 describe the competency rating factors.)