

NRC EXAM

Admin JPM A1a RO

Job Performance Measure Worksheet

Facility: Ginna

Task No.:

Task Title: Perform a Post-Trip Xenon
Reactivity CalculationJPM No.: 2017 Admin - NRC
JPM A1a RO

K/A Reference: G 2.1.43 (4.1)

Examinee:

Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.

Initial Conditions:

- The plant has tripped from 50% power.
- The reactor had been operating at this power for the last 3 days prior to the trip.
- The XENON PREDICT program on the PPCS is NOT available.
- There are no stuck control rods, or control rods that are NOT fully inserted.
- The following data has been provided:
 - The date and time of the plant trip was 0730 on 3/3/17
 - The cycle burnup from the PPCS is 12,514 MWD/MTU
- You are the HCO.

Initiating Cue:

The US has directed you to perform a Xenon Reactivity Calculation in accordance with O-3, Hot Shutdown With Xenon Present, up to Step 6.2.2.

Task Standard:

The operator will determine that it will take 13.5 hours for Xenon to decay to the value at the time of shutdown, and that this will occur at 2100 on 3/3/17.

Job Performance Measure Worksheet

Required Materials: Calculator

General References must be available for the operator to reference.

General References: O-3, Hot Shutdown With Xenon Present, Rev 04500

Handouts: Handout 1: Blank copy of O-3, Hot Shutdown With Xenon Present.

Time Critical Task: NO

Validation Time: 9 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.

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.

.....

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.				
<p style="text-align: center;">NOTE</p> <p>The preferred method for determining Xenon reactivity is to use the PPCS program, XENON PREDICT. Use of Attachment 1, Time To Equilibrium Xenon, for a shutdown from non-equilibrium power conditions is an approximation and, if used, the results should be confirmed by the Reactor Engineer as soon as possible.</p>					
1	<p>(O-3, Step 6.2.1/6.2.1.1) CALCULATE the date and time for Xenon to return to the value at time of shutdown by one of the following methods:</p> <p>IF the PPCS program, XENON PREDICT will be used to determine the date and time for Xenon to return to the value at time of shutdown, THEN PERFORM the following. OTHERWISE, MARK this Step N/A.</p>	The operator recognizes that the XENON PREDICT program is OOS, marks this step NA, and proceeds to Step 6.2.1.2	—	—	—
*2	<p>(O-3, Step 6.2.1.2/6.2.1.2.a) IF Attachment 1, Time To Equilibrium Xenon, will be used to determine the date and time for Xenon to return to the value at time of shutdown, THEN PERFORM the following: OTHERWISE, MARK this Step N/A.</p> <p>RECORD the average power for the 6 hours prior to reactor shutdown.</p> <p>Power: _____ %</p>	<p>The operator records 50%.</p> <p>The operator initials Step 6.2.1.2.a.</p>	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*3	(O-3, Step 6.2.1.2.b) DETERMINE the amount of time for Xenon to decay to the value at time of shutdown, using the Table in Attachment 1. USE the power level recorded in Step 6.2.1.2.a and the current burnup recorded in Prerequisite Step 5.8. Hours _____	The operator observes that the current burnup recorded in Prerequisite 5.8 is 12,514 MWD/MTU. The operator uses Attachment 1 and finds the intersecting point for 10000 MWD/MTU and 50% power to be 13.5 hours, and records. The operator initials Step 6.2.1.2.b.	—	—	—
*4	(O-3, Step 6.2.2) CALCULATE the date and time at which Xenon will equal the value at time of shutdown by adding the hours determined in Step 6.2.1.1.f OR 6.2.1.2.b to Step 5.7 and recording below. Date _____ Time _____	The operator observes that the Date and Time of the Trip were 0730 on 3/3/17. The operator adds 13.5 hours to the time of trip and determines that Xenon will equal the value at time of shutdown at 2100 on 3/3/17, and records. The operator initials Step 6.2.2.	—	—	—

JPM Stop Time: _____

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2017 Admin - NRC JPM A1a RO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant has tripped from 50% power.
- The reactor had been operating at this power for the last 3 days prior to the trip.
- The XENON PREDICT program on the PPCS is NOT available.
- There are no stuck control rods, or control rods that are NOT fully inserted.
- The following data has been provided:
 - The date and time of the plant trip was 0730 on 3/3/17
 - The cycle burnup from the PPCS is 12,514 MWD/MTU
- You are the HCO.

INITIATING CUE:

The US has directed you to perform a Xenon Reactivity Calculation in accordance with O-3, Hot Shutdown With Xenon Present, up to Step 6.2.2.

NRC EXAM

Admin JPM A1b RO

Job Performance Measure Worksheet

Facility: Ginna

Task No.:

Task Title: Verify SDM for a Shutdown Reactor
with Untrippable RodsJPM No.: 2017 Admin - NRC
JPM A1b RO

K/A Reference: G 2.1.37 (4.3)

Examinee:

Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance:

Classroom

X

Simulator

Actual Performance:

X

Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.

Initial Conditions:

- The plant is stable in MODE 3 following an inadvertent reactor trip from 100% power.
- Two Control Rods have stuck at 225 steps on the trip.
- Average Reactor Coolant Temperature is 539°F and stable.
- Core Burnup is 18,000 MWD/MTU.
- Plant Management has determined the Reactor Coolant System will not be borated to Cold Shutdown and both Reactor Coolant Pumps will continue to run during the shutdown.
- Current RCS Boron Concentration is 800 ppm.
- You are the HCO.

Initiating Cue:

- The US has directed you to verify SDM per O-3.1, Boron Concentration for the Xenon Free All Rods in – Most Reactive Rod Stuck Out Shutdown Margin, to the point at which Independent Verification is required.
- Assuming your calculations have been independently verified, is further boration needed to ensure SDM?

Job Performance Measure Worksheet

Task Standard: The operator will complete Sections 6.1, 6.2, and 6.3 in accordance with the provided KEY, and determine that further RCS boration is required to ensure SDM.

Required Materials: Calculator
General References must be available for the operator to reference.

General References: O-3.1, Boron Concentration for the Xenon Free All Rods In- Most Reactive Rod Stuck Out Shutdown Margin, Rev 05800

Handouts: Handout 1: Blank copy of O-3.1.

Time Critical Task: NO

Validation Time: 15 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.

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.

.....

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.				
1	(O-3.1, Section 5.0) Prerequisites	The operator completed Section in accordance with the provided KEY.	—	—	—
<p style="text-align: center;">NOTE</p> <p>Control rods that are NOT able to be verified fully inserted include control rods that are confirmed stuck (untrippable) or have lost rod position indication.</p>					
2	(O-3.1, Step 6.1/6.1.1) Stuck Rod Calculation/IF THREE or more control rods are NOT able to be verified fully inserted, THEN BORATE the RCS to 2750 ppm AND MARK Step 6.1.2 and Sections 6.2, 6.3, and 6.4 N/A, OTHERWISE, MARK this Step N/A.	The operator recognizes that with only two stuck rods, this step does not apply, and marks this Step NA.	—	—	—
<p style="text-align: center;">NOTE</p> <p>The calculation below must be performed, even if all rods are verified on the bottom, in which case record "0" for Number of RCCA.</p>					
*3	(O-3.1, Step 6.1.2) IF ONE or TWO control rods are NOT able to be verified fully inserted, THEN CALCULATE required increase in boron concentration to compensate for the decrease in shutdown margin, OTHERWISE, MARK this Step N/A.	The operator performs the calculation of Step 6.1.2, and determines that the required increase in boron concentration to compensate for the decrease in shutdown margin for two stuck controls rods is 400 ppm.	—	—	—
<p style="text-align: center;">NOTE</p> <p>If RCS temperature is maintained at 547°F then this section will be performed for shutdown margin requirements.</p>					

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
4	(O-3.1, Step 6.2/6.2.1) HZP Xenon Free Boron Requirement/DETERMINE HZP Xenon Free, minimum required Shutdown Margin Boron Concentration using Attachment 1, Shutdown Boron Concentrations vs Cycle Burnup At Hot, No Load Conditions, AND RECORD below: 1. Single Loop 2. Two Loop	The operator uses Attachment 1 to determine that the single loop SDM ($1.8\%\Delta p$) for 18,000 MWD/MTU is 476 ppm; and records this value in the space provided.	—	—	—
*		The operator uses Attachment 1 to determine that the two loop SDM ($1.3\%\Delta p$) for 18,000 MWD/MTU is 411(400-420) ppm; and records this value in the space provided.	—	—	—
Examiner Note: Although the operator will perform the single loop calculation, only the two-loop calculation is critical.					
5	(O-3.1, 6.2.2) INCREASE each required boron concentration to compensate for the decrease in shutdown margin due to one or more control rods NOT able to be verified fully inserted: 1. Single Loop 2. Two Loop	The operator performs the single loop calculation; and records 876 ppm in the space provided.	—	—	—
*		The operator performs the two loop calculation; and records 811 (800-820) ppm in the space provided.	—	—	—
Examiner Note: Although the operator will perform the single loop calculation, only the two-loop calculation is critical.					

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<p style="text-align: center;">NOTE</p> <ul style="list-style-type: none"> If RCS temperature is maintained between 547°F and 535°F then both Section 6.2 and 6.3 will be performed for shutdown margin requirements. O-2.2, Plant Shutdown From Hot Shutdown To Cold Shutdown, requires boration to the 1.80% Δp N-1 CSD boron concentration PRIOR TO removing a Reactor Coolant Pump from service when RCS temperature is less than 547°F. SDM verification for the single loop condition in the step below is intended to be used ONLY in the event of Reactor Coolant Pump failure or emergency shutdown. 					
*6	(O-3.1, 6.2.2) Cooldown from 547°F to 535°F Boron Requirement/ RECORD current OR desired RCS temperature.	The operator recognizes that the current temperature is 539°F, and stable; and records this value.	—	—	—
*7	(O-3.1, Step 6.3.2) CALCULATE reactivity addition due to cooldown by subtracting 547°F from RCS temp recorded on Step 6.3.1 AND multiplying result by (- 28.0 pcm/°F).	The operator performs the calculation; and records 224 pcm.	—	—	—
*8	(O-3.1, Step 6.3.3) CALCULATE boron required to compensate for cooldown by dividing reactivity determined in Step 6.3.2 by (-6.0 pcm/ppm).	The operator performs the calculation; and records 37.3 pcm.	—	—	—
9	(O-3.1, Step 6.3.4) INCREASE each required boron concentration to compensate for decrease in shutdown margin due to cooldown, in addition to one or more control rods NOT able to be verified fully inserted: 1. Single Loop 2. Two Loop	The operator performs the single loop calculation; and records 913.3 ppm in the space provided.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
9 (Cont'd) *		The operator performs the two loop calculation; and records 848.3 (837.3-857.3) ppm in the space provided.	—	—	—
	Examiner Note: Although the operator will perform the single loop calculation, only the two-loop calculation is critical.				
*10	(Directed Action) Assuming your calculations have been independently verified, is further boration needed to ensure SDM?	The operator compares the required boron concentration of 848.3 (837.3-857.3) ppm and the current boron concentration of 800 ppm; and determines that further boration is required.			

JPM Stop Time: _____

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2017 Admin - NRC JPM A1b RO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is stable in MODE 3 following an inadvertent reactor trip from 100% power.
- Two Control Rods have stuck at 225 steps on the trip.
- Average Reactor Coolant Temperature is 539°F and stable.
- Core Burnup is 18,000 MWD/MTU.
- Plant Management has determined the Reactor Coolant System will not be borated to Cold Shutdown and both Reactor Coolant Pumps will continue to run during the shutdown.
- Current RCS Boron Concentration is 800 ppm.
- You are the HCO.

INITIATING CUE:

- The US has directed you to verify SDM per O-3.1, Boron Concentration for the Xenon Free All Rods in – Most Reactive Rod Stuck Out Shutdown Margin, to the point at which Independent Verification is required.
- Assuming your calculations have been independently verified, is further boration needed to ensure SDM?

Yes / No (Circle One)

NRC EXAM

Admin JPM A2 RO

Job Performance Measure Worksheet

Facility: Ginna Task No.:
Task Title: Remove Annunciators From Service JPM No.: 2017 Admin - NRC
JPM A2 RO
K/A Reference: G 2.2.43 (3.0)

Examinee: Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1

Initial Conditions:

- The plant is operating at 100% power.
- The US has determined that the following MCB Annunciators must be flagged:
 - A-31, CCW SYSTEM LO FLOW 1800 GPM, is LIT because FT-619 has been isolated for field maintenance (No Tags have been or will be hung).
 - F-6, PRESSURIZER HEATER BREAKER TRIP, I&C has jumpered out the input from the backup heater breaker.
 - F-19, PRZR SAFETY VLV OUTLET HI TEMP 145°F, will be intermittently alarming and clearing for the next hour due to I&C working on the instrument loop.
- The US indicates these conditions are expected to exist throughout the shift and then be restored to normal.
- The US indicates that Control Operators must increase the frequency of monitoring alternate MCB system parameters for each annunciator until the alarms are restored to normal.
- You are the HCO.

Initiating Cue:

- The US has directed you to flag each of the annunciators as required.
- Ensure all required paperwork is prepared.

Job Performance Measure Worksheet

Task Standard: The operator will place a Black Dot on A-31, a Yellow Dot on F-6, and a Black Dot on F-19; and complete Attachment 1, Alarm Out of Service Log, of OPG-ANNUNCIATOR-FLAGGING per the attached KEY.

Required Materials: A selection of Red, Yellow, Blue and Black Flagging Dots
General References must be available for the operator to reference.

General References: OPG-ANNUNCIATOR-FLAGGING, Annunciator, Flagging, Rev 001
AR-A-31, CCW SYSTEM LO FLOW 1800 GPM, Rev 8
AR-F-6, PRESSURIZER HEATER BREAKER TRIP, Rev 7
AR-F-19, PRZR SAFETY VLV OUTLET HI TEMP 145°F, Rev 01101

Handouts: Handout 1: Overlay of MCB Annunciator Panels A and F
Handout 2: Blank copy of OPG-ANNUNCIATOR-FLAGGING, with last page printed in Landscape orientation (only provided if requested).

Time Critical Task: NO

Validation Time: 11 minutes

Job Performance Measure Worksheet

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.

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.

.....

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.				
*1	(Directed Action) Place MCB Annunciator A-31 out of service and complete paperwork.	<p>The operator places a Black DOT on A-31 MCB A Overlay.</p> <p>The operator completes Attachment 1 of OPG-ANNUNCIATOR FLAGGING in accordance with the provided KEY.</p>	—	—	—
*2	(Directed Action) Place MCB Annunciator F-6 out of service and complete paperwork.	<p>The operator places a Yellow DOT on F-6 MCB A Overlay.</p> <p>The operator completes Attachment 1 of OPG-ANNUNCIATOR FLAGGING in accordance with the provided KEY.</p>	—	—	—
*3	(Directed Action) Place MCB Annunciator F-19 out of service and complete paperwork.	<p>The operator places a Black DOT on F-19 MCB A Overlay.</p> <p>The operator completes Attachment 1 of OPG-ANNUNCIATOR FLAGGING in accordance with the provided KEY.</p>	—	—	—
	Examiner Note: Each Annunciator on Attachment 1 may not be initialed and dated as OOS by the operator until the CRSRO initials and dates as authorization to remove the Annunciators from service. During the post-JPM discussion the Examiner should initial and date Attachment 1 for authorization, and then the operator will initial and date the Attachment 1 for removal from service of each Annunciator.				

JPM Stop Time: _____

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2017 Admin - NRC JPM A2 RO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is operating at 100% power.
- The US has determined that the following MCB Annunciators must be flagged:
 - A-31, CCW SYSTEM LO FLOW 1800 GPM, is LIT because FT-619 has been isolated for field maintenance (No Tags have been or will be hung).
 - F-6, PRESSURIZER HEATER BREAKER TRIP, I&C has jumpered out the input from the backup heater breaker.
 - F-19, PRZR SAFETY VLV OUTLET HI TEMP 145°F, will be intermittently alarming and clearing for the next hour due to I&C working on the instrument loop.
- The US indicates these conditions are expected to exist throughout the shift and then be restored to normal.
- The US indicates that Control Operators must increase the frequency of monitoring alternate MCB system parameters for each annunciator until the alarms are restored to normal.
- You are the HCO.

INITIATING CUE:

- The US has directed you to flag each of the annunciators as required.
- Ensure all required paperwork is prepared.

NRC EXAM

Admin JPM A3 RO

Job Performance Measure Worksheet

Facility: Ginna

Task No.:

Task Title: Evaluate Stay Time with lowered
Spent Fuel Pool LevelJPM No.: 2017 Admin - NRC
JPM A3 RO

K/A Reference: G 2.3.7 (3.5)

Examinee:

Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____

Actual Performance: X

Classroom

 X

Simulator

Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

Initial Conditions:

- A station wide accident has occurred due to an Earthquake.
- The plant is in Mode 6 with a full core off-load.
- The Spent Fuel Pool level has lowered to 10 feet above the top of the fuel, and has stabilized at this level.
- The crew is implementing ER-SFP.2, Diverse SFP Makeup and Spray.
- R-5, Spent Fuel Pit Rad Monitor, reads 2.34E+02 mr/hr on the PPCS Radiation Monitors Screen.
- RP has confirmed these radiation levels by survey.
- A dose limit of 75 mrem has been placed on any individual performing emergency tasks within the Spent Fuel Building.
- An operator has been assigned a repetitive task within ER-SFP.2 which will require them to enter the Spent Fuel Building and proceed to the area around the Spent Fuel Pool, and remain there for 3 minutes, before exiting the building.
- You are supporting the Operational Support Center (OSC) Director.

Job Performance Measure Worksheet

Initiating Cue:	<ul style="list-style-type: none">• The OSC Director has directed you to estimate how many times the assigned individual can perform this repetitive task before the operator must be replaced by another operator.• The OSC Director has directed you to evaluate what this individual will need to enter the Spent Fuel Building in order to comply with RP-AA-460, Controls For High And Locked High Radiation Areas, without being accompanied by RP Personnel or receiving any approved deviations from the RP Manager.
Task Standard:	The operator will determine that the repetitive task can be performed 6 times before another operator will need to perform the task; and identify that the operator entering the SFP must meet the requirements of Section 4.3.3 of RP-AA-460 (Be on an RWP, have a functioning Electronic Dosimeter, and be briefed by RP personnel).
Required Materials:	Calculator General References must be available for the operator to reference.
General References:	ER-SFP.2, Diverse SFP Makeup and Spray, Rev 005 Technical Specifications, Amendment 119 RP-AA-460, Controls for High and Locked Radiation Areas, Rev 29
Handouts:	Handout 1: Blank copy of RP-AA-460
Time Critical Task:	NO
Validation Time:	6 minutes

Job Performance Measure Worksheet

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.

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.

.....

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.				
*1	(Directed Action) Determine dose rate in the Spent Fuel Pool Area	The operator evaluates the R-5 reading and determines that the area radiation levels are 234 mrem/hour.	—	—	—
*2	(Directed Action) Determine the accumulated Dose each time the repetitive task is performed.	<p>The operator determines that 3 minutes in a radiation field of 234 mrem/hour will yield a dose of 11.7 mrem</p> <p>$234 \text{ mrem/hr} \times 1\text{hr}/60 \text{ minutes} \times 3 \text{ minutes/task} = 11.7 \text{ mrem/task}$</p>	—	—	—
*3	(Directed Action) Determine how many times the repetitive task can be performed before allowable RWP limits have been reached.	<p>The operator determines that a Task which accumulates 11.7 mrem can be performed Six times without exceeding a dose limit of 75 mrem.</p> <p>$75 \text{ mrem} \times \text{task}/11.7 \text{ mrem} = 6.4 \text{ tasks}$</p> <p>Since the task cannot be partially performed, the task can be performed six times before the operator must be replaced with another operator.</p>	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
*4	(Directed Action) Evaluate what this individual will need to enter the Spent Fuel Building in order to comply with RP-AA-460, Controls For High And Locked High Radiation Areas, without being accompanied by RP Personnel.	<p>The operator recognizes that the dose rates in the SFB qualify the SFP as a High Radiation Area.</p> <p>The operator reviews RP-AA-460 and determines that Section 4.3.3 applies.</p> <p>The operator determines that the individual will need to (1) be on an RWP, (2) have a functioning Electronic dosimeter, and (3) be briefed by RP personnel.</p>	—	—	—
Examiner Note: The operator may indicate that the individual may take a radiation monitoring device which continually indicates the radiation dose in the area to satisfy Step 4.3.3.3; however, the fact that the dose rates in the SFB have been confirmed by RP permits and a briefing has been performed allows entry with an Electronic Dosimeter (which is required per Step 4.3.3.2).					

JPM Stop Time: _____

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2017 Admin - NRC JPM A3 RO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

VERIFICATION OF COMPLETION

KEY:**Record Answers Below:**

of times operator can enter the Spent Fuel Building:

6

Identify what the individual needs to enter:

(1) be on an RWP

(2) have a functioning Electronic dosimeter

(3) be briefed by RP personnel

Critical in RED

JPM CUE SHEET

INITIAL CONDITIONS:

- A station wide accident has occurred due to an Earthquake.
- The plant is in Mode 6 with a full core off-load.
- The Spent Fuel Pool level has lowered to 10 feet above the top of the fuel, and has stabilized at this level.
- The crew is implementing ER-SFP.2, Diverse SFP Makeup and Spray.
- R-5, Spent Fuel Pit Rad Monitor, reads $2.34\text{E}+02$ mr/hr on the PPCS Radiation Monitors Screen.
- RP has confirmed these radiation levels by survey.
- A dose limit of 75 mrem has been placed on any individual performing emergency tasks within the Spent Fuel Building.
- An operator has been assigned a repetitive task within ER-SFP.2 which will require them to enter the Spent Fuel Building and proceed to the area around the Spent Fuel Pool, and remain there for 3 minutes, before exiting the building.
- You are supporting the Operational Support Center (OSC) Director.

INITIATING CUE:

- The OSC Director has directed you to estimate how many times the assigned individual can perform this repetitive task before the operator must be replaced by another operator.
- The OSC Director has directed you to evaluate what this individual will need to enter the Spent Fuel Building in order to comply with RP-AA-460, Controls For High And Locked High Radiation Areas, without being accompanied by RP Personnel or receiving any approved deviations from the RP Manager.

Record Answers Below:

of times operator can enter the Spent Fuel Building: _____

Identify what the individual needs to enter:

NRC EXAM
Admin JPM A1a
SRO

Job Performance Measure Worksheet

Facility: Ginna Task No.:
Task Title: Determine Time to Boil for a Loss of Shutdown Cooling JPM No.: 2017 Admin - NRC
JPM A1a SRO

K/A Reference: G 2.1.25 (4.2)

Examinee: Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.

Initial Conditions:

- The plant is in Mode 5 for a refueling outage.
- The reactor has been shutdown for 25 hours.
- The pressurizer is solid with LTOP in service.
- RCS temperature is 140°F.
- The Ginna Defense-In-Depth computer program used to calculate time to boil and core uncover is unavailable.
- You are the US.

Initiating Cue: The Shift Manager has directed you to determine the Time to Boil given a Loss of RHR and the following two sets of conditions:

- For present plant conditions,

AND

- Exactly four (4) days from now when:
 - RCS level will be 64 inches
 - RCS temperature will be 100°F
 - PRZR manway will be OFF

Job Performance Measure Worksheet

Task Standard: The operator will use IP-OUT-2 and determine that the Time to Boil for the present plant conditions is 2.46 hours, and for the projected conditions four days from now is .43 hours (25.96 +0.1/-0.0 minutes).

Required Materials: Calculator
General References must be available for the operator to reference.

General References: IP-OUT-2, Outage Risk Management, Rev 02200

Handouts: Handout 1: Blank copy of IP-OUT-2

Time Critical Task: NO

Validation Time: 8 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.

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.

.....

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.				
1	(Directed Action) Determine time-to-boil for a loss of RHR under Present Plant conditions.	The operator reviews IP-OUT-2, reviews it and arrives at Attachment E.	—	—	—
		The operator determines that Page 5 of 11 on Attachment E, Time to Reach Saturation with Pressurizer Full and RCS Closed, most closely approximates present plant conditions, and addresses this page.	—	—	—
*		The operator finds the intersecting cell for Time after Shutdown (hrs) - 25 and Time to Reach Saturation (hrs) w/Trcs = 140°F to 2.46 hours.	—	—	—
2	(Directed Action) Determine time-to-boil for a loss of RHR Exactly four (4) days from now when: <ul style="list-style-type: none"> RCS level will be 64 inches RCS temperature will be 100°F PRZR manway will be OFF 	The operator reviews IP-OUT-2, reviews it and arrives at Attachment E.	—	—	—
		The operator determines that Page 7 of 11 on Attachment E, Time to Reach Saturation at 64" and RCS Open, most closely approximates present plant conditions, and addresses this page.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
2 <small>CONT'D</small> *		The operator finds the intersecting cell for Time after Shutdown (hrs) - 120 and Time to Reach Saturation (hrs) w/Trcs = 100°F to 0.43 hours/25.96 (+0.1/-0.0) minutes.	—	—	—
	Examiner Note: The +0.1/0.0 allowance is based on the fact that there have been 121 hours rather than 120 hours since the shutdown, and the operator may interpolate between the 120 hour time to reach saturation in minutes and the 150 hour time to reach saturation in minutes. If this is the case, and the operator assumed a linear function between the two points, the time would be increased by approximately 0.1 minutes.				

JPM Stop Time: _____

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2017 Admin - NRC JPM A1a SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is in Mode 5 for a refueling outage.
- The reactor has been shutdown for 25 hours.
- The pressurizer is solid with LTOP in service.
- RCS temperature is 140°F.
- The Ginna Defense-In-Depth computer program used to calculate time to boil and core uncover is unavailable.
- You are the US.

INITIATING CUE:

The Shift Manager has directed you to determine the Time to Boil given a Loss of RHR and the following two sets of conditions:

- For present plant conditions,

AND

- Exactly four (4) days from now when:
 - RCS level will be 64 inches
 - RCS temperature will be 100°F
 - PRZR manway will be OFF

Record Answers Below:

Present Plant Conditions:	
Projected Plant Conditions: (Four Days from now)	

NRC EXAM
Admin JPM A1b
SRO

Job Performance Measure Worksheet

Facility: Ginna Task No.:
 Task Title: Verify Required Service Water to Emergency Diesel Generators JPM No.: 2017 Admin - NRC JPM A1b SRO

K/A Reference: G 2.1.20 (4.6)

Examinee: Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
 Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.

- Initial Conditions:
- The plant is operating at 100% power.
 - The crew has entered AP-ELEC.2, Safeguard Busses Low Voltage or System Abnormal Frequency, due to low voltage on the ESF Busses.
 - Both Emergency Diesel Generators are running supplying their respective ESF Busses.
 - ECC reports that the Electrical Grid voltage will be stabilized in approximately 30 minutes.
 - O-6.13, Daily Surveillance Log, is in progress.
 - The SW Controlotron flow instrumentation is unavailable.
 - The A, B and C Service Water Pumps are operating.
 - Lake Temperature is 60°F.
 - The following Service Water readings are recorded for the Emergency Diesel Generators:
 - SW Δ P for A EDG Lube Oil Cooler is 8.2 PSID
 - SW Δ P for A EDG Jacket Water Heat Exchanger is 7.7 PSID
 - SW Δ P for B EDG Lube Oil Cooler is 8.5 PSID
 - SW Δ P for B EDG Jacket Water Heat Exchanger is 8.3 PSID
 - You are the US.

Job Performance Measure Worksheet

Initiating Cue: Verify that the EDG Service Water Differential Pressures (ΔP s) are within required limits by performing Step 6.4.3 of O-6.13, Daily Surveillance Log, and identify all, if any, required action.

Task Standard: The operator will identify that the A EDG is OPERABLE and declare the B EDG inoperable. For the A EDG, the operator will identify that an Issue Report requesting a PRI 2 Work Order for the A EDG to flush the Lube Oil and Jacket Water coolers must be prepared. For the B EDG, the operator will identify that a sequential backflush must be performed to restore operability.

Required Materials: General References must be available for the operator to reference.

General References: AP-ELEC.2, Safeguard Busses Low Voltage or System Abnormal Frequency, Rev 01503
O-6.13, Daily Surveillance Log, Rev 189

Handouts: Handout 1: Blank copy of O-6.13.

Time Critical Task: NO

Validation Time: 12 minutes

Job Performance Measure Worksheet

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.

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.

.....

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.				
NOTE					
The limits specified for SW ΔPs are only applicable during Modes 1, 2, 3, and 4. System Engineering should be consulted for limits during Modes 5, 6 AND Defueled conditions when lineups differ significantly from normal operations.					
CAUTION					
<ul style="list-style-type: none">Additional monitoring of heat exchanger D/Ps should be performed during silting conditions. [G0231]The typical order of heat exchanger fouling during silting conditions are as follows:<ul style="list-style-type: none">1. Circulating Water Seal Water Strainers2. Auxiliary Feedwater Service Water Strainers3. EDG Heat Exchangers [G0231]					
NOTE					
<ul style="list-style-type: none">Controlotron accuracy and uncertainties are included in values provided in Attachment 13, EDG SW D/P Limits – SW Flowrate Known [G0007], tables.To determine actual ΔP limits, lake temperature and SW flows may be interpolated. DO NOT extrapolate limits past 500 GPM SW flow.					
1	(O-6.13, Step 6.4.3/6.4.3.1/6.4.3.1.a) PERFORM the following D/G checks: IF normally closed EDG SW AOVs are bypassed OR EDG is operating, THEN VERIFY Emergency D/G Service Water (SW) D/Ps within limits as follows: IF current Emergency D/G SW inlet flowrates are known as measured by Controlotron, THEN USE Attachment 13, for SW D/P limits for Lube Oil and Jacket Water Coolers.	The operator recognizes that the Controlotron flow instrumentation is unavailable, and that the use of Attachment 13 is unwarranted.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
2	(O-6.13, 6.4.3.1.b) IF current Emergency D/G SW inlet flowrates are unknown, THEN USE Attachment 12, EDG SW D/P Limits – SW Flowrate Not Known [G0007], for SW D/P limits for Lube Oil and Jacket Water Coolers.	The operator addresses Attachment 12.	—	—	—
*3	(O-6.13, 6.4.3.1.c) IF ΔP across any Emergency D/G cooler is within 1.0 psi of, OR exceeds limits specified above, THEN ENSURE affected Emergency D/G is declared INOPERABLE AND PERFORM sequential backflush PER T-27.9 or T-27.10.	Using Attachment 12, the operator determines that the EDG SW D/P Limit for the EDG Lube Oil Cooler is 9.6 PSID and for the EDG Jacket Water Cooler is 9.1 PSID.	—	—	—
*		The operator compares the current ΔP for A EDG Lube Oil Cooler of 8.2 PSID to the limit and recognizes that the A EDG is OPERABLE and proceeds.	—	—	—
*		The operator compares the current ΔP for B EDG Lube Oil Cooler of 8.5 PSID to the limit and recognizes that the B EDG is OPERABLE and proceeds.	—	—	—
*		The operator compares the current ΔP for A EDG Jacket Water Cooler of 7.7 PSID to the limit and recognizes that the A EDG is OPERABLE and proceeds.	—	—	—
*		The operator compares the current ΔP for B EDG Jacket Water Cooler of 8.3 PSID to the limit and recognizes that the B EDG is INOPERABLE and that a sequential backflush needs to be performed to restore operability.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
NOTE					
Requesting a PRI 2 Work Order in Steps 6.4.3.1.d and 6.4.3.1.e allows IWM to prepare a scheduled LCO window, in the event, that other TS equipment may be inoperable.					
*4	(O-6.13, 6.4.3.1.d) IF Jacket Water Cooler SW D/P is greater than 8.0 PSID, THEN INITIATE an Issue Report requesting a PRI 2 Work Order for a planned LCO entry to backflush the cooler.	The operator recognizes that the A Lube Oil Cooler D/P is greater than 8.0 PSID, and identifies that an Issue Report requesting a PRI 2 Work Order for the A EDG to flush the cooler must be initiated.	—	—	—
*5	(O-6.13, 6.4.3.1.e) IF Lube Oil Cooler SW D/P is greater than 6.0 PSID, THEN INITIATE an Issue Report requesting a PRI 2 Work Order for a planned LCO entry to backflush the cooler.	The operator recognizes that the A Jacket Water Cooler D/P is greater than 6.0 PSID, and identifies that an Issue Report requesting a PRI 2 Work Order for the A EDG to flush the cooler must be initiated.	—	—	—

JPM Stop Time: _____

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2017 Admin - NRC JPM A1b SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

VERIFICATION OF COMPLETION

KEY:

A EDG OPERABLE: YES / NO (Circle One)

B EDG OPERABLE: YES / NO (Circle One)

All Required Action (If Any):

Declare the B EDG is INOPERABLE and schedule a sequential backflush performed to restore operability.

Prepare an Issue Report requesting a PRI 2 Work Order for the A EDG to flush the Lube Oil and Jacket Water coolers. (Or Equivalent).

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is operating at 100% power.
- The crew has entered AP-ELEC.2, Safeguard Busses Low Voltage or System Abnormal Frequency, due to low voltage on the ESF Busses.
- Both Emergency Diesel Generators are running supplying their respective ESF Busses.
- ECC reports that the Electrical Grid voltage will be stabilized in approximately 30 minutes.
- O-6.13, Daily Surveillance Log, is in progress.
- The SW Controlotron flow instrumentation is unavailable.
- The A, B and C Service Water Pumps are operating.
- Lake Temperature is 60°F.
- The following Service Water readings are recorded for the Emergency Diesel Generators:
 - SW ΔP for A EDG Lube Oil Cooler is 8.2 PSID
 - SW ΔP for A EDG Jacket Water Heat Exchanger is 7.7 PSID
 - SW ΔP for B EDG Lube Oil Cooler is 8.5 PSID
 - SW ΔP for B EDG Jacket Water Heat Exchanger is 8.3 PSID
- You are the US.

INITIATING CUE:

Verify that the EDG Service Water Differential Pressures (ΔP s) are within required limits by performing Step 6.4.3 of O-6.13, Daily Surveillance Log, and identify all, if any, required action.

Identify:

A EDG OPERABLE: YES / NO (Circle One)

B EDG OPERABLE: YES / NO (Circle One)

All Required Action (If Any):

NRC EXAM

Admin JPM A2 SRO

Job Performance Measure Worksheet

Facility: Ginna

Task No.:

Task Title: Perform a Safety Function
DeterminationJPM No.: 2017 Admin - NRC
JPM A2 SRO

K/A Reference: G 2.2.37 (4.6)

Examinee:

Examiner:

Facility Evaluator:

Date:

Method of testing:Simulated Performance: _____ Actual Performance: X
Classroom X Simulator _____ Plant _____**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.

Initial Conditions:

- The plant is operating at 100% power.
- The current date and time is 3/4/17 at 1200.
- The following equipment is Out of Service:
 - D Service Water Pump (LCO 3.7.8, Condition A was entered today at 1000 and all necessary paperwork has been completed.).
 - D/G B Fuel Oil particulate (LCO 3.8.3, condition B was entered on 3/1/17 at 1200 and all necessary paperwork has been completed.).
 - Battery Charger B for maintenance. It is expected to be returned to service 3/5/17 at 1200.
- At 1200 today Battery Charger B1 failed due to a ground.
- The B Battery Monitoring System ammeter indicates "negative 114 amps."
- Issue Report IR-2017-000284 has been initiated for the B1 Battery Charger ground.
- The crew has taken the appropriate action to stabilize the plant.
- You are the US.

Job Performance Measure Worksheet

- Initiating Cue:
- Complete an A-52.4, Attachment 1, through step 4.0, and Attachment 2 for the given plant conditions.
 - The EIN for Battery Charger B1 is BYCB1.
 - A “what if” risk assessment has been performed.
 - The WWM has been notified and risk mitigation strategies are being implemented.
 - The Fire Protection Engineer is determining the compensatory requirements.

Task Standard: The operator will complete Sections 1.0, 2.0, 3.0 and 4.0 of Attachment 1 and all of Attachment 2 of A-52.4 in accordance with the provided KEY.

Required Materials: General References must be available for the operator to reference.

General References: A-52.4, Control of Limiting Conditions for Operating Equipment, Rev 147
A-52.3, Safety Function Determination Program, Rev 5
Technical Specifications, Amendment 119
Technical Specifications Bases, Rev 76
A-601.13, Fire Protection Compensatory Actions, Rev 6

Handouts: Handout 1: Blank copy of A-52.4

Time Critical Task: NO

Validation Time: 29 minutes

Job Performance Measure Worksheet

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.

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.

.....

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.				
	Examiner Note: The steps may be performed in any order.				
1	(A-52.4, Attachment 1, Step 1.0/1) Equipment Description:	The operator records Battery Charger B1 (Or Equivalent) in accordance with the provided KEY.	—	—	—
2	(A-52.4, Attachment 1, Step 1.0/2) Equipment EIN:	The operator records BYCB1 (Or Equivalent) in accordance with the provided KEY.	—	—	—
3	(A-52.4, Attachment 1, Step 1.0/3) Reason for equipment to be rendered inoperable:	The operator places a checkmark in the IR checkbox in accordance with the provided KEY.	—	—	—
4	(A-52.4, Attachment 1, Step 1.0/4) Present Plant MODE:	The operator places a checkmark in the MODE 1 checkbox in accordance with the provided KEY.	—	—	—
*5	(A-52.4, Attachment 1, Step 1.0/5) LCO:	The operator records 3.8.4 in accordance with the provided KEY.	—	—	—
6	(A-52.4, Attachment 1, Step 1.0/6) PERFORM Loss of Safety Function Determination per Attachment 2.	The operator addresses Attachment 2.	—	—	—
*7	(A-52.4, Attachment 2, Step 1.0) PERFORM a loss of safety function evaluation as follows: Have any of the following support system LCOs been entered? YES / NO	The operator determines that both LCO 3.7.8 and 3.8.3 have been entered for other OOS equipment, and places a YES in the "Entered?" Column, and circles YES; in accordance with the provided KEY.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*8	(A-52.4, Attachment 2, Step 2.0) Has only one (1) LCO been entered (i.e., total # of LCOs in effect is only 1)? YES / NO IF NO, THEN a loss of safety function evaluation is required.	The operator determines that there are three LCOs currently in effect (LCO 3.7.8, 3.8.3 and 3.8.4), and circles NO in accordance with the provided KEY; and proceeds.	—	—	—
*9	(A-52.4, Attachment 2, Step 3.0) Using the attached Loss of Safety Function Matrix, determine if any combination of LCO's has the potential to result in a loss of safety function. Only combinations which are not shaded in the box require further evaluation (i.e., "empty" boxes). Do any combination of LCOs result in a potential loss of safety function? YES / NO IF NO, THEN the LCOs in effect provide necessary ACTIONS. Return to Attachment 1.	The operator uses Attachment 2 and compares the various combinations of affected LCOs and observes that there are no empty boxes in the matrix for any combination of affected LCOs and determines that no combination of these LCOs result in a potential loss of safety function; and circles NO in accordance with the provided KEY. The operator returns to Attachment 1; and places a check in the Step 1.6 checkbox, in accordance with the provided KEY.	—	—	—
10	(A-52.4, Attachment 1, Step 1.0/7) PERFORM a "What If" risk assessment in EOOS for inoperable equipment IAW Step 5.2.E.	The operator recognizes that the "What If" risk assessment has already been performed and places a checkmark in the Step 1.7 checkbox in accordance with the provided KEY.	—	—	—
11	(A-52.4, Attachment 1, Step 1.0/8) IF equipment is being removed for planned maintenance,.....	The operator recognizes that the Battery Charger B1 is NOT being removed for planned maintenance and places a "NA" aside the Step 1.8 checkbox in accordance with the provided KEY.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
12	(A-52.4, Attachment 1, Step 1.0/9) IF equipment being removed from service is due to emergent maintenance issues, THEN PERFORM the following: NOTIFY WWM and implement Risk Mitigation Strategies per Step 5.2.E.12 and 5.2.E.13. IMPLEMENT Risk Mitigation Strategies per WC-AA-104, INTEGRATED RISK MANAGEMENT.	The operator recognizes that the WWM has been notified and risk mitigation strategies are being implemented and places a checkmark in the Step 1.9 checkbox in accordance with the provided KEY.	—	—	—
13	(A-52.4, Attachment 1, Step 1.0/10) IF equipment being removed from service is used for Appendix R response THEN DETERMINE required compensatory actions PER A-601.13 IAW Step 5.2.F AND Record in Section 2.0 of this Attachment.	The operator recognizes that the Fire Protection Engineer is determining the compensatory measures; and places a checkmark in the Step 1.10 checkbox in accordance with the provided KEY.	—	—	—
*14	(A-52.4, Attachment 1, Step 2.0) REQUIRED ACTIONS/APPENDIX R COMPENSATORY ACTIONS (if applicable)	The operator addresses LCO 3.8.4 and recognizes that ACTION Condition A is applicable; and completes Section 2.0 in accordance with the provided KEY.	—	—	—
*15	(A-52.4, Attachment 1, Step 3.0) REQUIREMENTS IF REQUIRED ACTIONS/COMPLETION TIMES ARE NOT MET	The operator addresses LCO 3.8.4 and recognizes that ACTION Condition B is potentially applicable if the requirements of Condition A are not met; and completes Section 3.0 in accordance with the provided KEY.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
16	(A-52.4, Attachment 1, Step 4.0) DECLARATION OF INOPERABLE EQUIPMENT Declare equipment inoperable (Log in official record): Equipment deemed inoperable by: Date: _____ Time: _____	The operator completes Section 4.0 in accordance with the provided KEY.			

JPM Stop Time: _____

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2017 Admin - NRC JPM A2 SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is operating at 100% power.
- The current date and time is 3/4/17 at 1200.
- The following equipment is Out of Service:
 - D Service Water Pump (LCO 3.7.8, Condition A was entered today at 1000 and all necessary paperwork has been completed.).
 - D/G B Fuel Oil particulate (LCO 3.8.3, condition B was entered on 3/1/17 at 1200 and all necessary paperwork has been completed.).
 - Battery Charger B for maintenance. It is expected to be returned to service 3/5/17 at 1200.
- At 1200 today Battery Charger B1 failed due to a ground.
- The B Battery Monitoring System ammeter indicates "negative 114 amps."
- Issue Report IR-2017-000284 has been initiated for the B1 Battery Charger ground.
- The crew has taken the appropriate action to stabilize the plant.
- You are the US.

INITIATING CUE:

- Complete an A-52.4, Attachment 1, through step 4.0, and Attachment 2 for the given plant conditions.
- The EIN for Battery Charger B1 is BYCB1.
- A "what if" risk assessment has been performed.
- The WWM has been notified and risk mitigation strategies are being implemented.
- The Fire Protection Engineer is determining the compensatory requirements.

NRC EXAM

Admin JPM A3 SRO

Job Performance Measure Worksheet

Facility: Ginna

Task No.:

Task Title: Evaluate Stay Time with lowered
Spent Fuel Pool LevelJPM No.: 2017 Admin - NRC
JPM A3 SRO

K/A Reference: G 2.3.7 (3.6)

Examinee:

Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____

Actual Performance: X Classroom X

Simulator _____

Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with the Radiation Histories of Three Available Operators and the Initial Conditions/Cue (Last Two Pages of this JPM), and Handout 1.

Initial Conditions:

- A station wide accident has occurred due to an Earthquake.
- The plant is in Mode 6 with a full core off-load.
- The Spent Fuel Pool level has lowered to 10 feet above the top of the fuel, and has stabilized at this level.
- The crew is implementing ER-SFP.2, Diverse SFP Makeup and Spray.
- R-5, Spent Fuel Pit Rad Monitor, reads 2.34E+02 mr/hr on the PPCS Radiation Monitors Screen.
- A dose limit of 75 mrem has been placed on any individual performing emergency tasks within the Spent Fuel Building.
- An operator has been assigned a repetitive task within ER-SFP.2 which will require them to enter the Spent Fuel Building and proceed to the area around the Spent Fuel Pool, and remain there for 3 minutes, before exiting the building.
- There are three operators available to perform this repetitive task (See attached radiological histories)
- You are supporting the Operational Support Center (OSC) Director.

Job Performance Measure Worksheet

Initiating Cue:

- The OSC Director has directed you to estimate how many times the assigned individual can perform this repetitive task before the operator must be replaced by another operator.
- The OSC Director has directed you to evaluate the radiological histories of the three available operators and identify the individual(s) that can receive 75 mrem without reliance on an extension of an administrative dose limit in accordance with RP-AA-203, Exposure Control and Authorization.

Task Standard:

The operator will determine that the repetitive task can be performed 6 times before another operator will need to perform the task; and identify that Boyle is the only operator that can receive 75 mrem without processing an administrative dose limit extension.

Required Materials:

Calculator

General References must be available for the operator to reference.

General References:

ER-SFP.2, Diverse SFP Makeup and Spray, Rev 005

Technical Specifications, Amendment 119

RP-AA-203, Exposure Control and Authorization, Rev 5

Handouts:

Handout 1: Blank copy of RP-AA-203

Time Critical Task:

NO

Validation Time:

6 minutes

Job Performance Measure Worksheet

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.

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.

.....

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with the Radiation Histories of Three Available Operators and the Initial Conditions/Cue (Last Two Pages of this JPM), and Handout 1.				
*1	(Directed Action) Determine dose rate in the Spent Fuel Pool Area	The operator evaluates the R-5 reading and determines that the area radiation levels are 234 mrem/hour.	—	—	—
*2	(Directed Action) Determine the accumulated Dose each time the repetitive task is performed.	<p>The operator determines that 3 minutes in a radiation field of 234 mrem/hour will yield a dose of 11.7 mrem</p> <p>$234 \text{ mrem/hr} \times 1\text{hr}/60 \text{ minutes} \times 3 \text{ minutes/task} = 11.7 \text{ mrem/task}$</p>	—	—	—
*3	(Directed Action) Determine how many times the repetitive task can be performed before allowable RWP limits have been reached.	<p>The operator determines that a Task which accumulates 11.7 mrem can be performed Six times without exceeding a dose limit of 75 mrem.</p> <p>$75 \text{ mrem} \times \text{task}/11.7 \text{ mrem} = 6.4 \text{ tasks}$</p> <p>Since the task cannot be partially performed, the task can be performed six times before the operator must be replaced with another operator.</p> <p>See Attached KEY.</p>	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
*4	(Directed Action) Evaluate the radiological histories of the three available operators and identify the individual(s) that can receive 75 mrem without reliance on an extension of an administrative dose limit in accordance with RP-AA-203, Exposure Control and Authorization.	<p>Addison has an administrative dose control level of 2000 mrem TEDE/year (Step 4.1.2).</p> <p>This reduced by 1250 mrem because of a current year No Record (Step 4.1.5)</p> <p>Addison's administrative limit is 750 mrem, and can only receive an additional 50 mrem.</p> <p>See Attached KEY.</p>	—	—	—
*		<p>Boyle has a High Lifetime Exposure (Definition 2.4) and has an administrative dose control level of 1000 mrem TEDE/year (Step 4.1.3).</p> <p>Boyle's administrative limit is 1000 mrem, and can receive an additional 200 mrem.</p> <p>See Attached KEY.</p>	—	—	—
*		<p>Corbin has an administrative dose control level of 2000 mrem TEDE/year (Step 4.1.2).</p> <p>Corbin's administrative limit is 2000 mrem, and can only receive an additional 30 mrem.</p> <p>See Attached KEY.</p>	—	—	—

JPM Stop Time: _____

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2017 Admin - NRC JPM A3 SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

VERIFICATION OF COMPLETION

KEY:**Record Answers Below:****# of times operator can enter the Spent Fuel Building:****6****Identify which operators can receive 75 mrem without extending an administrative dose limit:****Boyle****Critical in RED**

JPM CUE SHEET

Radiation Histories of Three Available Operators

<u>Name</u>	<u>Age</u>	<u>Lifetime Exposure in Rem</u>	<u>Current Annual Exposure in millirem</u>	<u>Additional Notes</u>
Addison	32	10	700	<ul style="list-style-type: none">• One NO RECORD in current year dose history• No Lifetime PSE
Boyle	28	30	800	<ul style="list-style-type: none">• No Lifetime PSE
Corbin	24	20	1970	<ul style="list-style-type: none">• No Lifetime PSE

JPM CUE SHEET

INITIAL CONDITIONS:

- A station wide accident has occurred due to an Earthquake.
- The plant is in Mode 6 with a full core off-load.
- The Spent Fuel Pool level has lowered to 10 feet above the top of the fuel, and has stabilized at this level.
- The crew is implementing ER-SFP.2, Diverse SFP Makeup and Spray.
- R-5, Spent Fuel Pit Rad Monitor, reads $2.34\text{E}+02$ mr/hr on the PPCS Radiation Monitors Screen.
- A dose limit of 75 mrem has been placed on any individual performing emergency tasks within the Spent Fuel Building.
- An operator has been assigned a repetitive task within ER-SFP.2 which will require them to enter the Spent Fuel Building and proceed to the area around the Spent Fuel Pool, and remain there for 3 minutes, before exiting the building.
- There are three operators available to perform this repetitive task (See attached radiological histories)
- You are supporting the Operational Support Center (OSC) Director.

INITIATING CUE:

- The OSC Director has directed you to estimate how many times the assigned individual can perform this repetitive task before the operator must be replaced by another operator.
- The OSC Director has directed you to evaluate the radiological histories of the three available operators and identify the individual(s) that can receive 75 mrem without reliance on an extension of an administrative dose limit in accordance with RP-AA-203, Exposure Control and Authorization.

Record Answers Below:

of times operator can enter the Spent Fuel Building: _____

Identify which operators can receive 75 mrem without extending an administrative dose limit:

NRC EXAM

Admin JPM A4 SRO

Job Performance Measure Worksheet

Facility: Ginna

Task No.:

Task Title: Emergency Classification – Site
Area EmergencyJPM No.: 2017 Admin - NRC
JPM A4 SRO

K/A Reference: G 2.4.41 (4.6)

Examinee:

Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____

Actual Performance: XClassroom X Simulator _____ Plant _____**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handouts 1-2.

Initial Conditions:

- The crew had to manually trip the Reactor when a loss of Main Feedwater occurred.
- The reactor failed to trip automatically on SG Low Level prior to the manual trip.
- Due to a pipe rupture in the IB, all AFW pumps have failed and cannot be started.
- SG Levels are 290 inches and slowly lowering.
- The crew has transitioned from E-0, "Reactor Trip or Safety Injection," with CETs reported by STA to be 1200°F and slowly rising.
- Actions to stop the temperature rise have been unsuccessful.

Initiating Cue:

Classify the Event and complete the GNP NY State Radiological Emergency Data Form (Part 1) (CNG) boxes 1-7.

THIS IS A TIME CRITICAL JPM

Job Performance Measure Worksheet

Task Standard: The operator will declare a Site Area Emergency based on EAL FS1.1, and complete the GNP NY State Radiological Emergency Data Form (Part 1) (CNG) in accordance with the attached KEY.

Required Materials: General References must be available for the operator to reference.

General References: EP-AA-1012 Addendum 3, Emergency Action Levels, Rev 3
EP-CE-114-100-F-07, GNP NY State Radiological Emergency Data Form (Part 1) (CNG), Rev C

Handouts: Handout 1: Blank copy of EPJA-0, Rev 1, E-Plan Wall Charts
Handout 2: Blank copy of EP-CE-114-100-F-07, GNP NY State Radiological Emergency Data Form (Part 1) (CNG)

Time Critical Task: YES - 15 Minutes

Validation Time: 5 minutes

Job Performance Measure Worksheet

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.

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.

.....

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with the Initial Conditions/Cue (Last Page of this JPM) and Handouts 1-2.				
1	(Directed Action) Classify the Event	The operator addresses H-Hazards and Other Conditions Affecting Plant Safety, 2 – Fire or Explosion, of EP-AA-1012 Addendum 3 and determines that an ALERT exists based on an explosion (pipe rupture) resulting in visible damage to any Safety-Related structure, system, or component within ANY Table H-1 area (Intermediate Building).	—	—	—
		The operator addresses S-System Malfunction, 3 – Criticality & RPS Failure, of EP-AA-1012 Addendum 3 and determines that an ALERT exists based on an automatic trip failed to shut down the reactor as indicated by reactor power >5% AND Manual actions taken at the reactor console successfully shut down the reactor as indicated by reactor power ≤5% (manual trip successful).	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*		<p>The operator addresses Table F-1, Fission Product Barrier Matrix, and determines the following:</p> <ul style="list-style-type: none"> A LOSS of the Fuel Clad Barrier has occurred (A CSFST [Red Path Condition exists F-0.2 Core Cooling], (B Core Exit TCs [Core Exit TCs $\geq 1200^{\circ}\text{F}$]) A POTENTIAL LOSS of the RCS Barrier has occurred (A CSFST [Red path condition exists F-0.3 Heat Sink and Heat Sink is required]) A POTENTIAL LOSS of the Containment Barrier exists (B Core Exit TCs (Core Exit TCs cannot be restored $\leq 1200^{\circ}\text{F}$ within 15 minutes]) 	—	—	—
*		The operator addresses F-Fission Product Barrier Degradation, of EP-AA-1012 Addendum 3 and determines that an SAE exists based on FS1.1, Loss or potential loss of ANY two barriers (Table F-1).	—	—	—
	Examiner Note: The operator will determine that there is a LOSS and two POTENTIAL LOSS' of the three Fission Product Barriers which will result in an SAE, higher than both the ALERTS caused by the pipe rupture (HA2.1) and the RPS Failure (SA3.1)				
*2	(Directed Action) Complete EP-CE-114-100-F-F-07, GNP NY State Radiological Emergency Data Form (Part 1) (CNG)	The operator completes EP-CE-114-100-F-07 in accordance with the attached KEY (Page 7 of 8).	—	—	—

JPM Stop Time: _____

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2017 Admin - NRC JPM A4 SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT: _____ UNSAT: _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

VERIFICATION OF COMPLETION

KEY:

RECS Message Number	1
Monroe County Checkbox	Checked
Wayne County Checkbox	Checked
1. Message Transmitted AT:	Left Blank
2. This is:	A. An Actual Event
3. Classification:	C. Site Area Emergency
4. Classification Time:	Current Date and Time
5. Release:	A. No Release
6. PAR:	A. No Need for Protective Actions Outside the Site Boundary
7. EAL Number:/Description	FS1.1, Loss or potential loss of ANY two barriers (Table F-1).

Critical in RED

JPM CUE SHEET

INITIAL CONDITIONS:

- The crew had to manually trip the Reactor when a loss of Main Feedwater occurred.
- The reactor failed to trip automatically on SG Low Level prior to the manual trip.
- Due to a pipe rupture in the IB, all AFW pumps have failed and cannot be started.
- SG Levels are 290 inches and slowly lowering.
- The crew has transitioned from E-0, "Reactor Trip or Safety Injection," with CETs reported by STA to be 1200°F and slowly rising.
- Actions to stop the temperature rise have been unsuccessful.

INITIATING CUE:

Classify the Event and complete the GNP NY State Radiological Emergency Data Form (Part 1) (CNG) boxes 1-7.

THIS IS A TIME CRITICAL JPM

NRC EXAM

SIM JPM A

Job Performance Measure Worksheet

Facility: Ginna

Task No.:

Task Title: Verify Containment Isolation and Heat Removal

JPM No.: 2017 Systems NRC -
Control Room JPM A
(Alternate Path)

K/A Reference: EPE E14 EA1.1 (3.7/3.7)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

- Initial Conditions:
- The plant tripped from 100% power and safety injection has actuated.
 - The crew entered E-0, Reactor Trip or Safety Injection, and then transitioned to E-2, Faulted Steam Generator Isolation.
 - Due to a degrading transient, an Orange Path now exists on the Containment Critical Safety Function Status Tree.
 - You are the HCO.

Initiating Cue: The US has directed you to verify Containment Isolation and Heat Removal systems are operating as expected by performing FR-Z.1, Response to High Containment Pressure, starting from Step 1.

Job Performance Measure Worksheet

Task Standard: The operator will take action to verify Containment Isolation and Heat Removal systems are operating in accordance with Steps 1-3 of FR-Z.1. When the operator discovers that two Containment Isolation Valves have failed to close as expected the operator will close or direct that alternative valves be closed in accordance with ATT-3.0, Attachment CI/CVI. When it is revealed that one of the two actions on ATT-3.0 were unsuccessful at providing Containment Isolation, the operator will need to take actions to trip the Reactor Coolant Pumps, and close an alternate valve in the CCW System to fully achieve Containment Isolation.

Required Materials: None

General References: AR-A-27, Containment Spray 2/3 + 2/3 > 28 PSI, Rev 9
AR-A-28, Containment Spray Channel Alert 2/3 > 28 PSI, Rev 8
F-0.5, Containment, Rev 2
FR-Z.1, Response to High Containment Pressure, Rev 01200
ATT-3.0, Attachment CI/CVI, Rev 01200
P-7, Safety Injection and Containment Spray Systems, Rev 23
OP-AA-101-111-1001, Operations Standards and Expectations, Rev 18
A-503.1, Emergency and Abnormal Operating Procedures User's Guide, Rev 04600

Handouts: Handout 1: Blank copy of FR-Z.1, Response to High Containment Pressure
Handout 2: Blank copy of ATT-3.0, Attachment CI/CVI.

Time Critical Task: NO

Validation Time: 14 minutes

Job Performance Measure Worksheet

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.

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.

.....

Job Performance Measure Worksheet

SIMULATOR OPERATIONAL GUIDELINES

1. Initiate to **any 100% IC (IC-19)**.

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.

2. Insert **Malfunctions RPS08A and RPS08B, No Manual** (Failure of CS Automatic Actuation/No Manual, Both Trains).
3. Insert **Malfunction STM11A, 1.7e+05** (Steam Line Break Inside Containment, 'A' S/G).
4. Insert **Malfunction RPS11-A5A and RPS11-A5B, Fail As-Is** (MOV-813 and 814 fail as-is on T-Signal, cannot be operated).
5. Insert **REM-EDS054, Closed, on T-1 (Breaker for MOV-817)**.
6. Place simulator in RUN.
7. Carry out action of E-0 and transition to E-2.
8. Upon transition to E-2, **increase** malfunction **STM11A to 1.7e+07** (Steam Rupture Inside Containment, 'A' S/G).
9. Ensure Annunciator A-28 is LIT, that Containment Pressure is > 28 psig, and that CS has NOT automatically actuated.
10. Place simulator in FREEZE.
11. Reset to IC-161 (October, 2016)
12. Place simulator in RUN when directed by examiner.
13. When the above steps are completed for this and other JPMs to be run concurrently then validate, if not previously validated, the concurrently run JPMs using the JPM Validation Checklist.
14. This completes the setup for this JPM.

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.				
NOTE FOLDOUT Page should be open and monitored periodically.					
1	(FR-Z.1 Step 1) Verify All CI And CVI Valve Status Lights - BRIGHT	The operator reads the NOTE, and proceeds. The operator observes all CI And CVI Valve Status Lights are BRIGHT <u>except</u> MOV-813 and MOV-814. The operator proceeds to the Step 1 RNO.	_____	_____	_____
	Examiner Note: At any time during this JPM, the operator may recognize that automatic actions have failed, and take manual action as needed to operate equipment as needed (See A-503.1, Step 5.3.D, Manual Backup). While the operator <i>may</i> take this action, and it is permitted by procedures, and expected; if the action is not taken the operator will still be successful by adherence to the procedure assigned.				
	Examiner Note: Any attempt by the operator to actuate CS by depressing two MCB pushbuttons simultaneously will not be successful (pushbutton operation has failed).				

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
2	(FR-Z.1 Step 1 RNO) IF flow path NOT required, THEN manually close affected CI and CVI valves. IF valves can NOT be verified closed by MCB indication, THEN close alternate isolation valves. (Refer to ATT-3.0, ATTACHMENT CI/CVI).	<p>The operator recognizes that the Rx Support Cooler CCW flowpaths are NOT required under the current conditions.</p> <p>The operator observes the MOV-813 Red status light is LIT, and the Green status light is OFF.</p> <p>The operator places the MOV-813 Control Switch to CLOSE, and observes Red status light is LIT, and the Green status light is OFF.</p> <p>The operator observes the MOV-814 Red status light is LIT, and the Green status light is OFF.</p> <p>The operator places the MOV-814 Control Switch to CLOSE, and observes Red status light is LIT, and the Green status light is OFF.</p> <p>The operator refers to ATT-3.0.</p>	—	—	—
CUE	When the operator is looking to find ATT-3.0, PROVIDE operator with <u>Handout 2 (ATT-3.0)</u> .				
NOTE Locked valve key may be required for local operations.					
3	(ATT-3.0 Step 1) For each of the following AUTO ISOL VALVES that will not close, take the action directed in the ALTERNATE ISOLATION column. MOV-813 (CCW) Locally close MOV-813 (AB Int Level).	<p>The operator reads the Note, and proceeds.</p> <p>The operator will contact an EO and direct that MOV-813 be locally closed.</p>	—	—	—
CUE	IF the operator waits for the EO response on local operation of MOV-813, prior to proceeding to the check of MOV-814, THEN report as the EO that MOV-813 will NOT close manually. FOLLOW the action of JPM Step 11; THEN return to JPM Step 3 below, and continue.				

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*3	(ATT-3.0 Step 1) For each of the following AUTO ISOL VALVES that will not close, take the action directed in the ALTERNATE ISOLATION column. MOV-814 (CCW) Close V-815A (AB INT LEVEL)	*The operator will contact an EO and direct that V-815A be locally closed. The operator will proceed to Step 2 of FR-Z.1 while the local action is taking place.	—	—	—
CUE	IF the operator waits for the EO response on local operation of MOV-814, prior to proceeding to FR-Z.1 Step 2/2.a below, THEN report as the EO that V-815A has been CLOSED, and continue.				
<p>SIM DRIVER NOTE: The EO response will depend on the action of the operator. If the operator provides the EO direction and continues while waiting for a response (As expected), the EO response will be delayed until Performance Step 10. At that time provide the following:</p> <p>As the EO, report that V-815A has been locally closed, and report that MOV-813 will NOT operate manually.</p> <p>There is NO Remote for V-815A (Not Modeled).</p> <p>IF the operator waits for an EO response prior to continuing with the procedure, the Examiner will provide the EO cues; and PERFORM the local EO Actions listed in Step 11 as required.</p>					
<p style="text-align: center;">CAUTION</p> <p>IF ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, IS IN EFFECT, THEN CNMT SPRAY SHOULD BE OPERATED AS DIRECTED IN ECA-1.1, RATHER THAN STEP 2 BELOW.</p> <p>IF E-1, LOSS OF REACTOR OR SECONDARY COOLANT, IS IN EFFECT, THEN CNMT SPRAY SHOULD BE OPERATED AS DIRECTED IN E-1, LOSS OF REACTOR OR SECONDARY COOLANT, RATHER THAN STEP 2 BELOW.</p>					
4	(FR-Z.1 Step 2/2.a) Verify CNMT Spray Actuated: Verify RWST outlet to SI and CNMT spray pumps – OPEN <ul style="list-style-type: none">MOV-896AMOV-896B	The operator reads the Cautions, and proceeds. The operator observes the MOV-896A Red status light is LIT and the Green status light is OFF. The operator observes the MOV-896B Red status light is LIT and the Green status light is OFF.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
5	(FR-Z.1 Step 2.b) Verify CNMT spray pumps - RUNNING	<p>The operator observes the A Containment Spray Pump Green status light is LIT, and the Red status light is OFF.</p> <p>The operator observes the B Containment Spray Pump Green status light is LIT, and the Red status light is OFF.</p> <p>The operator observes Containment pressure to be \approx40-50 psig.</p> <p>The operator proceeds to the Step 2.b RNO.</p>	—	—	—
*6	(FR-Z.1 Step 2.b RNO) Manually start pumps.	<p>The operator places the A Containment Spray Pump Control Switch to START and observes the Red status light is LIT, and the Green status light is OFF.</p> <p>The operator places the B Containment Spray Pump Control Switch to START and observes the Red status light is LIT, and the Green status light is OFF.</p>	—	—	—
7	(FR-Z.1 Step 2.c) Verify NaOH flow (FI-930)	<p>The operator observes FI-930 and notes flow at "0."</p> <p>The operator proceeds to the Step 2.c RNO.</p>	—	—	—
*8	<p>(FR-Z.1 Step 2.c RNO) IF NaOH flow NOT indicated, THEN place switches for NaOH tank outlet valves to OPEN.</p> <ul style="list-style-type: none"> • AOV-836A • AOV-836B 	<p>The operator places the Control Switch for AOV-836A in OPEN.</p> <p>The operator places the Control Switch for AOV-836B in OPEN.</p>	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
	<p>Examiner Note: One of the two valve Control Switches must be in the OPEN position to satisfy the Critical Step.</p> <p>Flow on FI-930 will NOT be observed until Performance Step 10. When the Containment Spray Pump Discharge Valves are OPEN.</p>				
9	(FR-Z.1 Step 2.d) Verify CNMT spray pump discharge valves – OPEN <ul style="list-style-type: none"> • MOV-860A • MOV-860B • MOV-860C • MOV-860D 	<p>The operator observes the MOV-860A Green status light is LIT, and the Red status light is OFF.</p> <p>The operator observes the MOV-860B Green status light is LIT, and the Red status light is OFF.</p> <p>The operator observes the MOV-860C Green status light is LIT, and the Red status light is OFF.</p> <p>The operator observes the MOV-860D Green status light is LIT, and the Red status light is OFF.</p> <p>The operator proceeds to the Step 2.d RNO.</p>	—	—	—
*10	(FR-Z.1 Step 2.d RNO) Ensure at least one in each set valves - OPEN. <ul style="list-style-type: none"> • MOV-860A or MOV-860B • MOV-860C or MOV-860D 	<p>The operator places the MOV-860A Control Switch in OPEN and observes the Red status light is LIT, and the Green status light is OFF.</p> <p>OR</p> <p>The operator places the MOV-860B Control Switch in OPEN and observes the Red status light is LIT, and the Green status light is OFF.</p>	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
*		<p>The operator places the MOV-860C Control Switch in OPEN and observes the Red status light is LIT, and the Green status light is OFF.</p> <p>OR</p> <p>The operator places the MOV-860D Control Switch in OPEN and observes the Red status light is LIT, and the Green status light is OFF.</p> <p>The operator will observe flow on FI-930.</p>	—	—	—
Examiner Note: The operator may OPEN all four valves, however, at least one valve in each set must be OPEN to satisfy the Critical Nature of this Step.					
SIM DRIVER NOTE: Call the Control Room as the EO and report "V-815A has been locally closed, however MOV-813 will NOT operate manually."					
EXAMINER NOTE: ALTERNATE PATH DECISION POINT OCCURS IN THE NEXT STEP					
<p style="text-align: center;">NOTE</p> <p style="text-align: center;">Locked valve key may be required for local operations.</p>					

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
*11	<p>(ATT-3.0 Step 1) For each of the following AUTO ISOL VALVES that will not close, take the action directed in the ALTERNATE ISOLATION column.</p> <p>MOV-813(CCW): IF MOV-813 can not be closed, THEN perform the following:</p> <ul style="list-style-type: none"> • Direct AO with locked valve key to unlock and close breaker for MOV-817 (MCC D POS 10C) • Stop both RCPs • Manually close MOV-817 (MCB). IF MOV-817 will not close, THEN direct AO to locally close MOV-817 (AB INT LEVEL). 	<p>The operator reads the NOTE, and proceeds.</p> <p>*The operator will refer to ATT-3.0, contact the EO, and direct that the EO unlock and close the breaker for MOV-817.</p> <p>*The operator will place the A RCP Control Switch to STOP and observe the Green status light is LIT, and the Red status light is OFF.</p> <p>*The operator will place the B RCP Control Switch to STOP and observe the Green status light is LIT, and the Red status light is OFF.</p> <p>*The operator will place the MOV-817 Control Switch to CLOSE and observe the Green status light is LIT, and the Red status light is OFF.</p> <p>The operator returns to FR-Z.1.</p>	—	—	—
<p>SIM DRIVER NOTE: Upon direction from the operator to unlock and close the MOV-817 breaker, operate Trigger 1 (REM-EDS054 (MOV-817 Breaker Closed)).</p> <p>Call as EO and report that you have unlocked and closed the MOV-817 breaker.</p>					

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
12	(FR-Z.1 Step 3/3.a) Verify CNMT RECIRC Fans Running: All fans - RUNNING	<p>The operator observes the A CNMT RECIRC Fan Red status light is LIT, and the Green status light is OFF.</p> <p>The operator observes the B CNMT RECIRC Fan Red status light is LIT, and the Green status light is OFF.</p> <p>The operator observes the C CNMT RECIRC Fan Red status light is LIT, and the Green status light is OFF.</p> <p>The operator observes the D CNMT RECIRC Fan Red status light is LIT, and the Green status light is OFF.</p>	—	—	—
13	(FR-Z.1 Step 3.b) Charcoal filter dampers green status lights - EXTINGUISHED	<p>The operator observes the A CNMT RECIRC Fan Charcoal Filter Damper Red status light is LIT, and the Green status light is OFF.</p> <p>The operator observes the C CNMT RECIRC Fan Charcoal Filter Damper Red status light is LIT, and the Green status light is OFF.</p>	—	—	—

JPM Stop Time: _____

CUE: This terminates the JPM.

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2017 Systems NRC - Control Room JPM A

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant tripped from 100% power and safety injection has actuated.
- The crew entered E-0, Reactor Trip or Safety Injection, and then transitioned to E-2, Faulted Steam Generator Isolation.
- Due to a degrading transient, an Orange Path now exists on the Containment Critical Safety Function Status Tree.
- You are the HCO.

INITIATING CUE:

The US has directed you to verify Containment Isolation and Heat Removal systems are operating as expected by performing FR-Z.1, Response to High Containment Pressure, starting from Step 1.

NRC EXAM

SIM JPM B

Job Performance Measure Worksheet

Facility: Ginna

Task No.:

Task Title: Start an RCP during Plant Startup

JPM No.: 2017 Systems NRC -
Control Room JPM B
(Alternate Path)

K/A Reference: 003 A4.01 (3.3/3.2)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handouts 1-3.

Initial Conditions:

- The plant is returning to service after a refueling outage.
- B RCP is running and the S-2.1, Reactor Coolant Pump Operation, used to start the pump has been closed out.
- The crew is performing O-1.1, Plant Heatup From Cold Shutdown to Hot Shutdown, and has reached step 6.5.10.3 – PLACE PCV 135 in MANUAL AND CONTROL RCS pressure at approximately 325 psig.
- A new S-2.1 is being used to start the A RCP and is complete up to Step 6.1.3.
- The Containment Sound Monitor is OOS and will not be used during the RCP start.
- An Equipment Operator is at the “A” RCP to monitor the start.
- You are the HCO.

Initiating Cue:

- The US has assigned you to start the A RCP in accordance with Steps 6.5.10.3 through 6.5.10.7 of O-1.1.
- The CO will respond to alarms not directly related to this task and is available for adjusting Charging Pump speed during the RCP start, but you must direct any adjustments.

Job Performance Measure Worksheet

Task Standard: The operator will start the "A" RCP per O-1.1 and S-2.1, and then diagnose a low oil level in the pump, and stop the pump per plant Annunciator Response Procedures.

Required Materials: None

General References: O-1.1, Plant Heatup From Cold Shutdown to Hot Shutdown, Rev 16900
S-2.1, Reactor Coolant Pump Operation, Rev 04700
AR-A-24, RCP OIL LEVEL \pm 1.25, Rev 01601

Handouts: Handout 1: A marked up copy of O-1.1 up to the NOTE prior to Step 6.5.10.3
Handout 2: A marked up copy of S-2.1, REACTOR COOLANT PUMP OPERATION, up to Step 6.1.2.
Handout 3: A completed Attachment 5, RCP A, of S-2.1, marked up for current plant conditions

Time Critical Task: NO

Validation Time: 12 minutes

NOTE: This JPM should be Pre-Briefed in the Briefing Room.

Job Performance Measure Worksheet

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.

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.

.....

Job Performance Measure Worksheet

SIMULATOR OPERATIONAL GUIDELINES

1. Reset to IC-29

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.

2. Start the B RCP and heat up the RCS to 140°F (May take 8-10 hours starting from IC-29).
3. Insert **MALF RCS08A (-2.5) ramped in over 30 seconds on Trigger #1** ("A" RCP Oil Leak)
4. Ensure the follows conditions are met:
 - The "B" RCP is running
 - RCS Temperature is > 140°F and < 199°F
 - RCS pressure is ≈325 psig
 - PCV-135 is in AUTO
 - LTOP Display on overhead monitor
 - Marked up portions of O-1.1 are consistent with Simulator conditions
 - Marked up portions of body of S-2.1 are consistent with Simulator conditions
 - Marked up portions of Attachment 5 of S-2.1 are consistent with Simulator conditions
 - Blank Attachment 6 of O-1.1 on the HCO Desk
5. Place RCP Parameters on Group Display
6. Place simulator in FREEZE.
7. Reset to IC-162 (October, 2016):
8. Replace A-20, C-5 and F-29 alarm tiles for low pressure conditions.
9. Place simulator in RUN when directed by examiner.
10. When the above steps are completed for this and other JPMs to be run concurrently then validate, if not previously validated, the concurrently run JPMs using the JPM Validation Checklist.
11. This completes the setup for this JPM.

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handouts 1-3.				
NOTE					
<ul style="list-style-type: none">• An Operator should be ready to open PCV-135 should a pressure spike occur when the Reactor Coolant Pump is started.• IF RCS pressure goes down after RCP start, THEN closing PCV-135 will raise RCS pressure faster than raising Charging Pump speed.• IF RCS pressure rises, THEN it may be necessary to lower Charging Pump speed OR open PCV-135.					
*1	(O-1.1, Step 6.5.10.3) PLACE PCV 135 in MANUAL AND CONTROL RCS pressure at approximately 325 psig.	<p>The operator reads the NOTES, and proceeds.</p> <p>The operator balances the PCV 135 Automatic-to-Manual control and places the controller to Manual.</p> <p>The operator controls pressure at ≈325 psig.</p>	—	—	—
2	(O-1.1, Step 6.5.10.4) IF the containment sound monitor is to be used for the RCP being started, THEN TURN ON the containment sound monitor for the respective RCP. OTHERWISE, MARK this Step N/A.	Based on Initial Conditions, the operator marks the step N/A.	—	—	—
3	(O-1.1, Step 6.5.10.5) CLOSELY MONITOR RCS heatup rate AND RCS pressure after starting of the 2 nd RCP.	The operator monitors RCS heat up rate and pressure on PPCS.	—	—	—
*4	(O-1.1, Step 6.5.10.6) PLACE LETDOWN DIVERT TO DI OR VCT, TCV-145 to VCT to prevent pressure transient on mixed bed.	The operator places the TCV-145 control switch to the VCT position and observes the Red status light is LIT and the Green status light is OFF.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
5	(O-1.1, Step 6.5.10.7) START the 2 nd RCP PER S-2.1, starting instructions section AND MARK RCP NOT started N/A. <ul style="list-style-type: none"> RCP A RCP B 	The operator marks RCP B step N/A. The operator refers to S-2.1 for the A RCP.	—	—	—
<p style="text-align: center;">NOTE</p> <ul style="list-style-type: none"> Starting the Oil Lift Pump will increase RCP seal clearances and may result in a change of state for MCB Alarm B-17, RCP 1A No. 1 SEAL HI-LO FLOW. A pressure interlock prevents starting of the RCP unless a minimum oil pressure is available to the Upper Thrust Shoes of the Motor Thrust Bearing. 					
*6	(S-2.1, Section 6.1/Step 6.1.3) STARTING RCP A/ Start RCP A Oil Lift Pump.	The operator refers to Section 6.1. The operators reads the NOTES, and proceeds. The operator places the RCP A Oil Lift Pump in the START position and observes the Red status light is LIT and the Green status light is OFF. The operator notes the time.	—	—	—
<p>Examiner Note: The time should be marked to ensure the Lift Oil Pump has been running for at least 2 minutes prior to starting the RCP but the RCP will not start unless the pressure interlock is satisfied (Once the White Light is LIT, use Time Compression).</p>					
7	(S-2.1, Step 6.1.4) AFTER 2 minutes, VERIFY RCP A Lift Pressure WHITE light is lit.	The operator observes that the RCP A White status light is LIT. The operator verifies 2 minutes has elapsed since the start of the Lift Oil Pump.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*8	(S-2.1, Step 6.1.5) VERIFY RCP A No. 1 Seal Leakoff is still in the NORMAL OPERATING RANGE of Attachment 3, RCP Seal Leakoff.	<p>The operator refers to S-2.1, Attachment 3, and determines the combination of #1 Seal Leak Rate and #1 Seal DP are within the NORMAL OPERATING RANGE.</p> <p>The operator observes RCP A F-177 and A SEAL FLOW F-175, and determines the #1 Seal Leak Rate.</p> <p>The operator observes PI-420 (Rx Coolant Loop Low Range Pressure) and determines the #1 Seal DP.</p> <p>Using the combination of #1 Seal Leak Rate and #1 Seal DP the operator verifies their intersection is within the NORMAL OPERATING RANGE on Attachment 3.</p>	—	—	—
9	(S-2.1, Step 6.1.6) Select RCP A on the Containment Sound Monitor, N/A if Sound Monitor is not available.	The operator marks this step NA, and proceeds.	—	—	—
10	(S-2.1, Step 6.1.7) Make a Plant Announcement that RCP A will be started.	The operator announces starting Reactor Coolant Pump A.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<p style="text-align: center;">NOTE</p> <ul style="list-style-type: none"> During solid plant operations when starting an RCP, control RCS pressure such as to maintain >220 psid on the #1 seal DP indicator and below the PORV setpoint of 410 psig. Maintain RCS pressure at approximately 325 psig, as indicated on PI-420, by setting of the Low Pressure Letdown Controller, PCV-135. 					
*11	(S-2.1, Step 6.1.8) Start RCP A.	<p>The operator reads the NOTES, and proceeds.</p> <p>The operator may assign the second board operator to adjust Charging Pump speed, when directed.</p> <p>The operator places the A RCP control switch to the START position and observes the Red status light is LIT and the Green status light is OFF.</p> <p>The operator adjusts PCV-135 as necessary to maintain RCS Pressure such that RCP #1 Seal DP >220 PSID, as seen on PI-420, and no PORV lift (410 PSIG).</p>	—	—	—
<p>SIM DRIVER: If directed, adjust Charging Pump speed, and report actions taken to the operator.</p>					
12	(S-2.1, Step 6.1.9) Turn off the Containment Sound Monitor (mark N/A if not used).	The operator marks this step NA, and proceeds.	—	—	—
13	(S-2.1, Step 6.1.10) WHEN the A RCP has been operating for greater than 1 minute, THEN STOP the RCP A Oil Lift Pump.	<p>The operator verifies the RCP has been running for one minute.</p> <p>The operator places the RCP A Oil Lift Pump in the STOP position and observes the Green status light is LIT and the Red status light is OFF.</p>	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
14	(S-2.1, Step 6.1.11) Monitor the following parameters for RCP A IAW Section 6.3, Normal Operation: <ul style="list-style-type: none">• RCP A Bearing Temps (PPCS or Recorder)• RCP A Seal Leakoff Flows• RCP A #1 Seal D/P• Seal Return Heat Exchanger Outlet Temperature (A.O.)• RCP A Oil Levels• RCP A Vibration Monitor	The operator refers to Section 6.3 and begins verifying parameters.	—	—	—
CUE	If the operator asks Seal Return Heat Exchanger Outlet Temperature, state that it is 80°F.				
SIM DRIVER: When this step is in progress, operate Trigger #1 (insert MALF RCS08A, - 2.5, ramp over 30 seconds)					
EXAMINER NOTE: ALTERNATE PATH DECISION POINT OCCURS IN THE NEXT STEP					
15	(AR-A-24, Step 1) When first starting the pump, then allow 30 seconds for alarm to clear. Trip pump if alarm still does not clear.	The operator acknowledges MCB Annunciator A-24, and addresses the ARP. The operator may stop the RCP any time after reading this step by placing the A RCP control switch to the STOP position and observing the Green status light is LIT and the Red status light is OFF.	—	—	—
	Examiner Note: The critical task for stopping the RCP is met if the operator trips the RCP at any time after reading this step but before the RCP A breaker trips on overcurrent. RCP A will trip on overcurrent after approximately 3.5 minutes.				
	Examiner Note: Once the RCP is tripped, terminate the JPM. If the RCP automatically trips prior to the operator tripping the RCP, the JPM is FAILED.				

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
16	(AR-A-24, Step 2) When operating, then verify level using RCP Oil Level Indicators and Plant Process Computer System.	The operator observes RCP A Oil Level (at the RMS rack side panel) is lowering.	—	—	—
17	(AR-A-24, Step 2.1) Immediately monitor the A RCP Motor bearing temperature. This can be done by using PPCS Group Display RCPS.	The operator observes Group Display RCPS on PPCS. Using the PPCS the operator determines A RCP Motor Bearing temperatures are rising. T2092: Upper Thrust Bearing T2161: Upper Radial Bearing	—	—	—
18	(AR-A-24, Step 2.2) IF bearing temperatures AND indicated level appear normal, THEN initiate a CNMT entry to investigate the sight glass level. IF the lower bearing oil level is greater than 1" BELOW the notch on the sight glass, THEN prepare to remove the pump from service. Otherwise, the level is acceptable to continue operation.	The operator determines that conditions are NOT normal and proceeds.	—	—	—
*19	(AR-A-24, Step 2.3) If level is 1.5" below normally indicated level and visibly lowering then: <ul style="list-style-type: none"> • Trip the reactor • When all E-0 immediate actions done, then trip affected RCP 	The operator places the A RCP control switch to the STOP position and observes the Green status light is LIT and the Red status light is OFF.	—	—	—
Examiner Note: The operator will NOT perform E-0 Actions because the plant is in Mode 5.					

JPM Stop Time: _____

CUE: This terminates the JPM.

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2017 Systems NRC - Control Room JPM B

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT UNSAT

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is returning to service after a refueling outage.
- B RCP is running and the S-2.1, Reactor Coolant Pump Operation, used to start the pump has been closed out.
- The crew is performing O-1.1, Plant Heatup From Cold Shutdown to Hot Shutdown, and has reached step 6.5.10.3 – PLACE PCV 135 in MANUAL AND CONTROL RCS pressure at approximately 325 psig.
- A new S-2.1 is being used to start the A RCP and is complete up to Step 6.1.3.
- The Containment Sound Monitor is OOS and will not be used during the RCP start.
- An Equipment Operator is at the “A” RCP to monitor the start.
- You are the HCO.

INITIATING CUE:

- The US has assigned you to start the A RCP in accordance with Steps 6.5.10.3 through 6.5.10.7 of O-1.1.
- The CO will respond to alarms not directly related to this task and is available for adjusting Charging Pump speed during the RCP start, but you must direct any adjustments.

NRC EXAM

SIM JPM C

Job Performance Measure Worksheet

Facility: Ginna

Task No.:

Task Title: Placing Main FRV in Auto when
Bypass FRV is Controlling S/G
Level in AutoJPM No.: 2017 Systems NRC -
Control Room JPM C
(Alternate Path)

K/A Reference: 059 A2.12 (3.1/3.4)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

- Initial Conditions:
- The plant is operating at 31% power.
 - The "A" Feed Reg Valve Bypass Valve has been placed in AUTO, and the "A" Feed Reg Valve has been placed in MANUAL at the request of Maintenance.
 - You are the CO.

Initiating Cue: The US has directed you to place the "A" FRV back in AUTO and to close the "A" FRV Bypass Valve IAW Attachment 2 of P-17.

Task Standard: The operator will place the "A" FRV in AUTO and close the "A" Feed Reg Valve Bypass Valve in accordance with Attachment 2 of P-17; and then take manual control of the "A" Feed Reg Valve and stabilize the "A" S/G level when it is recognized that the "A" Feed Reg Valve controller has failed to operate in AUTO.

Required Materials: None

Job Performance Measure Worksheet

General References: P-17, Operations Control Room Operating Instructions, Rev 01800
OP-AA-101-111-1001, Operations Expectations and Standards, Rev 18
A-503.1, Emergency and Abnormal Operating Procedures Users Guide,
Rev 04600

Handouts: Handout 1: Blank copy of Attachment 2 of P-17

Time Critical Task: NO

Validation Time: 9 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.

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.

.....

Job Performance Measure Worksheet

SIMULATOR OPERATIONAL GUIDELINES

1. Reset to **IC-9** (Any At Power IC which will support the "A" Feed Reg Valve Bypass Valve operating in AUTO with the 'A' FRV operating in MANUAL)

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.

2. Raise power to 31% power and stabilize plant.
3. Insert Malfunction FDW07A = 0 (60 second Ramp and 90 second delay) (Failure of the "A" FRV Controller to operate in AUTO) on Trigger #1 (x06O310D==1 ["A" FRV Bypass Controller in MANUAL]).
4. Place simulator in RUN
5. Place the "A" FRV Bypass Valve in AUTO and the Main FRV in MANUAL per Attachment 1, CROI-1 of P-17.
6. Place simulator in FREEZE.
7. Reset to IC-163 (October, 2016)
8. **Trend SGLVL-WIDE on PPCS.**
9. Place simulator in RUN when directed by examiner.
10. When the above steps are completed for this and other JPMs to be run concurrently then validate, if not previously validated, the concurrently run JPMs using the JPM Validation Checklist.
11. This completes the setup for this JPM.

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.				
NOTE					
<ul style="list-style-type: none">PPCS points V4271 and V4272 have warnings 70%, and high alarms, 90%, to alert operators when the FRV Bypass AOV's are approaching position limits.The FRV controllers respond faster the longer the buttons are held down.					
1	(Attachment 2, Step 1.1/1.1.1) PERFORM the following to place the Main FRV in AUTO: VERIFY the desired Main FRV is in MANUAL.	The operator reads the NOTES, and proceeds. The operator observes the "A" Main FRV controller White "MAN" backlight is LIT.	—	—	—
*2	(Attachment 2, Step 1.1.2) SLOWLY CLOSE the desired Main FRV by DEPRESSING the Main FRV Controller closed pushbutton.	The operator presses the "A" Main FRV controller CLOSE pushbutton and observes the controller output lowering. The operator will observe feed flow to the "A" using FI-466, 467 and 500 on the MCB and/or the Feedwater System Page on the PPCS	—	—	—
3	(Attachment 2, Step 1.1.3) VERIFY the Bypass FRV fully OPENS to maintain Feed Flow constant.	The operator observes the "A" FRV Bypass Valve controller output rising, and that "A" S/G feed flow remains constant.	—	—	—
Examiner NOTE: During the transfer between the two valves, MCB Annunciator G-3, S/G A LEVEL DEVIATION ±7%, may alarm.					

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*4	(Attachment 2, Step 1.1.4) PLACE the Main FRV in AUTO for the desired S/G.	The operator presses the "A" Main FRV controller AUTO pushbutton and observes the White "AUTO" backlight is LIT.	—	—	—
5	(Attachment 2, Step 1.1.5) VERIFY Main FRV is responding as expected.	The operator observes the "A" FRV controller output rising, and that "A" S/G feed flow remains constant.	—	—	—
<p style="text-align: center;">NOTE</p> <p>The Bypass FRV Manual Pushbutton must be depressed for 2-3 seconds to allow the ADFACS DPU to go through its processor cycle time.</p>					
6	(Attachment 2, Step 1.1.6) PLACE the Bypass FRV to MANUAL for the desired S/G.	<p>The operator reads the NOTE, and proceeds.</p> <p>The operator presses the "A" FRV Bypass Valve MANUAL pushbutton and holds for 2-3 seconds; and observes the White "MAN" backlight is LIT.</p>	—	—	—
	<p>Examiner NOTE: WHEN the "A" FRV Bypass controller is in MANUAL for 90 seconds, TRIGGER #1 will automatically operate causing the A FRV to close over 60 seconds.</p>				
7	(Attachment 2, Step 1.1.7) SLOWLY CLOSE the Bypass FRV WHILE VERIFYING the Main FRV compensates by opening slightly.	<p>The operator presses the "A" FRV Bypass Valve controller CLOSE pushbutton and observes the controller output lowering.</p> <p>The operator observes the FRV controller output rises as the FRV Bypass Valve closes.</p>	—	—	—
<p style="text-align: center;">EXAMINER NOTE: ALTERNATE PATH DECISION POINT OCCURS IN THE NEXT STEP</p>					

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
	Examiner NOTE: When the A FRV Controller fails, MCB Annunciator G-22, ADFCS SYSTEM TROUBLE, will alarm; the controller output will lower, and the A S/G feed flow and Narrow Range level will lower.				
*8	(Attachment 2, Step 1.1.8) ENSURE the Main FRV is controlling S/G level In AUTO with the Bypass FRV closed in Manual.	<p>The operator observes the "A" FRV Controller output lowering uncontrollably with the controller in AUTO, and the A S/G feed flow and Narrow Range level lowering.</p> <p>The operator presses the MAN Pushbutton on the "A" FRV controller and observes the White Backlight is LIT.</p> <p>The operator adjusts the output of the "A" FRV controller to control the position of the "A" FRV, raise feed flow to the "A" S/G and stabilize "A" S/G Narrow Range level.</p>	—	—	—
	Examiner NOTE: The operator may manually re-open the A FRV Bypass Valve, however, at this power level this action alone will be insufficient to stabilize the A S/G level.				
	Examiner NOTE: The response action is permitted as an identified procedural deviation as indicated in A-503.1, Step 5.3.A.5 which states "Actions are permitted to mitigate or compensate for equipment or controller failures or to isolate leaks. Permitted actions include those actions necessary to take manual control and stabilize the affected parameters, or to isolate a leak. Examples include closing or isolating a failed open PORV, taking manual control of a failed FRV controller, etc. These deviations fall under the Maintenance Rule. Therefore, 50.59 is not required."				

JPM Stop Time: _____

CUE: This terminates the JPM.

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2017 Systems NRC - Control Room JPM C

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is operating at 31% power.
- The "A" Feed Reg Valve Bypass Valve has been placed in AUTO, and the "A" Feed Reg Valve has been placed in MANUAL at the request of Maintenance.
- You are the CO.

INITIATING CUE:

The US has directed you to place the "A" FRV back in AUTO and to close the "A" FRV Bypass Valve IAW Attachment 2 of P-17.

NRC EXAM

SIM JPM D

Job Performance Measure Worksheet

Facility: Ginna

Task No.:

Task Title: Dropped Rod Recovery w/Second
Dropped RodJPM No.: 2017 Systems NRC -
Control Room JPM D
(Alternate Path)

K/A Reference: APE 003 AA1.02 (3.6/3.4)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handouts 1-2.

Initial Conditions:

- Reactor power is stable at 42%.
- Control Rod E-11 dropped into the reactor core 24 hours ago.
- AP-RCC.3, "Dropped Rod Recovery," has been carried out.
- The crew is currently in ER-RCC.1, Retrieval of a Dropped Rod, and has completed this procedure through Step 6.2.3.
- All Technical Specifications have been addressed.
- All necessary repairs have been made.
- It has been determined that the Control Rod can be recovered at power.
- The RCS Boron Concentration is 1145 ppm, and the BAST Boron Concentration is 17,400 ppm.
- You are the HCO.

Initiating Cue:

- The US has directed you to recover the dropped rod in accordance with ER-RCC.1, starting with Step 6.2.4.
- The Reactor Engineer has directed that a 120 gallon boration be made at 3 gpm during the recovery of the Control Rod.
- The CO will manipulate the P/A converter and control the secondary plant, as you direct.

Job Performance Measure Worksheet

Task Standard: The operator will attempt to recover Control Rod E-11 per ER-RCC.1; and then manually trip the reactor during the recovery when it is diagnosed that two dropped rods exist.

Required Materials: Lift Coil Cabinet Key
Marked up copy of AP-RCC.3 on the RO Desk

General References: ER-RCC.1, Retrieval of a Dropped Rod, Rev 02102
AP-RCC.3, Dropped Rod Recovery, Rev 01000
S-3.1, Boron Concentration Control, Rev 03200
A-503.1, Emergency and Abnormal Operating Procedure User Guide, Rev 04600

Handouts: Handout 1: ER-RCC.1, Retrieval of a Dropped Rod, marked up through Step 6.2.3.
Handout 2: Blank copy of S-3.1, Boron Concentration Control.

Time Critical Task: NO

Validation Time: 18 minutes

NOTE: This JPM should be Pre-Briefed in the Briefing Room.

Job Performance Measure Worksheet

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.

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.

.....

Job Performance Measure Worksheet

SIMULATOR OPERATIONAL GUIDELINES

1. Reset to **IC-20** (Or any appropriate 48% power IC)

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.

2. Insert Malfunction ROD02–E11= Stationary (Control Rod E-11 Dropped)
3. Place simulator in RUN
4. Carry out actions of AP-RCC.3 through step 8e.
5. Carry out actions of ER-RCC.1 through Step 6.2.3.
6. Allow conditions to stabilize.
7. Remove Malfunction ROD02–E11
8. Insert Malfunction ROD02–L6 = Stationary (Control Rod L-6 Dropped) on Trigger #1 (Conditional = X07I314A==1 [Rod Withdrawal Signal], 10 seconds delayed).
9. Place simulator in FREEZE.
10. Reset to IC-164 (October, 2016)
11. Place simulator in RUN when directed by examiner.
12. When the above steps are completed for this and other JPMs to be run concurrently then validate, if not previously validated, the concurrently run JPMs using the JPM Validation Checklist.
13. This completes the setup for this JPM.

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handouts 1-2.				
*1	(ER-RCC.1, Step 6.2.4) PLACE CONTROL ROD BANK SELECTOR SWITCH on control board to the affected bank.	The operator places the Control Rod Bank Select Switch to the SBA position.	—	—	—
<p style="text-align: center;">NOTE</p> <p>The disconnect switches are located in the LIFT COIL DISCONNECT PANEL on the back of the control board.</p>					
*2	(ER-RCC.1, Step 6.2.5/6.2.5.1) PERFORM the following for the affected bank: DISCONNECT lift coils of RCC's that DID NOT drop.	The operator reads the NOTE, and proceeds. The operator obtains Lift Coil Cabinet Key and opens Lift Coil Cabinet. The operator Disconnects lift coils for SDB A Group 1 Control Rods E3, C9, I11, and K5 (Disconnect Switch in "Down" position). The operator Disconnects lift coils for SDB A Group 2 Control Rods I3, C5, and K9 (Disconnect Switch in "Down" position).	—	—	—
	Examiner Note: The TOGGLE SWITCH is above the Nomenclature in the Lift Coil Switch Cabinet.				
3	(ER-RCC.1, Step 6.2.5.2) VERIFY that the lift coil for the dropped RCC is CONNECTED.	The operator observes the SDB A Group 2 Control Rod E11 lift coil Disconnect Switch in the "Up" position.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
4	(ER-RCC.1, Step 6.2.5.3) RECORD reading on group counter for affected group (Refer to Attachment 1, RCC Bank Grouping). _____ steps	The operator observes group counter for Shutdown Bank A Group 2, and records 223 Steps.	—	—	—
*5	(ER-RCC.1, Step 6.2.5.4) RESET step counter of only the affected group (group 1 or 2) by opening the counter window and resetting to 0 (depress reset pushbutton RS).	The operator opens the Shutdown Bank A Group 2 Counter window and depresses middle pushbutton, and observes reading of "0."	—	—	—
6	(ER-RCC.1, Step 6.2.5.5) IF the dropped RCC is in the Shutdown Bank THEN GO TO step 6.2.6.	The operator recognizes that the Dropped Rod is in a Shutdown Bank, and proceeds to Step 6.2.6.	—	—	—
<p style="text-align: center;">CAUTION</p> <p>Reactor power and T_{AVG} will rise as RCC is being retrieved, the positive reactivity from the RCC shall be offset by RCS Boration such that power is maintained stable and less than 50%.</p>					
<p style="text-align: center;">NOTE</p> <p>The amount of boric acid required and rate to be added to recover the dropped RCC should be determined by the Reactor Engineer.</p>					
7	(ER-RCC.1, Step 6.2.6/6.2.6.1) PERFORM the following to restore the dropped RCC to its bank position: INITIATE a Boration to add the amount of Boric Acid determined by the Reactor Engineer to recover the dropped RCC per reactivity plan guidance.	<p>The operator reads the CAUTION and NOTE, and proceeds.</p> <p>The operator addresses Attachment 2, Normal Boration, of S-3.1.</p>	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
8	(S-3.1, Attachment 2, Step 1.0) ENSURE Attachment 1, Makeup Determinations, is complete.	The operator recognizes that the Reactor Engineer has determined that a 120 gallon boration be made at 3 gpm during the recovery of the Control Rod, and proceeds.	—	—	—
9	(S-3.1, Attachment 2, Step 2.0) Board operator SHALL inform US of intent to change core reactivity.	The operator informs the US of the intent to change reactivity via boration.	—	—	—
CUE	The US acknowledges.				
10	(S-3.1, Attachment 2, Step 2.1) US SHALL acknowledge reactivity manipulation and provide input and oversight. [G0092].	The operator reads the Step, and proceeds.	—	—	—
*11	(S-3.1, Attachment 2, Step 3.0) PLACE RMW MODE SELECTOR control switch to BORATE position.	The operator places the RMW MODE SELECTOR control switch to the BORATE position.	—	—	—
*12	(S-3.1, Attachment 2, Step 4.0) SET BA TO BA BLENDER FLOW CONTROL VALVE, HCV-110A, controller to flow rate determined in Attachment 1, Makeup Determinations, Step 1.1.	The operator makes note of the HCV-110A controller's current setting, and adjusts the controller to 3.0 gpm.	—	—	—
*13	(S-3.1, Attachment 2, Step 5.0) SET BA COUNTER, YIC-110, to quantity determined in Attachment 1.	The operator sets YIC-110 to 120 gallons.	—	—	—
<p style="text-align: center;">NOTE</p> <p>Key parameters including Reactor Coolant Tavg AND control rod position indication, OR subcritical count rate SHALL be observed as boric acid is injected to ensure proper response. [G0092] [G0132]</p>					
*14	(S-3.1, Attachment 2, Step 6.0) PLACE RMW CONTROL switch to START position.	<p>The operator reads the NOTE, and proceeds.</p> <p>The operator places the RMW CONTROL switch to the START position.</p>	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
15	(S-3.1, Attachment 2, Step 7.0) VERIFY the following: <ul style="list-style-type: none"> BORIC ACID TRANSFER PUMP A OR B starts. BA TO BA BLENDER FLOW CONTROL VLV, HCV-110A, throttles open to preset flow position. REACTOR MAKEUP TO CHG PUMP, AOV-110B, opens. 	The operator observes the A Boric Acid Transfer Pump Red status light is LIT, and Green status light is OFF. OR The operator observes the B Boric Acid Transfer Pump Red status light is LIT, and Green status light is OFF.	—	—	—
		The operator observes HCV-110A output rising.	—	—	—
		The operator observes the AOV-110B Red status light is LIT, and Green status light is OFF.	—	—	—
<p style="text-align: center;">NOTE</p> <p>The following MCB annunciators will alarm as withdrawal starts:</p> <ul style="list-style-type: none"> C-30, ROD CONTROL URGENT FAILURE ROD STOP. C-5, PPCS ROD SEQUENCE OR ROD DEVIATION. 					
EXAMINER NOTE: ALTERNATE PATH DECISION POINT OCCURS IN THE NEXT STEP					

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*16	(ER-RCC.1, Step 6.2.6.2) WITHDRAW the dropped RCC to maintain TAVG at TREF	<p>The operator reads the NOTES, and proceeds.</p> <p>The operator places the "In-Out Rod Control Switch" to the "Out" position and raises the Control Rod to the required position while maintaining Tavg at Tref.</p> <p>The operator acknowledges the Rod Control Urgent Failure Rod Stop annunciator upon rod withdrawal as an expected alarm.</p> <p>The operator observes second dropped rod while recovering the first dropped rod, and re-enters AP-RCC.3 at Step 1.</p>	—	—	—
SIM DRIVER: Ensure that malfunction ROD02-L6 becomes ACTIVE ten (10) seconds after the rod withdrawal signal is initiated.					
17	(AP-RCC.3 Step 1) Verify Only One Rod Has Dropped	<p>The operator observes that Control Rod L6 Rod Bottom light is LIT, and Control Rod E11 is still being recovered; and concludes that more than one Control Rod has dropped.</p> <p>The operator proceeds to the RNO.</p>	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*18	(AP-RCC.3 Step 1) IF 2 or more rods dropped, THEN trip the reactor AND go to E-0, REACTOR TRIP OR SAFETY INJECTION.	The operator manually trips the reactor by depressing one of the Reactor Emergency Trip pushbuttons, and begins to perform the Immediate Actions of E-0.	—	—	—
Examiner Note: There are two Reactor Emergency Trip pushbuttons either of which will manually trip the reactor when depressed.					

JPM Stop Time: _____

CUE: This terminates the JPM.

.....

Job Performance Measure No.: 2017 Systems NRC - Control Room JPM D

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- Reactor power is stable at 42%.
- Control Rod E-11 dropped into the reactor core 24 hours ago.
- AP-RCC.3, "Dropped Rod Recovery," has been carried out.
- The crew is currently in ER-RCC.1, Retrieval of a Dropped Rod, and has completed this procedure through Step 6.2.3.
- All Technical Specifications have been addressed.
- All necessary repairs have been made.
- It has been determined that the Control Rod can be recovered at power.
- The RCS Boron Concentration is 1145 ppm, and the BAST Boron Concentration is 17,400 ppm.
- You are the HCO.

INITIATING CUE:

- The US has directed you to recover the dropped rod in accordance with ER-RCC.1, starting with Step 6.2.4.
- The Reactor Engineer has directed that a 120 gallon boration be made at 3 gpm during the recovery of the Control Rod.
- The CO will manipulate the P/A converter and control the secondary plant, as you direct.

NRC EXAM

SIM JPM E

Job Performance Measure Worksheet

Facility: Ginna

Task No.:

Task Title: Establish 100/0 Electric Lineup on
Circuit 767JPM No.: 2017 Systems NRC -
Control Room JPM E
(Alternate Path)

K/A Reference: 062 A4.01 (3.3/3.1)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

Initial Conditions:

- The plant is operating at 100% power.
- The Electric Plant is currently in a 50/50 NORMAL lineup.
- RG&E ECC has requested that the plant be placed in a 100/0 lineup on Circuit 767 for scheduled maintenance on offsite Circuit 7T later today.
- An A-52.12 for removal of Circuit 7T is being prepared.
- You are the CO.

Initiating Cue:

- The US has directed you to establish a 100/0 Electric Plant alignment per O-6.9.2, Establishing and/or Transferring Offsite Power to BUS 12A / BUS 12B, Section 6.3.
- The SM and RG&E ECC have approved performance of this bus re-alignment.

Job Performance Measure Worksheet

Task Standard: The operator will transfer 4160V buses from a 50/50 NORMAL Lineup to 100/0 Lineup on Circuit 767, recognize a failure of breaker 52/12AY to auto trip, and implement Attachment 1 of O-6.9.2 to realign the electric plant to a 50/50 lineup.

Required Materials: None

General References: O-6.9.2, Establishing And/Or Transferring Offsite Power to Bus 12A/12B, Rev 023

Handouts: Handout 1: Blank copy of O-6.9.2, Establishing And/Or Transferring Offsite Power to Bus 12A/12B.

Time Critical Task: NO

Validation Time: 6 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.

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.

.....

Job Performance Measure Worksheet

SIMULATOR OPERATIONAL GUIDELINES

1. Reset to **IC-19** (Or any appropriate 100% power IC)

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.

2. Ensure the electric plant is in a Normal 50/50 electric plant lineup
3. Create an Event and Schedule File as follows:

The simulator electrical model does not have the capability to fail the auto trip feature of 52/12AY when 52/12BY is closed in. Having the 52/12AY synchroscope also ON, however, defeats this interlock and would prevent the breaker from opening. Since there is only one (1) synchroscope handle, however, and is being used to close the 52/12BY breaker, a "software work around" must be accomplished by opening an Event and Schedule file:

- Insert override OVR-EDS69D = FALSE (12AY Trip signal)
- Insert override OVR-EDS69G = FALSE (12AY Pull-to-stop signal)
- Insert override OVR-EDS69F = FALSE (12AY Norm Aft Trip signal)
- insert override OVR-EDS29 = TRUE on T-1 (Conditional x05i115a [12A ALT Synch Switch taken to ON position])
- Open Event 2 in the Events box:
- Enter jbk 12by & ! x05i115a in the Event Code box (T-2)
- Type "Remove Override EDS29 when" in the Description box (optional)
- Build Schedule LC 15-1 NRC JPM E.sch:
- Enter the following in the Schedule box:

Insert	Pause	@Time	Event	Action (type <u>exactly</u>)	Description
<input type="checkbox"/>	<input type="checkbox"/>		2	remove override OVR-EDS29	

- SAVE the schedule LC 15-1 NRC JPM E.sch.
 - Open and RUN the schedule file.
4. Place simulator in FREEZE.
 5. Reset to IC-165 (October, 2016)
 6. Place simulator in RUN when directed by examiner.

Job Performance Measure Worksheet

7. When the above steps are completed for this and other JPMs to be run concurrently then validate, if not previously validated, the concurrently run JPMs using the JPM Validation Checklist.
8. This completes the setup for this JPM.

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.				
1	(O-6.9.2, Step 6.3.1/6.3.1.1) ESTABLISH Offsite Power to 12A Bus using Circuit 767 as follows: MARK BUS 12A NORMAL FEED FROM 7T, 52/12AY, breaker initial position: <ul style="list-style-type: none"> • OPEN • CLOSED 	The operator observes the 52/12ABY Red status light is LIT and the Green status light is OFF. The operator checks the CLOSED box.	—	—	—
2	(O-6.9.2, Step 6.3.1.2) VERIFY CLOSED CIRCUIT BKR 76702 34 KV BUS.	The operator observes the Breaker 76702 Red status light is LIT and the Green status light is OFF.	—	—	—
*3	(O-6.9.2, Step 6.3.1.2) TURN ON BUS 12A ALT FEED FROM 767, 52/12BY, SYNCHROSCOPE.	The operator places the synch switch for Bus 12A ALT Feed from 767 to ON.	—	—	—
Examiner Note: The operator may inform you that J-6, 4KV MAIN OR TIE BREAKER TRIP, and L-20, 12A XFMR OR 12A BUS TROUBLE, will alarm after closing Bus 12A Normal Feed breaker.					
<p style="text-align: center;">NOTE</p> <p>Next Step will cause the following MCB Alarms to ILLUMINATE: - J-6, 4KV MAIN OR TIE BREAKER TRIP - L-20, 12A XFMR OR 12A BUS TROUBLE</p> <p>Steps 6.3.1.5 through 6.3.1.7 SHALL be performed without delay following completion of Step 6.3.1.4.</p>					
*4	(O-6.9.2, Step 6.3.1.4) CLOSE BUS 12A ALT FEED FROM 767 52/12BY.	The operator reads the NOTES, and proceeds. The operator places the 52/12BY control switch in the CLOSE position and observes the Red status light is LIT and the Green status light is OFF.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
	Examiner Note: MCB Annunciator L-20, 12A XFMR OR 12A BUS TROUBLE, is an expected alarm.				
	Evaluator NOTE: Closing this ALTERNATE feed breaker SHOULD automatically trip the Normal feed breaker and result in J-6, 4KV Main or Tie Breaker Trip				
5	(O-6.9.2, Step 6.3.1.5) IF BUS 12A NORMAL FEED FROM 7T, 52/12AY, was initially OPEN, THEN VERIFY breaker is OPEN AND RESET (Green light ILLUMINATED, White light EXTINGUISHED). OTHERWISE, MARK this Step N/A.	The operator recognizes that 52/12AY was initially CLOSED, and marks this Step N/A.	—	—	—
6	(O-6.9.2, Step 6.3.1.6/6.a-c) IF BUS 12A NORMAL FEED FROM 7T, 52/12AY, was initially CLOSED, THEN PERFORM the following: <ul style="list-style-type: none"> • VERIFY breaker OPENED (Green light ILLUMINATED, White light ILLUMINATED). • PLACE BUS 12A NORMAL FEED FROM 7T, 52/12AY, control switch to TRIP AND THEN to AUTO. • VERIFY breaker is OPEN AND RESET (Green light ILLUMINATED, White light EXTINGUISHED). 	<p>The operator observes that the 52/12AY Red status light is still LIT and both the Green and White status lights are OFF.</p> <p>The operator places the 52/12AY control switch to TRIP and then to AUTO, and observes that the Red status light is still LIT and both the Green and White status lights are OFF.</p>	—	—	—
EXAMINER NOTE: ALTERNATE PATH DECISION POINT OCCURS IN THE NEXT STEP					

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
7 *	(O-6.9.2, Step 6.3.1.7) IF BUS 12A NORMAL FEED FROM 7T, 52/12AY, is NOT OPEN, THEN IMMEDIATELY PERFORM Attachment 1, 7T/Bus 12A Circulating Current Contingency Action. OTHERWISE, MARK this Step N/A.	The operator observes that the 52/12AY Red status light is still LIT and both the Green and White status lights are OFF. The operator proceeds to Attachment 1.	—	—	—
<p style="text-align: center;">CAUTION</p> <p>This attachment is only performed as directed when breaker 52/12AY is NOT OPEN.</p>					
8	(Attachment 1, Step 1) VERIFY BUS 12A NORMAL FEED FROM 7T, 52/12AY, is NOT OPEN.	The operator reads the CAUTION, and proceeds. The operator observes that the 52/12AY Red status light is still LIT and both the Green and White status lights are OFF.	—	—	—
9	(Attachment 1, Step 2) VERIFY CLOSED BUS 12A ALT FEED FROM 767, 52/12BY.	The operator observes the 52/12BY Red status light is LIT and the Green status light is OFF.	—	—	—
10	(Attachment 1, Step 3) VERIFY BUS 12A VOLTMETER 4160 V indicates approximately 4000 VOLTS.	The operator observes that the BUS 12A VOLTMETER reads ≈4160 VOLTS	—	—	—
11	(Attachment 1, Step 4) VERIFY CLOSED CIRCUIT BKR 7T1352 34 KV BUS.	The operator observes the Breaker 7T1352 Red status light is LIT and the Green status light is OFF.	—	—	—
<p style="text-align: center;">NOTE</p> <p>Next Step SHOULD automatically trip BUS 12A ALT FEED FROM 767, 52/12BY.</p> <p>Performance of next Step will cause MCB Alarm J-6, 4KV MAIN OR TIE BREAKER TRIP, to ILLUMINATE.</p>					

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*12	(Attachment 1, Step 5) TURN OFF BUS 12A ALT FEED FROM 767, 52/12BY, SYNCHROSCOPE AND REMOVE handle.	The operator reads the NOTES, and proceeds. The operator places the synch switch for Bus 12A ALT Feed from 767 to OFF, and removes the handle.	—	—	—
Examiner Note: MCB Annunciator J-6, 4KV MAIN OR TIE-BREAKER TRIP, is an expected alarm.					
13	(Attachment 1, Step 6) VERIFY BUS 12A ALT FEED FROM 767, 52/12BY, OPENS (Green light ILLUMINATED, White light ILLUMINATED).	The operator observes the 52/12BY Green and White status lights are LIT and the Red status light is OFF.	—	—	—
14	(Attachment 1, Step 7) PLACE BUS 12A ALT FEED FROM 767, 52/12BY, control switch to TRIP AND THEN to AUTO.	The operator places the 52/12BY control switch to TRIP and then to AUTO.	—	—	—
15	(Attachment 1, Step 8) VERIFY BUS 12A ALT FEED FROM 767, 52/12BY is OPEN AND RESET (Green light ILLUMINATED, White light EXTINGUISHED).	The operator observes the 52/12BY Green status light is LIT and the Red and White status lights are OFF.	—	—	—
*16	(Attachment 1, Step 9) PLACE BUS 12A NORMAL FEED FROM 7T, 52/12AY, control switch to CLOSE AND THEN to AUTO.	The operator places the 52/12AY control switch to CLOSE and then to AUTO and observes that the Red status light is LIT and the Green and White status lights are OFF.	—	—	—
17	(Attachment 1, Step 10) VERIFY BUS 12A NORMAL FEED FROM 7T, 52/12AY, is CLOSED AND RESET (Red light ILLUMINATED, White light EXTINGUISHED).	The operator observes the 52/12AY the Red status light is LIT and the Green and White status lights are OFF.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
18	(Attachment 1, Step 11) IMMEDIATELY NOTIFY Electrical Maintenance AND System Engineer of breaker problem.	The operator calls Electrical Maintenance and the SE.	—	—	—
CUE	Acknowledge as Maintenance and System Engineer				

JPM Stop Time: _____

CUE: This terminates the JPM.

.....

Job Performance Measure No.: 2017 Systems NRC - Control Room JPM E

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is operating at 100% power.
- The Electric Plant is currently in a 50/50 NORMAL lineup.
- RG&E ECC has requested that the plant be placed in a 100/0 lineup on Circuit 767 for scheduled maintenance on offsite Circuit 7T later today.
- An A-52.12 for removal of Circuit 7T is being prepared.
- You are the CO.

INITIATING CUE:

- The US has directed you to establish a 100/0 Electric Plant alignment per O-6.9.2, Establishing and/or Transferring Offsite Power to BUS 12A / BUS 12B, Section 6.3.
- The SM and RG&E ECC have approved performance of this bus re-alignment.

NRC EXAM

SIM JPM F

Job Performance Measure Worksheet

Facility: Ginna

Task No.:

Task Title: Add Nitrogen to an SI Accumulator

JPM No.: 2017 Systems NRC -
Control Room JPM F

K/A Reference: 006 A4.02 (4.0/3.8)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

Initial Conditions:

- The plant is operating at 100% power.
- MCB Annunciator C-11, ACCUMULATOR 1A (LOOP B) PRESS 730 PSI 760, alarms.
- You are the HCO.

Initiating Cue:

- The US has directed you to coordinate with the Equipment Operator and raise the pressure in the A Accumulator to 745 ±10 psig per S-16.2, Nitrogen Makeup to the SI Accumulators, using nitrogen cluster A.
- The Equipment Operator has a Field Copy of S-16.2 and has completed the Aux Bldg High Press N₂ Valve alignment.

Task Standard: The operator will raise the A SI Accumulator pressure to 745±10 psig per S-16.2.

Required Materials: None

General References: S-16.2, Nitrogen Makeup to the SI Accumulators, Rev 032

2017 Systems NRC - Control Room JPM F

NUREG 1021, Revision 10

Job Performance Measure Worksheet

AR-C-11, ACCUMULATOR 1A (LOOP B) PRESS 730 PSI 760, Rev
00700

Handouts: Handout 1: Copy of S-16.2, Nitrogen Makeup to the SI Accumulators,
marked up through prerequisite 5.6.

Time Critical Task: NO

Validation Time: 16 minutes

NOTE: This JPM should be Pre-Briefed in the Briefing Room.

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.

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.

.....

Job Performance Measure Worksheet

SIMULATOR OPERATIONAL GUIDELINES

1. Reset to **IC-19** (Or any appropriate 100% power IC)

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.

2. Open AOV-834A and HCV-945 to lower the A SI Accumulator pressure to ≈ 728 psig (PI-941) and alarm C-11 received.
3. Close AOV-834A and HCV-945.
4. Insert REM SIS06 = 705 (This will be adjusted higher during the performance of the JPM using Trigger #1).
5. Insert REM SIS06 = 760 on Trigger #1 (10 Second Ramp)
6. Place simulator in FREEZE.
7. Reset to IC-166 (October, 2016)
8. Place simulator in RUN when directed by examiner.
9. When the above steps are completed for this and other JPMs to be run concurrently then validate, if not previously validated, the concurrently run JPMs using the JPM Validation Checklist.
10. This completes the setup for this JPM.

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.				
NOTE					
Step ladder will be needed to reach V-1827, V-1827A and V-1827B located Aux. Bldg. Middle level about 10 feet off floor just South of East stairway.					
1	(S-16.2, Step 6.2.1) IF Aux Bldg High Press N2 valve alignment has been completed, THEN with US approval, MARK this Step N/A.	The operator reads the NOTE, and proceeds. The operator recognizes from the Initiating Cue that the Aux Bldg High Press N2 valve alignment has been completed, and marks this Step N/A.	—	—	—
CUE	IF the operator asks the US for approval to mark this Step N/A state that permission is granted to do so.				
*2	(S-16.2, Step 6.2.2) OPEN SI ACCUM A N2 FILL VENT VALVE, AOV-834A. (MCB)	The operator places the AOV-834A Control Switch to the OPEN position and observes the Red status light is LIT, and the Green status light is OFF.	—	—	—
*3	(S-16.2, Step 6.2.3) OPEN ACCUM N2 SUPPLY ISOL VALVE, AOV-846. (MCB)	The operator places the AOV-846 Control Switch to the OPEN position and observes the Red status light is LIT, and the Green status light is OFF.	—	—	—
4	(S-16.2, Step 6.2.4) IF Nitrogen Cluster is in Low Pressure backup mode PER S-4.2.9, Nitrogen Backup Supply to Auxiliary Building, THEN MARK N/A closure of applicable 1803 valve in Step 6.2.5 AND use of that cluster for charging Accumulators in Step 6.2.6. OTHERWISE, MARK this Step N/A.	The operator recognizes from the Initiating Cue that the Nitrogen Cluster is in Low Pressure backup mode (Direction has been provided to use N2 Cluster A), and marks this Step N/A.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
5	(S-16.2, Step 6.2.5) PERFORM the following to verify N2 Cluster isolation valves to Low Pressure N2 Header CLOSED: <ul style="list-style-type: none"> • VERIFY CLOSED N2 CLUSTER A ISOL VLV TO LP N2 HDR, V-1803A. • VERIFY CLOSED N2 CLUSTER B ISOL VLV TO LP N2 HDR, V-1803B. • VERIFY CLOSED N2 CLUSTER C ISOL VLV TO LP N2 HDR, V-1803C. 	The operator contacts the Equipment Operator and directs that Step 6.2.5 be performed.	—	—	—
SIM DRIVER (Or Examiner): As Equipment Operator, report that Step 6.2.5 has been completed.					
<p style="text-align: center;">NOTE</p> <p style="text-align: center;">N₂ Cluster pressure must be greater than 800 psi.</p>					
*6	(S-16.2, Step 6.2.6/6.2.6.1) PERFORM ONE of the following to align N2 supply AND MARK options NOT used N/A: From N2 Cluster A: <ul style="list-style-type: none"> • OPEN N2 CLUSTER A OUTLET BLOCK VLV, V-1806A. • RECORD Cluster pressure at start of charge. • OPEN N2 CLUSTER A ISOL VLV TO ACCUMULATOR FILL LINE, V-1805A. 	The operator reads the NOTE, and proceeds. The operator contacts the Equipment Operator and directs that Step 6.2.6 and 6.2.6.1 be performed.	—	—	—
SIM DRIVER (Or Examiner): As Equipment Operator, report that Step 6.2.6.1 has been completed. If asked, report A Cluster pressure of 2100 psig.					

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<p align="center">CAUTION</p> <p>Regulator valve discharge pressure MUST be less than 755 psig to avoid lifting N2 INLET TO ACCUMULATORS RELIEF VLV, RV-8621.</p>					
*7	<p>(S-16.2, Step 6.2.7/6.2.7.1) IF NITROGEN PRESSURE CONTROL, AOV-944C, is OPERABLE, THEN PERFORM the following to charge accumulator using regulated pressure:</p> <p>ADJUST NITROGEN PRESSURE CONTROL, AOV-944C, as necessary AND MAINTAIN regulator valve discharge pressure less than 755 psig.</p>	<p>The operator reads the CAUTION, and proceeds.</p> <p>The operator contacts the Equipment Operator and directs that Step 6.2.7 and 6.2.7.1 be performed.</p>	—	—	—
<p>SIM DRIVER (Or Examiner):</p> <p>As Equipment Operator, report that Step 6.2.7.1 has been completed.</p>					
*8	<p>(S-16.2, Step 6.2.7.2) OPEN NITROGEN SUPPLY ISOLATION, V-944D, to begin charging Accumulators.</p>	<p>The operator contacts the Equipment Operator and directs that Step 6.2.7.2 be performed.</p>	—	—	—
<p>SIM DRIVER:</p> <p>As Equipment Operator align N2 by operating Trigger #1. THEN, report that Step 6.2.7.2 has been completed.</p>					
		<p>The operator observes PI-941 to be rising.</p>	—	—	—
<p>Examiner Note: MCB Annunciator C-11 is expected to clear when the A SI Accumulator Pressure is > 730 psig.</p>					
<p align="center">NOTE</p> <p>IF IST surveillance testing of CV-8623 is being performed AND SI Accumulator nitrogen pressure is at high end of the allowable band, THEN only a verification of a pressure increase during SI Accumulator charging needs to be performed to satisfy the IST surveillance test for CV-8623.</p>					

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
9	(S-16.2, Step 6.2.7.3) WHEN Accumulator N2 pressure reaches 745 psig (735 to 755 psig), THEN CLOSE NITROGEN SUPPLY ISOLATION, V-944D.	<p>The operator reads the NOTE, and proceeds.</p> <p>The operator observes PI-941 to be > 735 psig, but < 755 psig; and MCB Annunciator C-11 is EXTINGUISHED; and contacts the Equipment Operator and directs that Step 6.2.7.3 be performed.</p>	—	—	—
SIM DRIVER: Observe A SI Accumulator pressure as it is being pressurized. As Equipment Operator adjust N2 by setting REM SIS06 to the current A Accumulator pressure. THEN, report that Step 6.2.7.3 has been completed.					
10	(S-16.2, Step 6.2.8) IF NITROGEN PRESSURE CONTROL, AOV-944C, is INOPERABLE, THEN PERFORM the following to charge accumulator using NITROGEN SUPPLY BYPASS, V-944E: OTHERWISE, MARK this Step N/A.	The operator recognizes that AOV-944C is NOT inoperable, marks Step 6.2.8 N/A, and proceeds.	—	—	—
11	<p>(S-16.2, Step 6.2.9/6.2.9.1) PERFORM ONE of the following to secure N2 supply alignment AND MARK options NOT used N/A:</p> <p>From N2 Cluster A:</p> <ul style="list-style-type: none"> • CLOSE N2 CLUSTER A ISOL VLV TO ACCUMULATOR FILL LINE, V-1805A. • RECORD Cluster pressure at end of charge. • CLOSE N2 CLUSTER A OUTLET BLOCK VLV, V-1806A. 	The operator contacts the Equipment Operator and directs that Step 6.2.9 and 6.2.9.1 be performed.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
SIM DRIVER (Or Examiner): As Equipment Operator, report that Step 6.2.9.1 has been completed. If asked, report A Cluster pressure of 1500 psig.					
*12	(S-16.2, Step 6.2.10) CLOSE ACCUM N2 SUPPLY ISOL VALVE, AOV-846. (MCB)	The operator places the AOV-846 Control Switch to the CLOSE position and observes the Green status light is LIT, and the Red status light is OFF.	—	—	—
*13	(S-16.2, Step 6.2.11) CLOSE SI ACCUM A N2 FILL VENT VALVE, AOV-834A. (MCB)	The operator places the AOV-834A Control Switch to the CLOSE position and observes the Green status light is LIT, and the Red status light is OFF.	—	—	—

JPM Stop Time: _____

CUE: This terminates the JPM.

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2017 Systems NRC - Control Room JPM F

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is operating at 100% power.
- MCB Annunciator C-11, ACCUMULATOR 1A (LOOP B) PRESS 730 PSI 760, alarms.
- You are the HCO.

INITIATING CUE:

- The US has directed you to coordinate with the Equipment Operator and raise the pressure in the A Accumulator to 745 \pm 10 psig per S-16.2, Nitrogen Makeup to the SI Accumulators, using nitrogen cluster A.
- The Equipment Operator has a Field Copy of S-16.2 and has completed the Aux Bldg High Press N₂ Valve alignment.

NRC EXAM

SIM JPM G

Job Performance Measure Worksheet

Facility: Ginna

Task No.:

Task Title: Startup the Containment Mini-Purge JPM No.: 2017 Systems NRC - Control Room JPM G

K/A Reference: 029 A2.01 (2.9/3.6)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

- Initial Conditions:
- The plant is operating at 100% power.
 - A Containment entry for maintenance is scheduled for tomorrow.
 - A Containment Mini-Purge Release has been initiated and SM and RP approvals have been received.
 - The Prerequisites of S-23.2.3, Containment Mini-Purge System Operation, have been established for startup of the Containment Mini-Purge System.
 - You are the CO.

- Initiating Cue:
- The US has directed you to startup the Containment Mini-Purge System per S-23.2.3.
 - An Equipment Operator has a Field Copy of S-23.2.3 and is standing by to assist.

Task Standard: The operator will start the Containment Mini-Purge System per S-23.2.3.

Required Materials: None

Job Performance Measure Worksheet

General References: S-23.2.3, Containment Mini-Purge System Operation, Rev 013
CH-704, Containment Mini-Purge Releases, Rev 00000

Handouts: Handout 1: Copy of S-23.2.3, Containment Mini-Purge System
Operation, marked up through prerequisite 5.13.2.

Time Critical Task: NO

Validation Time: 5 minutes

NOTE: This JPM should be Pre-Briefed in the Briefing Room.

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.

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.

.....

Job Performance Measure Worksheet

SIMULATOR OPERATIONAL GUIDELINES

1. Reset to **IC-19** (Or any appropriate 100% power IC)

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.

2. Verify that Prerequisite conditions required by Section 5.0 of S-23.2.3 are MET.
3. Place simulator in FREEZE.
4. Reset to IC-167 (October, 2016)
5. Place simulator in RUN when directed by examiner.
6. When the above steps are completed for this and other JPMs to be run concurrently then validate, if not previously validated, the concurrently run JPMs using the JPM Validation Checklist.
7. This completes the setup for this JPM.

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.				
1	(S-23.2.3, Step 6.1.1) VERIFY LOCKED CLOSED ILRT VENT INR ISOL VLV, AOV-7479.	The operator contacts the Equipment Operator and directs that Step 6.1.1 be completed.	—	—	—
SIM DRIVER: As Equipment Operator, report that Step 6.1.1 has been completed.					
*2	(S-23.2.3, Step 6.1.2) OPEN CONTAINMENT MINI PURGE EXHAUST VALVE, AOV-7970. (Inside Containment)	The operator places the AOV-7970 Control Switch in the OPEN position and observes the Red status light is LIT, and the Green status light is OFF.	—	—	—
*3	(S-23.2.3, Step 6.1.3) OPEN CONTAINMENT MINI PURGE EXHAUST VALVE, AOV-7971. (Outside Containment)	The operator places the AOV-7971 Control Switch in the OPEN position and observes the Red status light is LIT, and the Green status light is OFF.	—	—	—
*4	(S-23.2.3, Step 6.1.4) OPEN CNMT MINI PURGE SUPPLY VLV, AOV-7478. (Inside Containment)	The operator places the AOV-7478 Control Switch in the OPEN position and observes the Red status light is LIT, and the Green status light is OFF.	—	—	—
*5	(S-23.2.3, Step 6.1.5) OPEN CNMT MINI PURGE SUPPLY VLV, AOV-7445. (Outside Containment)	The operator places the AOV-7445 Control Switch in the OPEN position and observes the Red status light is LIT, and the Green status light is OFF.	—	—	—
NOTE Blower discharge valve AOV-7480 will stroke open on blower start.					

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*6	(S-23.2.3, Step 6.1.6) START 1A Mini-Purge Supply System Blower AND VERIFY containment pressure rise. (Pressure should start rising in 4-5 minutes)	<p>The operator reads the NOTE, and proceeds.</p> <p>The operator places the 1A Mini-Purge Supply System Blower Control Switch in the START position and observes the Red status light is LIT, and the Green status light is OFF.</p>	—	—	—
	Examiner NOTE: Step 6.1.6 of S-23.2.3 refers to the 1A Mini-Purge Supply System Blower. The MCB label refers to this component as the CNMT Mini Purge Supply Fan 1A.				
	Examiner NOTE: MCB Annunciator C-17, CONTAINMENT VENT SYSTEM, will flash when the Blower is started.				
	Examiner NOTE: Terminate JPM as soon as Containment pressure is observed to be rising.				

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
7	<p>(S-23.2.3, Step 6.1.7) PERFORM one of the following steps to ensure containment mini-purge is occurring; N/A option(s) not used:</p> <ul style="list-style-type: none"> • VERIFY containment purge occurring by increasing then stabilizing containment pressure. N/A if mini-purge valve adjustments are required. • IF containment pressure is increasing too rapidly, THEN ADJUST Instrument Air PCV 15475 to close MINI-PURGE SUPPLY FAN A OUTLET DAMPER, AOV-7480. OTHERWISE, MARK this Step N/A. • IF containment pressure is not increasing, THEN ADJUST Instrument Air PCV-15475 to open MINI-PURGE SUPPLY FAN A OUTLET DAMPER, AOV-7480. OTHERWISE, MARK this Step N/A. 	The operator monitors MCB Containment pressure (PI-944) for indication of rising pressure, OR establish a trend of P0944 on the PPCS.	—	—	—

JPM Stop Time: _____

CUE: This terminates the JPM.

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2017 Systems NRC - Control Room JPM G

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is operating at 100% power.
- A Containment entry for maintenance is scheduled for tomorrow.
- A Containment Mini-Purge Release has been initiated and SM and RP approvals have been received.
- The Prerequisites of S-23.2.3, Containment Mini-Purge System Operation have been established for startup of the Containment Mini-Purge System.
- You are the CO.

INITIATING CUE:

- The US has directed you to startup the Containment Mini-Purge System per S-23.2.3.
- An Equipment Operator has a Field Copy of S-23.2.3 and is standing by to assist.

NRC EXAM

SIM JPM H

Job Performance Measure Worksheet

Facility: Ginna

Task No.:

Task Title: Defeat a Failed S/G Pressure Channel

JPM No.: 2017 Systems NRC - Control Room JPM H

K/A Reference: 012 A4.04 (3.3/3.3)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

Initial Conditions:

- The plant is operating at 100% power.
- Steam Pressure Channel PI-468 has just failed LOW.
- All appropriate actions have been taken to stabilize the plant.
- The Brief for defeating the associated channel has been completed.
- You are the CO.

Initiating Cue: The US has directed you to defeat affected Steam Generator pressure channel as per Attachment 30, Red Channel – S/G Pressure Channel PI-468, of ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure.

Task Standard: The operator will defeat S/G Pressure Channel PI-468 using Attachment 30 of ER-INST.1.

Required Materials: None

General References: ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure, Rev 037

Job Performance Measure Worksheet

Handouts: Handout 1: Blank copy of Attachment 30, Red Channel – S/G Pressure Channel PI-468, of ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure.

Time Critical Task: NO

Validation Time: 8 minutes

NOTE: This JPM should be Pre-Briefed in the Briefing Room.

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.

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.

.....

Job Performance Measure Worksheet

SIMULATOR OPERATIONAL GUIDELINES

1. Reset to **IC-19** (Or any appropriate 100% power IC)

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.

2. Place simulator in RUN.
3. Insert MALF SGN3A= 0.
4. Respond using ER-INST.1 through Step 6.8.1.
5. Place simulator in FREEZE.
6. Reset to IC-168 (October, 2016)
7. Place simulator in RUN when directed by examiner.
8. When the above steps are completed for this and other JPMs to be run concurrently then validate, if not previously validated, the concurrently run JPMs using the JPM Validation Checklist.
9. This completes the setup for this JPM.

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.				
NOTE					
The following bistable status light is expected to be lit after the DEFEAT:					
<ul style="list-style-type: none">• Hi Steam Flow, FC464A• Hi Hi Steam Flow, FC464B• Lo Press SI, PC468A					
The following Annunciator is expected to be lit after the DEFEAT:					
<ul style="list-style-type: none">• G-26, S/G A HI STEAM FLOW• G-11, LO STEAM PRESSURE LOOP A 600 PSI• G-27, STM LINE A LO-LO PRESS CHANNEL ALERT 514 PSI					
1	(ER-INST.1, Attachment 30, Step 1.0/1.1) DETERMINE the expected Bistable proving light status for the post defeat condition as follows: RECORD the following Data: <ul style="list-style-type: none">• S/G A Pressure PI-468 _____ PSIG• S/G A Steam Flow F0464 (PPCS) _____ lb/hr	The operator reads the NOTE, and proceeds. The operator observes PI-468 and records 0 psig. The operator observes PPCS Point F0464 and records 3.7E6 lbm/hour.	_____	_____	_____

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
2	(ER-INST.1, Attachment 30, Step 1.2) DETERMINE the expected post defeat Bistable proving light status and circle the expected status in table below: 468 LOOP A-1 <ul style="list-style-type: none"> LO LO PRESS SI Light OFF IF $PI-468 \leq 514$ psig 	The operator recognizes that the LO LO PRESS SI Proving Light is OFF if the PI-468 reading is ≤ 514 psig, and circles OFF for 468 LOOP A-1 LO LO PRESS SI.	—	—	—
	468 LOOP A-1 <ul style="list-style-type: none"> LOW PRESS Light OFF IF $PI-468 \leq 600$ psig 	The operator recognizes that the LOW PRESS Proving Light is OFF if the PI-468 reading is ≤ 600 psig, and circles OFF for 468 LOOP A-1 LOW PRESS.	—	—	—
	464 LOOP A-1 <ul style="list-style-type: none"> HIGH TRIP Light OFF IF $F0464 (PPCS) \geq 0.50 \times 10^6$ lb/hr 	The operator recognizes that the HI TRIP Proving Light is OFF if the F0464 reading is $\geq 0.50 \times 10^6$ lb/hr, and circles OFF for 464 LOOP A-1 HI TRIP.	—	—	—
	464 LOOP A-1 <ul style="list-style-type: none"> HI-HI TRIP Light OFF IF $F0464 (PPCS) \geq 4.40 \times 10^6$ lb/hr 	The operator recognizes that the HI-HI TRIP Proving Light is OFF if the F0464 reading is $\geq 4.40 \times 10^6$ lb/hr, and circles ON for 464 LOOP A-1 HI-HI TRIP.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*3	<p>(ER-INST.1, Attachment 30, Step 2.0) In the (RED) R-2 PROTECTION CHANNEL 1 rack, PLACE the following bistable proving switches to DEFEAT (UP), AND verify the proving light status is correct per the table above:</p> <p>468 LOOP A-1</p> <ul style="list-style-type: none"> • LO LO PRESS SI 	<p>The operator obtains a Key and proceeds to R-2 PROTECTION CHANNEL 1.</p> <p>The operator unlocks and opens the R-2 PROTECTION CHANNEL 1 door.</p> <p>The operator verifies that the 468 LOOP A-1 LO LO PRESS SI Proving Light is OFF.</p> <p>The operator places the 468 LOOP A-1 LO LO PRESS SI proving switch to the UP position, and observes that the proving light remains OFF.</p>	—	—	—
	<p>468 LOOP A-1</p> <ul style="list-style-type: none"> • LOW PRESS 	<p>The operator verifies that the 468 LOOP A-1 LOW PRESS Proving Light is OFF.</p> <p>The operator places the 468 LOOP A-1 LOW PRESS proving switch to the UP position, and observes that the proving light remains OFF.</p>	—	—	—
	<p>464 LOOP A-1</p> <ul style="list-style-type: none"> • HIGH TRIP 	<p>The operator verifies that the 464 LOOP A-1 HIGH TRIP Proving Light is OFF.</p> <p>The operator places the 464 LOOP A-1 HIGH TRIP proving switch to the UP position, and observes that the proving light remains OFF.</p>	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
	464 LOOP A-1 • HI-HI TRIP	<p>The operator verifies that the 464 LOOP A-1 HI-HI TRIP Proving Light is OFF.</p> <p>The operator places the 464 LOOP A-1 HI-HI TRIP proving switch to the UP position, and observes that the proving light turns ON.</p> <p>The acknowledges the sound of a MCB Annunciator alarming.</p> <p>The operator closes and locks the R-2 PROTECTION CHANNEL 1 door.</p>	—	—	—
4	(ER-INST.1, Attachment 30, Step 3.0) VERIFY the bistable status lights AND Annunciators listed above are lit.	The operator observes that the Lo Press SI, PC468A bistable status light is LIT.	—	—	—
		The operator observes that the Hi Steam Flow, FC-464A, bistable status light is LIT.	—	—	—
		The operator observes that the Hi Hi Steam Flow, FC464B, bistable status light is LIT.	—	—	—
		The operator observes that MCB Annunciator G-26, S/G A HI STEAM FLOW, is LIT.	—	—	—
		The operator observes that MCB Annunciator G-11, LO STEAM PRESSURE LOOP A 600 PSI, is LIT.	—	—	—
		The operator observes that MCB Annunciator G-27, STM LINE A LO-LO PRESSURE CHANNEL ALERT 514 PSI, is LIT.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*5	(ER-INST.1, Attachment 30, Step 4.0/4.1) DELETE the point from the PPCS by PERFORMING the following: SELECT the "Sub/Delete/Restore" display.	At the PPCS Console, the operator selects "Sub/Delete/Restore" display.	—	—	—
*6	(ER-INST.1, Attachment 30, Step 4.2) SELECT Point ID P0468.	At the PPCS Console, the operator selects "Point ID P0468."	—	—	—
*7	(ER-INST.1, Attachment 30, Step 4.3) TURN "OFF" scan processing.	At the PPCS Console, the operator selects "OFF," for scan processing.	—	—	—
*9	(ER-INST.1, Attachment 30, Step 4.4) SELECT "Change".	At the PPCS Console, the operator selects "CHANGE."	—	—	—
*10	(ER-INST.1, Attachment 30, Step 4.5) ANSWER prompts.	At the PPCS Console, the operator answers prompts.	—	—	—
*11	(ER-INST.1, Attachment 30, Step 4.6) SELECT Point ID F0464.	At the PPCS Console, the operator selects "Point ID F0464."	—	—	—
*12	(ER-INST.1, Attachment 30, Step 4.7) TURN "OFF" scan processing.	At the PPCS Console, the operator selects "OFF," for scan processing.	—	—	—
*13	(ER-INST.1, Attachment 30, Step 4.8) SELECT "Change.	At the PPCS Console, the operator selects "CHANGE."	—	—	—
*14	(ER-INST.1, Attachment 30, Step 4.9) ANSWER prompts.	At the PPCS Console, the operator answers prompts.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
15	(ER-INST.1, Attachment 30, Step 5.0) GO TO step 6.8.2.	The operator reports to the US that Attachment 30 is complete, and that ER-INST.1 Step 6.8.2 must be addressed.	—	—	—
CUE	Acknowledge as US.				

JPM Stop Time: _____

CUE: This terminates the JPM.

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2017 Systems NRC - Control Room JPM H

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is operating at 100% power.
- Steam Pressure Channel PI-468 has just failed LOW.
- All appropriate actions have been taken to stabilize the plant.
- The Brief for defeating the associated channel has been completed.
- You are the CO.

INITIATING CUE:

The US has directed you to defeat affected Steam Generator pressure channel as per Attachment 30, Red Channel – S/G Pressure Channel PI-468, of ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure.

NRC EXAM

In-Plant JPM I

Job Performance Measure Worksheet

Facility: Ginna

Task No.:

Task Title: Energize a Minimum of 100 KW B/U Heaters onto EDG

JPM No.: 2017 Systems NRC – In-Plant JPM I

K/A Reference: APE 056 AA1.03 (3.2/3.3)

Examinee:

Examiner:

Facility Evaluator:

Date:

Method of testing:Simulated Performance: X Actual Performance: Classroom Simulator Plant X **READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.

Initial Conditions:

- The plant was operating at 100% power when it experienced an SI coincident with a loss of all AC power.
- The B EDG is now running and carrying approximately 1650 KW on Buses 16 and 17.
- PRZR level is 20% and stable.
- SI has been RESET.
- The crew has taken all required actions needed to restore Pressurizer Heaters on the EDG.
- You are an extra Control Operator.

Initiating Cue:

The US has directed you to energize a minimum 100 KW of PRZR BACKUP heaters per ER-PRZR.1, Restoration of PRZR Heaters During Blackout.

Task Standard:

The operator will energize 125 KW of pressurizer backup heaters per ER-PRZR.1.

Required Materials: PPE (Hardhat, Safety Glasses, Hearing Protection, Safety Shoes etc.)

Job Performance Measure Worksheet

General References: ER-PRZR.1, Restoration of PRZR Heaters During Blackout, Rev. 00700
Drawing 03200-0122, Sheet 1, Pressurizer Backup Heater Panel B1
ACPDPA12 Schedule, Rev 2
Drawing 03200-0122, Sheet 2, Pressurizer Backup Heater Panel B1
ACPDPA12 Arrangement, Rev 0
Drawing 03200-0123, Sheet 1, Pressurizer Backup Heater Panel B2
ACPDPA13 Schedule, Rev 2
Drawing 03200-0123, Sheet 2, Pressurizer Backup Heater Panel B2
ACPDPA13 Arrangement, Rev 0

Handouts: Handout 1: Blank copy of ER-PRZR.1
Handout 2: Photo of ACPDPAB12
Handout 3: Photo of ACPDPAB13

Time Critical Task: NO

Validation Time: 9 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.

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.

.....

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.				
PRECAUTIONS					
<ul style="list-style-type: none">• A minimum of 100 KW of PRZR heaters should be restored within 1 hour of initiation of natural circulation to prevent loss of subcooling. (ITS LCO 3.4.9)• PRZR level must be GREATER THAN 13% (50% adverse CNMT) to energize PRZR heaters.• Continuous D/G loading should not exceed 1950 KW.• During accident conditions, the on duty RP Technician should be consulted prior to entry into the controlled area.• The PASS purge line to the VCT may require flushing to minimize radiological hazards prior to entering the SFP Hx area.					
NOTE					
D/G accident loading is listed in UFSAR Table 8.3-2.					
1	(ER-PRZR.1, Step 4.0.1) This procedure is divided into the following sections: 4.1 Restoring PRZR Proportional HTRs 4.2 Restoring PRZR Backup HTRs	The operator reads the PRECAUTIONS, and proceeds. The operator reads the NOTE, and proceeds. The operator proceeds to Step 4.2.	—	—	—
2	(ER-PRZR.1, Step 4.2/4.2.1) Perform the following to restore all or part of the PRZR Backup heaters: Verify SI has been reset (Annunciator K-6 clear). Reset SI if necessary.	The operator recognizes from the Initial Conditions that SI has been reset, and proceeds.	—	—	—
CUE	If the operator contacts the Control Room, as the CO, state that “MCB Annunciator K-6 is CLEAR.”				
3	(ER-PRZR.1, Step 4.2.2) Verify Emergency D/G B is supplying Bus 16.	The operator recognizes from the Initial Conditions that D/G B is supplying Bus 16, and proceeds.	—	—	—

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	If the operator contacts the Control Room, as the CO, state that "the B EDG is supplying Bus 16."				
4	(ER-PRZR.1, Step 4.2.3/4.2.3.1) To energize all PRZR Backup heaters (400 KW) perform the following: Verify Emergency D/G B load less than 1550 KW. IF NOT, THEN go to step 4.2.4.	The operator recognizes from the Initial Conditions that D/G B is loaded to 1650 KW, and proceeds to Step 4.2.4.	—	—	—
CUE	If the operator contacts the Control Room, as the CO, state that "the B EDG is loaded to 1650 KW."				
5	(ER-PRZR.1, Step 4.2.4/4.2.4.1) To energize a minimum of 125 KW of PRZR Backup heaters, perform the following: IF Emergency D/G B load is GREATER THAN 1825 KW, THEN evaluate plant status and reduce D/G loading to less than 1825 KW.	The operator recognizes that the B EDG is loaded to 1650 KW, marks the Step NA, and proceeds.	—	—	—
6	(ER-PRZR.1, Step 4.2.4.2) Dispatch an AO to the PRZR backup heater breaker panel (AUX BLDG intermediate floor by SFP Hx).	The operator proceeds to backup heater breaker panel ACPDPAB12.	—	—	—
	Examiner Note: ACPDPAB12 is located on the AB Middle level, behind 'A' SFP heat exchanger.				
CUE	When the operator identifies the location of ACPDPAB12, provide Handout 2. Due to potential safety concern with panel's elevation, after identifying the panel inform the operator that they may simulate/describe breaker actions on provided drawing.				

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*7	(ER-PRZR.1, Step 4.2.4.3) At ACPDPAB12 open all breaker switches EXCEPT Breaker Switch #4.	The operator places Breaker # 01 to OFF.	—	—	—
		The operator places Breaker # 02 to OFF.	—	—	—
		The operator places Breaker # 03 to OFF.	—	—	—
		The operator places Breaker # 05 to OFF.	—	—	—
		The operator places Breaker # 06 to OFF.	—	—	—
		The operator places Breaker # 07 to OFF.	—	—	—
		The operator places Breaker # 08 to OFF.	—	—	—
CUE	After the operator manipulates each breaker, state that "The Breaker Handle is in the OFF position."				
	Examiner Note: The Breaker manipulations can be accomplished in any order.				
	Examiner Note: Breakers in panel ACPDPAB12 are identical to the breakers in ACPDPAB13 in upcoming step.				
	Examiner Note: Nearest ladder station is on the wall next to the Spent Fuel Pool DI room gate				

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	When the operator identifies the location of ACPDPAB13, provide Handout 3. Due to potential safety concern with panel's elevation, after identifying the panel inform the operator that they may simulate/describe breaker actions on provided drawing.				
*8	(ER-PRZR.1, Step 4.2.4.4) At ACPDPAB13 open all breaker switches EXCEPT Breaker Switch #1, #3, and #6. (Total capacity available should be approximately 125 KW)	<p>The operator proceeds to the backup heater breaker panel ACPDPAB13.</p> <p>The operator places Breaker # 02 to OFF.</p>	—	—	—
		The operator places Breaker # 04 to OFF.	—	—	—
		The operator places Breaker # 05 to OFF.	—	—	—
CUE	After the operator manipulates each breaker, state that "The Breaker Handle is in the OFF position."				
9	(ER-PRZR.1, Step 4.2.4.5) Note Emergency D/G B wattmeter reading.	The operator contacts the Control Room and directs them to report B EDG Load.	—	—	—
CUE	When the operator contacts the Control Room, as the CO, state that "the B EDG is loaded to 1650 KW."				
*10	(ER-PRZR.1, Step 4.2.4.6) Place PRZR backup heater breaker switch to ON to load heaters onto Emergency D/G B.	The operator contacts the Control Room and requests them to place the PRZR backup heater breaker switch to ON.	—	—	—
CUE	When the operator contacts the Control Room, as the CO, state that "the PRZR Backup Heater Control Switch is in ON."				

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
11	(ER-PRZR.1, Step 4.2.4.7) Verify a minimum of 100 KW has been loaded on Emergency D/G B.	The operator contacts the Control Room and requests them to report B EDG Load.	—	—	—
CUE	When the operator contacts the Control Room, as the CO, state that “the B EDG is loaded to 1775 KW, and steady.”				

JPM Stop Time: _____

CUE: This terminates the JPM.

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2017 Systems NRC - In-Plant JPM I

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant was operating at 100% power when it experienced an SI coincident with a loss of all AC power.
- The B EDG is now running and carrying approximately 1650 KW on Buses 16 and 17.
- PRZR level is 20% and stable.
- SI has been RESET.
- The crew has taken all required actions needed to restore Pressurizer Heaters on the EDG.
- You are an extra Control Operator.

INITIATING CUE:

The US has directed you to energize a minimum 100 KW of PRZR BACKUP heaters per ER-PRZR.1, Restoration of PRZR Heaters During Blackout.

NOTE: No plant equipment should be operated during the performance of this JPM. All actions must be SIMULATED.

NRC EXAM

In-Plant JPM J

Job Performance Measure Worksheet

Facility: Ginna

Task No.:

Task Title: Take Local Manual Control of a Charging Pump

JPM No.: 2017 Systems NRC – In-Plant JPM J

K/A Reference: 004 A2.15 (3.5/3.7)

Examinee:

Examiner:

Facility Evaluator:

Date:

Method of testing:Simulated Performance: X

Actual Performance: _____

Classroom _____ Simulator _____ Plant X**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.

- Initial Conditions:
- A fire in the Cable Tunnel requires evacuation of the Control Room, and ER-FIRE.2, "Alternate Shutdown for Cable Tunnel Fire," is being implemented.
 - Attachment 4 of ER-FIRE.2 has been performed up to Step 8.0.
 - You are the CO

Initiating Cue: The US has directed you to start and control the A Charging Pump in accordance with procedure ER-FIRE.2, Attachment 4, Step 8.0, until charging flow is verified to the RCS.

Task Standard: The operator will start, control and initiate charging flow locally from the A Charging Pump per Attachment 4 of ER-FIRE.2.

Required Materials: PPE (Hardhat, Safety Glasses, Hearing Protection, Safety Shoes etc.)
Appendix "R" Locker key
Locked Valve key

General References: ER-FIRE.2, Alternate Shutdown for Cable Tunnel Fire, Rev. 034
2017 Systems NRC – In-Plant JPM J NUREG 1021, Revision 10

Job Performance Measure Worksheet

Handouts: Handout 1: Attachment 4, Control Operator (CO), of ER-FIRE.2 marked up to Step 8.0.

Handout 2: Internal view of the Local Control Cabinet used in JPM Step 6.

Time Critical Task: NO

Validation Time: 8 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.

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.

.....

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.				
NOTE To maintain radio communications from the charging pump room, it may be necessary to exit the room OR communicate from the doorway.					
CAUTION <ul style="list-style-type: none">Charging Pump A local/remote switch must be in local before placing DC control power switch to local.ABELIP may be affected by fire. Notify SM to monitor Charging Pump flow and PRZR level, if required.					
*1	(ER-FIRE.2, Step 8.0/8.1/8.1.1) PROCEED to Charging Pump Room. PERFORM the following to place Charging in service: PLACE the LOCAL/REMOTE switch for Charging Pump A to LOCAL.	The operator reads the NOTE, and proceeds. The operator places the Local/Remote switch for A Charging Pump to LOCAL.	—	—	—
CUE	The A Charging Pump Local/Remote switch is in LOCAL.				
*2	(ER-FIRE.2, Step 8.1.2) PLACE CHG PMP ALT DC 43A/CHP1A to LOCAL (in ABELIP).	The operator places the A Charging Pump alternate DC control power switch to LOCAL.	—	—	—
CUE	The A Charging Pump Alternate DC Control Power switch is in LOCAL.				

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*3	(ER-FIRE.2, Step 8.1.3) ENERGIZE the ABELIP by DEPRESSING the ON button located at the bottom of the cabinet.	At the ABELIP, the operator presses the ON button.	—	—	—
CUE	The ABELIP ON pushbutton is pressed.				
*4	(ER-FIRE.2, Step 8.1.4) CLOSE CHARGING PUMP DISCHARGE ISOLATION VALVE TO RCP SEAL INJECTION, V-289 (Above the Charging Pump Pulse Dampener).	The operator rotates the V-289 Handwheel in the Clockwise direction.	—	—	—
CUE	The Valve handwheel rotates freely, and then stops.				
*5	(ER-FIRE.2, Step 8.1.5) OPEN RWST MAKEUP AOV BYPASS VALVE TO CHARGING PUMP SUCTION, V-358 (in the overhead between A&B Charging Pumps).	The operator rotates the V-358 Handwheel 90° in the Counter-Clockwise direction.	—	—	—
CUE	The Valve handwheel rotates 90°, and then stops.				
*6	(ER-FIRE.2, Step 8.1.6) LOCALLY CLOSE Breaker 52/CHP1A by depressing PB-1/CHP1A, (in local control cabinet).	In the local control cabinet, the operator presses PB-1/CHP1A.	—	—	—
CUE	The sound of a breaker closing is heard.				
	Examiner Note: Provide a copy of Handout 2 (Cabinet internals) and have the operator demonstrate the action taken.				
7	(ER-FIRE.2, Step 8.1.7) At CHARGING PUMP A VFD/CHP1A, VERIFY white Power ON light is lit.	At CHARGING PUMP A VFD/CHP1A, the operator observes the White POWER ON light.	—	—	—
CUE	The White POWER ON light is LIT.				

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
8	(ER-FIRE.2, Step 8.1.8) At CHARGING PUMP A VFD/CHP1A, VERIFY Local/Remote Switch is in LOCAL.	At CHARGING PUMP A VFD/CHP1A, the operator places the Local/Remote Switch in LOCAL.	—	—	—
CUE	The A Charging Pump Local/Remote switch is in LOCAL.				
*9	(ER-FIRE.2, Step 8.1.9) START CHARGING PUMP A by Depressing the VFD Start button at VFD/CHP1A.	At CHARGING PUMP A VFD/CHP1A, the operator presses the A Charging Pump START pushbutton	—	—	—
CUE	The Red VFD RUNNING status light is LIT.				
*10	(ER-FIRE.2, Step 8.1.10) RAISE CHARGING PUMP A speed to $1,360 \pm 10$ RPM by using the Speed Command Potentiometer local controls at VFD/CHP1A.	At CHARGING PUMP A VFD/CHP1A, the operator adjusts the Speed Command Potentiometer to $1,360 \pm 10$ RPM.	—	—	—
CUE	The speed (located on the digital display panel) indicates 1,360 RPM.				
11	(ER-FIRE.2, Step 8.1.11) NOTIFY SM that CHARGING PUMP A is running.	The operator contacts Shift Manager on the radio and indicates that the Charging Pump is running.	—	—	—
CUE	The SM Acknowledges, and directs that Pressurizer Level be raised to 40%.				
*12	(ER-FIRE.2, Step 9.0) VERIFY PRZR level GREATER THAN 15% and STABLE OR RISING. IF NOT, THEN RAISE charging flow.	At the ABELIP, the operator observes Pressurizer Level	—	—	—
CUE	Pressurizer Level is 30% and slowly lowering.				

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
12 (Cont'd)		At CHARGING PUMP A VFD/CHP1A, the operator adjusts the Speed Command Potentiometer clockwise.	—	—	—
CUE	Pressurizer Level is 31% and slowly rising.				

JPM Stop Time: _____

CUE: This terminates the JPM.

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2017 Systems NRC - In-Plant JPM J

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- A fire in the Cable Tunnel requires evacuation of the Control Room, and ER-FIRE.2, "Alternate Shutdown for Cable Tunnel Fire," is being implemented.
- Attachment 4 of ER-FIRE.2 has been performed up to Step 8.0.
- You are the CO

INITIATING CUE:

The US has directed you to start and control the A Charging Pump in accordance with procedure ER-FIRE.2, Attachment 4, Step 8.0, until charging flow is verified to the RCS.

NOTE: No plant equipment should be operated during the performance of this JPM. All actions must be SIMULATED.

NRC EXAM

In-Plant JPM K

Job Performance Measure Worksheet

Facility: Ginna

Task No.:

Task Title: Locally Open the Rx Trip Breakers

JPM No.: 2017 Systems NRC –
In-Plant JPM K

K/A Reference: EPE 029 EA1.11 (3.9/4.1)

Examinee:

Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: X Actual Performance:
Classroom Simulator Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.

- Initial Conditions:
- The plant has experienced a reactor trip signal and the crew entered procedure E-0, Reactor Trip or Safety Injection.
 - The reactor trip could not be verified, and the crew entered FR-S.1, Response to Reactor Restart/ATWS.
 - You are an extra Control Operator.

Initiating Cue: The US has directed you to locally depress the trip pushbutton for BOTH Control Rod Drive Motor Generator Set Breakers at the CRDM Control Panel per the Step 1 RNO of FR-S.1.

Task Standard: The operator will attempt to trip the Control Rod Drive Motor Generator Set Breaker(s); and when it is discovered that the 52-2/MG1B will not trip, manually trip both Rx Trip Breakers when directed.

Required Materials: PPE (Hardhat, Safety Glasses, Hearing Protection, Safety Shoes etc.)

General References: E-0, Reactor Trip or Safety Injection, Rev. 048
FR-S.1, Response to Reactor Restart/ATWS, Rev. 021

Handouts: Handout 1: Blank copy of Page 3 of 17 of FR-S.1.

Time Critical Task: NO

Validation Time: 4 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.

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.

.....

PERFORMANCE INFORMATION

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE	Provide Candidate with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.				
*1	(FR-S.1, Step 1 RNO) Dispatch EO to locally DEPRESS trip button for BOTH Control Rod Drive Motor Generator Set breakers at CRDM Control Panel: 52-1/MG1A, CRD MG SET A BKR	The operator presses the TRIP pushbutton for 52-1/MG1A. The operator observes the Breaker Flag.	—	—	—
CUE	The sound of the breaker operating is heard, and the Green OPEN flag is showing.				
	Examiner Note: The operator may trip the MG Set Breakers in ANY order.				
	Examiner Note: If the operator attempts to trip the 52-2/MG1B first, it will not trip, and Step 1 is NOT critical.				
*2	(FR-S.1, Step 1 RNO) Dispatch EO to locally DEPRESS trip button for BOTH Control Rod Drive Motor Generator Set breakers at CRDM Control Panel: 52-2/MG1B, CRD MG SET B BKR	The operator presses the TRIP pushbutton for 52-2/MG1B. The operator observes the Breaker Flag.	—	—	—
CUE	The sound of the breaker operating is NOT heard, and the Red CLOSED flag is showing.				
		The operator contacts the Control Room and reports that the 52-2/MG1B will not manually trip.	—	—	—
CUE	As the US direct that the operator locally trip the Reactor Trip Breakers.				
*3	(US Directed Action) Locally trip 52/RTA.	The operator presses the TRIP pushbutton for 52/RTA. The operator observes the Breaker Flag.	—	—	—
CUE	The sound of the breaker operating is heard, and the Green OPEN flag is showing.				

PERFORMANCE INFORMATION

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
	Examiner Note: The operator may trip the Rx Trip Breakers in ANY order.				
4	(US Directed Action) Locally trip 52/RTB.	<p>The operator presses the TRIP pushbutton for 52/RTB.</p> <p>The operator observes the Breaker Flag.</p>	—	—	—
CUE	The sound of the breaker operating is heard, and the Green OPEN flag is showing.				

JPM Stop Time: _____

CUE: This terminates the JPM.

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2017 Systems NRC - In-Plant JPM K

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Name _____ (print)

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant has experienced a reactor trip signal and the crew entered procedure E-0, Reactor Trip or Safety Injection.
- The reactor trip could not be verified, and the crew entered FR-S.1, Response to Reactor Restart/ATWS.
- You are an extra Control Operator.

INITIATING CUE:

The US has directed you to locally depress the trip pushbutton for BOTH Control Rod Drive Motor Generator Set Breakers at the CRDM Control Panel per the Step 1 RNO of FR-S.1.

NOTE: No plant equipment should be operated during the performance of this JPM. All actions must be SIMULATED.

Facility:	Ginna	Scenario No.:	1	Op Test No.:	N17-1
Examiners:	_____	Operators:	_____	(SRO)	
	_____		_____	(RO)	
	_____		_____	(BOP)	
Initial Conditions:		The plant is at 100% power (EOL). The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. Per the daily work schedule, CROI-7, Swapping Service Water Pumps, is to be performed this shift, swapping the C for the D Service Water pumps.			
Turnover:		The following equipment is Out-Of-Service: The D SAFW Pump is OOS for breaker maintenance, and the Condensate Booster Pump A is OOS for thrust bearing replacement.			
Event No.	Malf. No.	Event Type*	Event Description		
1	1	C-BOP C(TS)-SRO	Swap Service Water Pumps/D Service Water Pump Trip		
2	2	C-RO C(TS)-SRO	Leak on the CCW System/B CCW Pump Trips		
3	3	I-BOP I-RO I(TS)-SRO	PZR Level Channel 427 fails LOW		
4	4	R-RO N-BOP N-SRO	Turbine Control Valve CV-L4 Drifts Closed/Downpower		
5	5	M-RO M-BOP M-SRO	Steamline Break in Intermediate Building/Delayed closure of MSIVs		
6	6	C-RO C-SRO	Automatic Rx Trip fails		
7	5	C-RO C-SRO	MDAFW and TDAFW Pumps fail to start		
8	NA	C-BOP C-SRO	D SAFW Pump is restored		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Ginna 2017 NRC Scenario #1

The plant is at 100% power (EOL). The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. Per the daily work schedule, CROI-7, Swapping Service Water Pumps, is to be performed this shift, swapping the D for the C Service Water Pumps.

The following equipment is Out-Of-Service: The D SAFW Pump is OOS for breaker maintenance, and the Condensate Booster Pump A is OOS for thrust bearing replacement.

Shortly after taking the watch, the operator will swap the C and the D Service Water Pumps in accordance with P-17, "Operations Control Room Operating Instructions." Because of restrictions on running four Service Water Pumps simultaneously, the operator will likely stop the C Service Water Pump prior to starting the D Service Water Pump. When the operator stops the C Service Water Pump, its Discharge Check Valve will stick partially open, resulting in lower system pressure, even after the D Service Water Pump is started. The operator may restart the pump based on these indications, or enter AP-SW.1, "Service Water Leak." When the C SW Pump is restarted the D Service Water Pump will trip. The operator will respond in accordance with AR-J-9, "SAFEGUARDS BREAKER TRIP," and AP-SW.2, "Loss of Service Water." The operator will address Technical Specification LCO 3.7.8, "Service Water (SW) System."

Following this, a CCW System Supply Relief Valve will lift and fail to reseal causing a 30 gpm CCW System leak. Approximately two minutes afterwards the B CCW Pump will trip, and the A CCW Pump will automatically start. The operator will respond in accordance with AR-A-17, "MOTOR OFF RCP CCWP," and enter AP-CCW.2, "Loss of CCW During Power Operation." The operator will address Technical Specification LCO 3.7.7, "Component Cooling Water System."

Subsequently, Pressurizer Level Channel 427 will fail LOW, resulting in letdown isolation and de-energizing the pressurizer heaters. The crew will respond per AR-F-11, "PZR LOW LEVEL 13%," and ER-INST.1, "Reactor Protection Bistable Defeat After Instrumentation Loop Failure." They will defeat the failed channel, reset PZR heaters, reduce charging to a single charging pump, and re-establish letdown per S-3.2.E, "Placing In or Removing From Service Normal Letdown/Excess Letdown." The crew will start a second charging pump and slowly restore PZR level to program (56%). The operator will address Technical Specification LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation" and LCO 3.4.9, "Pressurizer."

Then, turbine control valve CVL-4 will drift closed. The crew will respond per AP-TURB.2, "Turbine Load Rejection," begin a load reduction to less than 50% power using AP-TURB.5, "Rapid Load Reduction."

After this, a large steam break occurs downstream of the MSIVs in the Intermediate Building, and both MSIVs will fail to automatically or manually close. Simultaneously, the reactor will fail to trip automatically. The operator will need to manually trip the Reactor. Additionally, all AFW Pumps fail to start due to the high-energy break. The crew will implement E-0, "Reactor Trip or Safety Injection."

Both MSIVs will automatically close after 90 seconds. The crew will transition to FR-H.1, "Response to Loss of Secondary Heat Sink," at Step 9 of E-0; and will be required to initiate RCS Bleed and Feed. Upon successful implementation of RCS Bleed and Feed, the D SAFW Pump will become available, and the crew will restore a feed source to the B S/G in accordance with ATT-22.0, "Attachment Restoring Feed Flow."

The scenario will terminate at Step 27.b of FR-H.1, after feed flow has been restored from the D SAFW Pump.

Critical Tasks:**Manually trip the reactor from the control room before transition to FR-S.1 (EOP Based)**

Safety Significance: Failure to manually trip the reactor causes a challenge to the subcriticality CSF beyond that irreparably introduced by the postulated conditions. Additionally, it constitutes an "incorrect performance that necessitates the crew taking action which complicates the event mitigation strategy that demonstrates the inability by the crew to recognize a failure of the automatic actuation of the RPS.

Establish RCS bleed and feed so that the RCS depressurizes sufficiently such that the SI Pumps inject flow (EOP-Based)

Safety Significance: Failure to initiate RCS bleed and feed before the RCS saturates at a pressure above the shutoff head of the high-head ECCS pumps results in significant and sustained core uncover. If RCS bleed is initiated so that the RCS is depressurized below the shutoff head of the high-head ECCS pumps, then core uncover is prevented or minimized.

PROGRAM: Ginna Operations Training

MODULE: Initial License Operator Training Class 15-1

TOPIC: NRC Simulator Exam

Scenario N17-1-1

REFERENCES:

1. Technical Specification LCO 3.7.5, "Auxiliary Feedwater (AFW) System" (Amendment 88)
2. P-17, "Operations Control Room Operating Instructions" (Rev 01800)
3. AR-PPCS-P2160, "SERVICE WATER PUMPS A & B HEADER" (Rev 00001)
4. AR-PPCS-P2161, "SERVICE WATER PUMPS C & D HEADER" (Rev 00001)
5. AP-SW.1, "Service Water Leak" (Rev 02300)
6. AP-SW.2, "Loss of Service Water" (Rev 00801)
7. AR-J-9, "SAFEGUARDS BREAKER TRIP" (Rev 12)
8. Technical Specification LCO 3.7.8, "Service Water (SW) System" (Amendment 102)
9. AR-A-17, "MOTOR OFF RCP CCWP" (Rev 8)
10. AP-CCW.2, "Loss of CCW During Power Operation" (Rev 02300)
11. Technical Specification LCO 3.7.7, "Component Cooling Water System" (Amendment 80)
12. AR-F-11, "PZR LOW LEVEL 13%" (Rev 4)
13. ER-INST.1, "Reactor Protection Bistable Defeat After Instrumentation Loop Failure" (Rev 037)
14. S-3.2E, "Placing In or Removing From Service Normal Letdown/Excess Letdown" (Rev 02700)
15. Technical Specification LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation" (Amendment 112)
16. Technical Specification LCO 3.4.9, "Pressurizer" (Amendment 80)
17. AP-TURB.2, "Turbine Load Rejection" (Rev 02400)
18. AP-TURB.5, "Rapid Load Reduction" (Rev 01700)
19. E-0, "Reactor Trip or Safety Injection" (Rev 048)
20. FR-H.1, "Response to Loss of Secondary Heat Sink" (Rev 04100)
21. ATT-12.0, "Attachment N2 PORVS" (Rev 6)
22. ATT-27.0, "Attachment Automatic Actuation Verification" (Rev 00400)
23. ATT-22.0, "Attachment Restoring Feed Flow" (Rev 00700)
24. ATT-5.1, "Attachment SAFW From SW" (Rev 01200)

Validation Time: 105 minutes

Author: David Lazarony, Essential Training & Consulting, LLC

Facility Review: _____

Rev. 022117

Scenario Event Description
NRC Scenario 1

Facility:	Ginna	Scenario No.:	1	Op Test No.:	N17-1
Examiners:	_____	Operators:	_____	(SRO)	
	_____		_____	(RO)	
	_____		_____	(BOP)	
Initial Conditions:		The plant is at 100% power (EOL). The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. Per the daily work schedule, CROI-7, Swapping Service Water Pumps, is to be performed this shift, swapping the C for the D Service Water pumps.			
Turnover:		The following equipment is Out-Of-Service: The D SAFW Pump is OOS for breaker maintenance, and the Condensate Booster Pump A is OOS for thrust bearing replacement.			
Event No.	Malf. No.	Event Type*	Event Description		
1	1	C-BOP C(TS)-SRO	Swap Service Water Pumps/D Service Water Pump Trip		
2	2	C-RO C(TS)-SRO	Leak on the CCW System/B CCW Pump Trips		
3	3	I-BOP I-RO I(TS)-SRO	PZR Level Channel 427 fails LOW		
4	4	R-RO N-BOP N-SRO	Turbine Control Valve CV-L4 Drifts Closed/Downpower		
5	5	M-RO M-BOP M-SRO	Steamline Break in Intermediate Building/Delayed closure of MSIVs		
6	6	C-RO C-SRO	Automatic Rx Trip fails		
7	5	C-RO C-SRO	MDAFW and TDAFW Pumps fail to start		
8	NA	C-BOP C-SRO	D SAFW Pump is restored		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Scenario Event Description
NRC Scenario 1

Ginna 2017 NRC Scenario #1

The plant is at 100% power (EOL). The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. Per the daily work schedule, CROI-7, Swapping Service Water Pumps, is to be performed this shift, swapping the C for the D Service Water pumps.

The following equipment is Out-Of-Service: The D SAFW Pump is OOS for breaker maintenance, and the Condensate Booster Pump A is OOS for thrust bearing replacement.

Shortly after taking the watch, the operator will swap the C and the D Service Water Pumps in accordance with P-17, "Operations Control Room Operating Instructions." Because of restrictions on running four Service Water Pumps simultaneously, the operator will likely stop the C Service Water Pump prior to starting the D Service Water Pump. When the operator stops the C Service Water Pump, its Discharge Check Valve will stick partially open, resulting in lower system pressure, even after the D Service Water Pump is started. The operator may restart the pump based on these indications, or enter AP-SW.1, "Service Water Leak." When the C SW Pump is re-started the D Service Water Pump will trip. The operator will respond in accordance with AR-J-9, "SAFEGUARDS BREAKER TRIP," and AP-SW.2, "Loss of Service Water." The operator will address Technical Specification LCO 3.7.8, "Service Water (SW) System."

Following this, a CCW System Supply Relief Valve will lift and fail to reseal causing a 30 gpm CCW System leak. Approximately two minutes afterwards the B CCW Pump will trip, and the A CCW Pump will automatically start. The operator will respond in accordance with AR-A-17, "MOTOR OFF RCP CCWP," and enter AP-CCW.2, "Loss of CCW During Power Operation." The operator will address Technical Specification LCO 3.7.7, "Component Cooling Water System."

Subsequently, Pressurizer Level Channel 427 will fail LOW, resulting in letdown isolation and de-energizing the pressurizer heaters. The crew will respond per AR-F-11, "PZR LOW LEVEL 13%," and ER-INST.1, "Reactor Protection Bistable Defeat After Instrumentation Loop Failure." They will defeat the failed channel, reset PZR heaters, reduce charging to a single charging pump, and re-establish letdown per S-3.2.E, "Placing In or Removing From Service Normal Letdown/Excess Letdown." The crew will start a second charging pump and slowly restore PZR level to program (56%). The operator will address Technical Specification LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation" and LCO 3.4.9, "Pressurizer."

Then, turbine control valve CVL-4 will drift closed. The crew will respond per AP-TURB.2, "Turbine Load Rejection," begin a load reduction to less than 50% power using AP-TURB.5, "Rapid Load Reduction."

After this, a large steam break occurs downstream of the MSIVs in the Intermediate Building, and both MSIVs will fail to automatically or manually close. Simultaneously, the reactor will fail to trip automatically. The operator will need to manually trip the Reactor. Additionally, all AFW pumps fail to start due to the high-energy break. The crew will implement E-0, "Reactor Trip or Safety Injection."

Both MSIVs will automatically close after 90 seconds. The crew will transition to FR-H.1, "Response to Loss of Secondary Heat Sink," at Step 9 of E-0; and will be required to initiate RCS Bleed and Feed. Upon successful implementation of RCS Bleed and Feed, the D SAFW

Scenario Event Description
NRC Scenario 1

Pump will become available, and the crew will restore a feed source to the B S/G in accordance with ATT-22.0, "Attachment Restoring Feed Flow."

The scenario will terminate at Step 27.b of FR-H.1, after feed flow has been restored from the D SAFW Pump.

Critical Tasks:

Manually trip the reactor from the control room before transition to FR-S.1 (EOP Based)

Safety Significance: Failure to manually trip the reactor causes a challenge to the subcriticality CSF beyond that irreparably introduced by the postulated conditions. Additionally, it constitutes an "incorrect performance that necessitates the crew taking action which complicates the event mitigation strategy that demonstrates the inability by the crew to recognize a failure of the automatic actuation of the RPS.

Establish RCS bleed and feed so that the RCS depressurizes sufficiently such that the SI Pumps inject flow (EOP-Based)

Safety Significance: Failure to initiate RCS bleed and feed before the RCS saturates at a pressure above the shutoff head of the high-head ECCS pumps results in significant and sustained core uncover. If RCS bleed is initiated so that the RCS is depressurized below the shutoff head of the high-head ECCS pumps, then core uncover is prevented or minimized.

Scenario Event Description
NRC Scenario 1

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>		Reset to Temp IC 155 (Originally IC-24).	<p>T = 0 (From IC-24):</p> <p>Take D SAFW Pump Control Switch to PULL STOP</p> <p>Close MOV 9701B</p> <p>OVR [DO] FDW35B=OFF</p> <p>OVR [DO] FDW37B=OFF</p> <p>OVR [DO] FDW43B=OFF</p> <p>Take A CB Pump Control Switch to TRIP</p> <p>Insert OVR-CND04A=OFF</p> <p>Hang LOTO Tags as necessary</p> <p>Set Trigger #30 = x06i188a==1 (C SWP CS to STOP)</p> <p>Insert MALF CLG09C, 50%, T-30 (SWP C Discharge Check Valve fails OPEN)</p> <p>Set Trigger #29 = x06i188b==1 (C SWP CS to CLOSE)</p> <p>Insert MALF CLG01D T-29 (SWP D Trip)</p> <p>Insert MALF RPS05A, MAN AVAIL (Reactor trip breaker A failure)</p> <p>Insert MALF RPS05B, MAN AVAIL (Reactor trip breaker B failure)</p> <p>Insert MALF FDW12=0 (TD AFW Pump Trips on Overspeed)</p> <p>Insert MALF FDW11A (A MDAFW Pump fails to START)</p> <p>Insert MALF FDW11B (B MDAFW Pump fails to START)</p> <p>Insert MALF FDW15A (C SAFW Pump fails to START)</p> <p>Insert MALF CLG05 (30 gpm, No Ramp) on T-1</p> <p>Insert CLG02B (B CCW Pump Trip 2 Minute Delayed) on T-1</p> <p>Insert MALF PZR03B (0, No Ramp) on T-2</p> <p>Insert TUR11B (0 over 20 seconds) on T-3</p> <p>Insert MALF STM03 (2.4E7 No Ramp) on T-4</p> <p>Insert MALF STM05A = OPEN on T-4 (Delete after 90 seconds)</p> <p>Insert MALF STM05B = OPEN on T-4 (Delete after 90 seconds)</p> <p>Insert MALF FPS01-Z37 on T-4 (delayed 10 seconds)</p> <p>Insert MALF FPS01-Z38 on T-4 (delayed 10 seconds)</p>
<input type="checkbox"/>	Prior to Crew Briefing		<ul style="list-style-type: none"> Hang Protective Tags per OPG-Protective Equipment.

Scenario Event Description
NRC Scenario 1

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	Crew Briefing <ul style="list-style-type: none"> Assign Crew Positions based on evaluation requirements Review the Shift Turnover Information with the crew. Provide the crew with a copy of P-17. Handout current Reactivity Plan 		
<input type="checkbox"/>	T-0	Begin Familiarization Period	
<input type="checkbox"/>	At direction of examiner	Event 1 CLG09C (50%) (T-30) CLG01D (T-29)	Swap Service Water Pumps/D Service Water Pump Trip T-30 (C SWP CS to STOP), Discharge Check Valve sticks OPEN T-29 (C SWP CS to CLOSE), D SWP Trips Note: These malfunctions are inserted at T=0
<input type="checkbox"/>	At direction of examiner	Event 2 Trigger#1 CLG05 (30 gpm, No Ramp) CLG02B (B CCW Pump Trip 2 Minute Delayed)	Leak on the CCW System/B CCW Pump Trips
<input type="checkbox"/>	At direction of examiner	Event 3 Trigger#2 PZR03B (0, NO Ramp)	PZR Level Channel 427 fails LOW
<input type="checkbox"/>	At direction of examiner	Event 4 Trigger#3 TUR11B (0 over 20 seconds)	Turbine Control Valve CV-L4 Drifts Closed/Downpower

Scenario Event Description
NRC Scenario 1

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	At direction of examiner	Event 5 Trigger #4 STM03 (2.4E7 No Ramp) STM05A = OPEN (Delete after 90 seconds) STM05B = OPEN (Delete after 90 seconds) FPS01-Z37 (Delayed 10 seconds) FPS01-Z38 (Delayed 10 seconds)	Steamline Break in Intermediate Building/Delayed closure of MSIVs
<input type="checkbox"/>	Post-Rx Trip	Event 6 RPS05A RPS05B	Automatic Rx Trip fails Note: These malfunctions are inserted at T=0.
<input type="checkbox"/>	Post-Rx Trip	Event 7 FDW12=0 FDW11A FDW11B FDW15	MDAFW and TDAFW Pumps fail to start Note: These malfunctions are inserted at T=0.
<input type="checkbox"/>	At direction of examiner	Event 8 Close MOV 9701B OVR [DO]-FDW35B=OFF OVR [DO]-FDW37B=OFF OVR [DO]-FDW43B=OFF	D SAFW Pump is restored Note: These malfunctions are inserted at T=0. When directed remove MALF/OVRs.
<input type="checkbox"/>	Terminate the scenario upon direction of Lead Examiner		

Op Test No.: N17-1 Scenario # 1 Event # 1 Page 8 of 59Event Description: **Swap Service Water Pumps/D Service Water Pump Trip**

Shortly after taking the watch, the operator will swap the C and the D Service Water Pumps in accordance with P-17, "Operations Control Room Operating Instructions." Because of restrictions on running four Service Water Pumps simultaneously, the operator will likely stop the C Service Water Pump prior to starting the D Service Water Pump. When the operator stops the C Service Water Pump, its Discharge Check Valve will stick partially open, resulting in lower system pressure, even after the D Service Water Pump is started. The operator may restart the pump based on these indications, or enter AP-SW.1, "Service Water Leak." When the C SW Pump is re-started the D Service Water Pump will trip. The operator will respond in accordance with AR-J-9, "SAFEGUARDS BREAKER TRIP," and AP-SW.2, "Loss of Service Water." The operator will address Technical Specification LCO 3.7.8, "Service Water (SW) System."

SIM DRIVER Instructions: **NA (All Malfunctions will occur based on MCB Manipulations)**

Indications Available: **NA**

Time	Pos.	Expected Actions/Behavior	Comments
P-17, OPERATIONS CONTROL OPERATING INSTRUCTIONS ATTACHMENT 7, CROI SWAPPING SERVICE WATER PUMPS			
	CO	(Step 1.1) IF Service Water system chlorination is in service, THEN NOTIFY Chemistry prior to alternating SW pumps. OTHERWISE, MARK this Step N/A.	NOTE: The Service Water system chlorination is NOT in service.
	CO	(Step 1.2) IF required, THEN THROTTLE CCW HX A SW OUTLET ISOL VLV, V-4619 AND CCW HX B SW OUTLET ISOL VLV, V-4620, as necessary to obtain SW header pressure 55-60 psig as indicated on PI-2160 and PI-2161.	NOTE: This action will not be required.
	CO	(Step 7.1) STOP C Service Water Pump	NOTE: It is likely that the crew will stop the C SW Pump and then start the D SW Pump. If not, follow the actions of Step 8.1 through 8.3, and then return here.

Op Test No.: N17-1 Scenario # 1 Event # 1 Page 9 of 59Event Description: **Swap Service Water Pumps/D Service Water Pump Trip**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 7.2) VERIFY motor heater for C Service Water Pump energized.	NOTE: The CO will contact the EO. SIM DRIVER: as EO, acknowledge; and report de-energized. (Not simulated)
	CO	(Step 7.3) VERIFY C Service Water Pump is NOT rotating.	NOTE: The CO will contact the EO. SIM DRIVER: as EO, acknowledge, and report that the C SW Pump Shaft is rotating backwards .
	CO	(Step 7.4) VERIFY Service Water header pressure on PI-2160 and PI-2161 lowers.	
	CO	(Step 8.1) START D Service Water Pump	
	CO	(Step 8.2) VERIFY motor heater for D Service Water Pump de-energized.	NOTE: The CO will contact the EO. SIM DRIVER: as EO, acknowledge; and report de-energized. (Not simulated)
	CO	(Step 8.3) VERIFY Service Water header pressure on PI-2160 and PI-2161 rises.	Examiner NOTE: The SW Header Pressure will be lower than expected, AND the US may direct re-start of the C SW Pump after the D SW Pump is started. If so, the D SW Pump will TRIP when the C SW Pump is started. In this case the Examiner should move forward to actions associated with AR-J-9 (Page 12). If NOT, continue to AR-PPCS-P2160/P2161 actions.

Op Test No.: N17-1 Scenario # 1 Event # 1 Page 10 of 59Event Description: **Swap Service Water Pumps/D Service Water Pump Trip**

Time	Pos.	Expected Actions/Behavior	Comments
AR-PPCS-2160 (2161), SERVICE WATER PUMPS A & B (C & D) HEADER			
	CO	(Step 1) IF alarms are due to additional cooling demand because of warmer lake temperatures, THEN ensure 3 SW pumps are operating.	NOTE: The US may direct the re-start of the C SW Pump.
	US	(Step 2) Refer to the appropriate procedure:	
		<ul style="list-style-type: none"> IF a SW leak is suspected, THEN go to AP-SW.1. 	NOTE: The US will go to AP-SW.1.
		<ul style="list-style-type: none"> IF a loss of SW is suspected, THEN go to AP-SW.2. 	
			Examiner NOTE: The SW Header Pressure will be lower than expected, AND the US may direct re-start of the C SW Pump. If so, the D SW Pump will TRIP Move Forward to actions associated with AR-J-9. If NOT, continue to AR-PPCS-P2160/P2161 actions.
AP-SW.1, SERVICE WATER LEAK			
	CO	(Step 1) Verify 480V AC Emergency Busses 17 and 18 - ENERGIZED	
	CO	(Step 2) Verify At Least One SW Pump Running In Each Loop:	NOTE: The A and B and D SW Pumps are running.
		<ul style="list-style-type: none"> A or B Pump in loop A 	
		<ul style="list-style-type: none"> C or D Pump in loop B 	
	CO	(Step 3) Check SW System Status:	
		<ul style="list-style-type: none"> Check SW loop header pressures 	

Op Test No.: N17-1 Scenario # 1 Event # 1 Page 11 of 59Event Description: **Swap Service Water Pumps/D Service Water Pump Trip**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Pressure in both loops – APPROXIMATELY EQUAL 	NOTE: Pressure in the A loop is higher than in the B loop due to the C Pump discharge Check Valve stuck partially open.
	CO	(Step 3.a RNO) IF three SW pumps operating and either loop pressure is less than 40 psig, THEN.....	NOTE: Neither condition is met.
		If only two SW pumps operating and either loop pressure less than 45 psig, THEN....	
	CO	(Step 3.b) Check SW loop header pressures – GREATER THAN 55 PSIG.	NOTE: With the C SW Pump discharge check valve partially stuck open, the B Loop pressure is not greater than 55 psig.
	CO	(Step 3.b RNO) IF either SW loop pressure is less than 55 PSIG with three SW pumps running AND cause can NOT be corrected, THEN....	NOTE: The cause of the lower B loop pressure condition can be started by starting the C SW Pump (Note prior to Step 3).
	CO	(Step 4) Check For SW Leakage In CNMT:	NOTE: There is no SW leak in the Containment.
		<ul style="list-style-type: none"> Check Sump A indication 	
		<ul style="list-style-type: none"> Sump A level - RISING 	
		OR	
		<ul style="list-style-type: none"> Sump A pump start frequency – RISING (Refer to RCS Daily Leakage Log) 	
	US	(Step 4 RNO) IF the SW leak is NOT in the CNMT, THEN go to Step 6.	

Op Test No.: N17-1 Scenario # 1 Event # 1 Page 12 of 59Event Description: **Swap Service Water Pumps/D Service Water Pump Trip**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 6) Dispatch AO To Screenhouse To Perform The Following:	NOTE: The CO will contact the EO. SIM DRIVER: as EO, acknowledge, and report that the C SW Pump Shaft is rotating backwards .
		• Verify idle SW pump check valve closed	
		• Idle pump shaft stopped	
	CO	(Step 6 RNO) Notify the Control Room of any indication of check valve failure.	Examiner NOTE: It is expected that the US will direct the re-start of the C SW Pump based on the Note prior to Step 3 of AP-SW.1.
AR-J-9, SAFEGUARD BREAKER TRIP			
	US	IF alarm is due to loss of SW pump(s), THEN refer to AP-SW.2	NOTE: The US will address AP-SW.2.
AP-SW.2, LOSS OF SERVICE WATER			
	CO	(Step 1) Verify 480V AC Emergency Busses 17 and 18 - ENERGIZED	
	CO	(Step 2) Verify SW Pump Alignment:	NOTE: The A and B SW Pumps are running.
		• Check At Least One SW Pump Running In Each Loop:	
		• A or B Pump in loop A	
		• C or D Pump in loop B	
		• Return to procedure or guidance in effect.	NOTE: The US may call WCC/Electrical Maintenance to address the tripped D SW Pump and stuck open check valve on the C SW Pump. If so, SIM DRIVER acknowledge as WCC/Electrical Maintenance.

Op Test No.: N17-1 Scenario # 1 Event # 1 Page 13 of 59Event Description: **Swap Service Water Pumps/D Service Water Pump Trip**

Time	Pos.	Expected Actions/Behavior			Comments
					NOTE: The US will address Technical Specifications.
TECHNICAL SPECIFICATION 3.7.8, SERVICE WATER (SW) SYSTEM					
	US	LCO 3.7.8 four SW pumps and the SW loop header shall be OPERABLE.			
	US	APPLICABILITY: MODES 1, 2, 3, and 4.			
		ACTIONS			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	NOTE: The US will identify that Condition A is applicable.
		A. One SW pump inoperable.	A.1 Restore SW pump to OPERABLE status.	14 days	
At the discretion of the Lead Examiner move to Event #2.					

Op Test No.: N17-1 Scenario # 1 Event # 2 Page 14 of 59Event Description: **Leak on the CCW System/B CCW Pump Trips**

Following this, a CCW System Supply Relief Valve will lift and fail to reseat causing a 30 gpm CCW System leak. Approximately two minutes afterwards the B CCW Pump will trip, and the A CCW Pump will automatically start. The operator will respond in accordance with AR-A-17, "MOTOR OFF RCP CCWP," and enter AP-CCW.2, "Loss of CCW During Power Operation." The operator will address Technical Specification LCO 3.7.7, "Component Cooling Water System."

SIM DRIVER Instructions: Operate Trigger #1 (CLG05 (30 gpm), CLG02B (2 minutes delayed))

Indications Available:

- CCW Surge Tank Level starts to lower.
- Two minutes later, the B CCW Pump trips and the A CCW Pump starts automatically
- MCB Annunciator A-17; MOTOR OFF RCP CCWP
- MCB Annunciator A-22; CCW PUMP DISCHARGE LO PRESS (In and out)
- MCB Annunciator A-13, CCW SURGE TANK LO LEVEL 41.2%

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The crew may enter AP-CCW.2 directly.
AR-A-17, MOTOR OFF RCP CCWP			
	HCO	(Step 1) Verify which motor tripped.	
	HCO	(Step 2) IF a RCP has tripped, THEN.....	NOTE: An RCP has NOT tripped.
	US	(Step 3) IF a CCW pump has tripped, THEN go to the applicable AP-CCW procedure:	
		<ul style="list-style-type: none"> • AP-CCW.2 (LOSS OF CCW DURING POWER OPERATION) 	
			NOTE: The US will go to AP-CCW.2.
AP-CCW.2, LOSS OF CCW DURING POWER OPERATION			
	HCO	(Step 1) Check CCW Pump Status:	
		<ul style="list-style-type: none"> • Both CCW pump breaker white lights – EXTINGUISHED 	
		<ul style="list-style-type: none"> • Annunciator A-17, MOTOR OFF RCP CCWP - EXTINGUISHED 	

Op Test No.: N17-1 Scenario # 1 Event # 2 Page 15 of 59Event Description: **Leak on the CCW System/B CCW Pump Trips**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 1 RNO) Perform the following:	
		<ul style="list-style-type: none"> Ensure standby CCW pump running. 	
		IF no CCW pump can be operated, THEN.....	NOTE: The A CCW Pump is running.
		<ul style="list-style-type: none"> IF annunciator A-22, CCW PUMP DISCHARGE LO PRESS 60 PSI, lit, THEN..... 	NOTE: Annunciator A-22 is NOT lit.
	HCO	(*Step 2) Monitor CCW Surge Tank Level – APPROXIMATELY 50% AND STABLE....	NOTE: This is a Continuous Action. The US will make one or more board operators aware. NOTE: The CCW Surge Tank Level is lowering.
	HCO	(Step 2 RNO) Perform the following:	
		<ul style="list-style-type: none"> Open RMW to CCW surge tank, MOV-823. 	
		<ul style="list-style-type: none"> Start RMW pump(s). 	NOTE: The HCO may start one or both RMW Pumps.
		<ul style="list-style-type: none"> IF surge tank level stable or rising, THEN control level at approximately 50% while continuing with Step 3. 	NOTE: The makeup flow into the CCW Surge Tank will be able to stabilize the tank level.
	HCO	(*Step 3) Monitor CCW Hx Outlet Temperature (MCB rear or PPCS point ID T0621)	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> CCW Hx Outlet temperature – LESS THAN 120°F 	
	HCO	(*Step 4) Monitor RCP Indications:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.

Op Test No.: N17-1 Scenario # 1 Event # 2 Page 16 of 59Event Description: **Leak on the CCW System/B CCW Pump Trips**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Annunciator A-7 (A-15), RCP 1A (1B) CCW return Hi Temp or low flow 165 gpm 125°F alarm – EXTINGUISHED 	
		<ul style="list-style-type: none"> RCP motor bearings temperature (PPCS Group Display – RCPS OR RXP temperature monitor RK-30A recorder) - ≤ 200°F 	
	HCO	(*Step 5) Monitor If Letdown Should Be Isolated:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Check annunciator A-12, Non-Regen Hx Letdown Out Hi Temp 145°F - EXTINGUISHED 	
		<ul style="list-style-type: none"> Check excess letdown temperature – LESS THAN 195°F 	NOTE: Excess Letdown is NOT in service.
	HCO	(Step 6) Check CCW Valve Alignment - NORMAL	
		<ul style="list-style-type: none"> Check MCB CCW valves (Refer to ATT-1.0, ATTACHMENT AT POWER CCW ALIGNMENT) 	
		<ul style="list-style-type: none"> Direct AO to check local flow indications per ATT-1.1, ATTACHMENT NORMAL CCW FLOW 	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge.
	HCO	(Step 7) Locally Check Seal Water Hx CCW Outlet Flow – NORMAL (FI-605)	NOTE: The US may direct the EO to report status of Seal Water Hx CCW Outlet Flow. If so, SIM DRIVER acknowledge as EO, and report flow is 15 gpm .

Op Test No.: N17-1 Scenario # 1 Event # 2 Page 17 of 59Event Description: **Leak on the CCW System/B CCW Pump Trips**

Time	Pos.	Expected Actions/Behavior	Comments
SIM DRIVER:		<p>As EO, call and report that Relief Valve V770 (Near Sample Coolers) is lifting to the drain system. The leak appears to be isolable, and valves V772C (Inlet Iso Valve) and V772D (Outlet Iso Valve) are nearby.</p> <p>If directed to isolate the leak, Remove MALF CLG05</p>	
			<p>NOTE: The US may contact Chemistry and direct them to isolate CCW to the Sample Coolers.</p> <p>If so, SIM DRIVER acknowledge as Chemistry.</p> <p>NOTE: After the CCW to the Sample Cooler is isolated the crew may elect to isolate SG Blowdowns.</p>
	HCO/ EO	(Step 8) Check for CCW Leakage In CNMT:	
		<ul style="list-style-type: none"> Check CNMT sump A level: 	
		<ul style="list-style-type: none"> Level – STABLE 	
		<ul style="list-style-type: none"> Sump A pumps – OFF 	
		<ul style="list-style-type: none"> RCP oil levels - STABLE 	
	HCO/ EO	(Step 9) Check for CCW Leakage In AUX BLDG:	
		<ul style="list-style-type: none"> Start frequency of AUX BLDG sump pump(s) – NORMAL (Refer to RCS daily leakage log) 	
		<ul style="list-style-type: none"> Waste holdup tank level – STABLE OR RISING AS EXPECTED 	<p>NOTE: The US may direct the EO to report status of the WHUT.</p> <p>If so, SIM DRIVER acknowledge as EO, and report level is slowly rising (Modify if leak is isolated).</p>

Op Test No.: N17-1 Scenario # 1 Event # 2 Page 18 of 59Event Description: **Leak on the CCW System/B CCW Pump Trips**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 10) Verify CCW System Leak - IDENTIFIED	
		<ul style="list-style-type: none"> Leak identified 	
		<ul style="list-style-type: none"> Isolate leak if possible 	NOTE: The leak has likely been discovered and isolated.
		<ul style="list-style-type: none"> Refer to IP-ENV-3, RESPONSE TO A SPILL OF HAZARDOUS MATERIAL/WASTE 	NOTE: The US may ask the SM to address. If so, SIM DRIVER acknowledge as SM.
	HCO	(Step 11) Check Normal or Excess Letdown – IN SERVICE	NOTE: Normal Letdown is in service.
	HCO	(Step 12) Check CCW System Leak Isolated	
		<ul style="list-style-type: none"> Surge tank level – APPROXIMATELY 50% 	
	HCO	<ul style="list-style-type: none"> (Step 12a RNO) IF level less than 50%, THEN continue filling. 	NOTE: The Surge Tank Level is stable (still rising if NOT isolated).
		IF $\geq 50\%$ THEN perform the following:	
		<ul style="list-style-type: none"> Stop RMW pump(s). 	
		<ul style="list-style-type: none"> Close MOV-823. 	
	HCO	<ul style="list-style-type: none"> (Step 12 Continued) Surge tank level - STABLE 	
	HCO	(Step 13) Direct RP To Sample CCW System For Chromates	NOTE: The US may notify RP/Chemistry. SIM DRIVER: as RP/Chemistry, acknowledge.
	HCO/CO	(Step 14) Evaluate MCB Annunciator Status (Refer to AR Procedures)	

Op Test No.: N17-1 Scenario # 1 Event # 2 Page 19 of 59Event Description: **Leak on the CCW System/B CCW Pump Trips**

Time	Pos.	Expected Actions/Behavior			Comments
	US	(Step 15) Evaluate Plant Conditions:			
		<ul style="list-style-type: none">CCW system malfunction – IDENTIFIED AND CORRECTED.			NOTE: Although the leak has been isolated, the B CCW Pump has tripped, and needs to be evaluated.
		<ul style="list-style-type: none">CCW system status adequate for power operation (Refer to ITS Section 3.7.7).			
	US	(Step 16) Notify Higher Supervision			NOTE: The US may notify the WCC/Supervision. SIM DRIVER: as WCC/Supervision, acknowledge.
	US	(Step 17) Return To Procedure Or Guidance In Effect			
					NOTE: The US will check the Tech Specs.
TECHNICAL SPECIFICATION 3.7.7, COMPONENT COOLING (CCW) WATER SYSTEM					
	US	3.7.7 Two CCW trains, two CCW heat exchangers, and the CCW loop header shall be OPERABLE.			
	US	APPLICABILITY: MODES 1, 2, 3, and 4.			
		ACTIONS			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	NOTE: The US will identify that Condition A is applicable.
		A. One CCW train inoperable.	A.1 Restore CCW train to OPERABLE status.	72 hours	

Op Test No.:	<u>N17-1</u>	Scenario #	<u>1</u>	Event #	<u>2</u>	Page	<u>20</u>	of	<u>59</u>
Event Description:		Leak on the CCW System/B CCW Pump Trips							

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US may call WCC/Maintenance to address the CCW leak/Pump Trip. If so, SIM DRIVER acknowledge as WCC.
			NOTE: The US will likely conduct a Plant Status Brief.
At the discretion of the Lead Examiner move to Event #3.			

Op Test No.: N17-1 Scenario # 1 Event # 3 Page 21 of 59Event Description: **PZR Level Channel 427 fails LOW**

Subsequently, Pressurizer Level Channel 427 will fail LOW, resulting in letdown isolation and de-energizing the pressurizer heaters. The crew will respond per AR-F-11, "PZR LOW LEVEL 13%," and ER-INST.1, "Reactor Protection Bistable Defeat After Instrumentation Loop Failure." They will defeat the failed channel, reset PZR heaters, reduce charging to a single charging pump, and re-establish letdown per S-3.2.E, "Placing In or Removing From Service Normal Letdown/Excess Letdown." The crew will start a second charging pump and slowly restore PZR level to program (56%). The operator will address Technical Specification LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation" and LCO 3.4.9, "Pressurizer."

SIM DRIVER Instructions: Operate Trigger #2 (PZR03B (0, NO Ramp))**Indications Available:**

- MCB Annunciator F-6; PRESSURIZER HEATER BREAKER TRIP
- MCB Annunciator F-11; PRESSURIZER LO LEVEL 13%
- Normal Letdown Isolation Valve AOV-427 Green status light LIT, Red status light OFF
- Normal Letdown Orifice Isolation Valve AOV-202 Green status light LIT, Red status light OFF
- Pressurizer Level Channel LI-427 indicates 0%

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US may enter ER-INST.1 directly.
AR-F-11, PRESSURIZER LO Level 13%			
	HCO	(Step 1) Perform a channel check	NOTE: LT-427 will indicate low compared to the others.
	US	(Step 2) Go to the appropriate procedure:	
		<ul style="list-style-type: none"> • AP-RCS.1 for RCS leak • ER-INST.1 for failed channel 	NOTE: The US will go to ER-INST.1.
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE			
	HCO	(Step 6.1.1) IDENTIFY the failed instrument channel by observation of the bistable status light board, MCB annunciators, and the MCB metering indication.	NOTE: The HCO will identify that LI-427 has failed LOW.

Op Test No.: N17-1 Scenario # 1 Event # 3 Page 22 of 59Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior	Comments
	US	(Step 6.1.2) WHEN a failed instrument loop and/or channel has been identified, THEN refer to the appropriate section of this procedure listed below:	
		<ul style="list-style-type: none"> PRZR Level Channel Failures (Section 6.4) 	NOTE: The US proceeds to Section 6.4.
	US	(Step 6.4.1) IF PRZR low level heater cut out has occurred THEN monitor PRZR pressure AND DEFEAT failed channel in a timely manner to allow restoration of PRZR heaters (ITS Section 3.4.9).	
	HCO	(Step 6.4.2) If letdown isolation valve, AOV-427 has closed, THEN perform the following:	NOTE: Letdown isolated
		<ul style="list-style-type: none"> Place charging pump speed controllers in MANUAL AND minimize charging flow. 	NOTE: The HCO will place Charging Pump Speed in MANUAL.
		<ul style="list-style-type: none"> Stop all but one charging pumps (s). 	NOTE: The HCO will stop one Charging Pump.
		<ul style="list-style-type: none"> Adjust HCV-142 as necessary to maintain RCP labyrinth seal ΔP between 20 and 80 inches. 	NOTE: The HCO will close HCV-142 due to letdown isolation.
		<ul style="list-style-type: none"> Place loop B cold leg to REGEN HX AOV-427 switch (MCB) to close position 	
		<ul style="list-style-type: none"> Consider placing excess letdown in service, refer to S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN 	Examiner NOTE: The US will likely defeat channel and then return Normal Letdown to service (See Steps on Page 25). However, the US may also elect to place Excess Letdown in service first.
	HCO	(Step 6.3.4) REFER TO the appropriate attachment to defeat the associated control functions:	NOTE: The US will go Attachment 10, White Channel - PRZR Level LI-427.
		Attachment 9, Red Channel - PRZR Level LI-426	

Op Test No.: N17-1 Scenario # 1 Event # 3 Page 23 of 59Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior	Comments
		Attachment 10, White Channel - PRZR Level LI-427	
		Attachment 11, Blue Channel - PRZR Level LI-428	
			NOTE: The US will hand this off to the CO.
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE ATTACHMENT 10 WHITE CHANNEL - PRZR LEVEL LI-427			
			NOTE: The CO will conduct Instrument Defeat Brief.
	HCO	(Step 1) Ensure Charging pump controllers are in MANUAL	
	CO	(Step 2) In the PLP PRESS AND LEVEL rack, check the PRZR level defeat switch L/428A position.	NOTE: The CO will unlock and open the PLP PRZR PRESS AND LEVEL Rack Cabinet, take the required action, and then close and lock the cabinet door.
		<ul style="list-style-type: none"> IF L/428A is in NORMAL, THEN place L-428A to DEFEAT-2. 	
	CO	(Step 3) Notify the CRS that PRZR Heaters and Letdown can now be restored per steps 6.4.4 and 6.4.5.	
	CO	(Step 4) DETERMINE the expected Bistable proving light status for the post defeat condition as follows:	
		RECORD the following Data:	
		<ul style="list-style-type: none"> PRZR Level LI-427 _____% 	
	CO	(Step 5) DETERMINE the expected post defeat Bistable proving light status and circle the expected status in table below:	
		<ul style="list-style-type: none"> 427 CHANNEL 2 HIGH LEVEL TRIP Light OFF if LI-427 \geq87% 	NOTE: The CO will determine that the Proving Light should be ON in the Post-Defeat condition.

Op Test No.: N17-1 Scenario # 1 Event # 3 Page 24 of 59Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 6) In the (WHITE) W-1 PROTECTION CHANNEL 2 rack, PLACE the following bistable proving switches to DEFEAT (UP) AND verify the proving light status is correct: <u>427 CHANNEL 2</u> HIGH LEVEL TRIP	NOTE: The CO will unlock and open the W-1 PROTECTION CHANNEL 2 Rack Cabinet, take the required action, and then close and lock the cabinet door. NOTE: The B/S proving light should be ON after defeat.
	HCO	(Step 7) PLACE the PRZR level recorder transfer switch (MCB) to position 428.	
	HCO	(Step 8) VERIFY the bistable status lights AND Annunciators listed above are lit.	
	HCO/ CO	(Step 9) Remove the PRZR level channel from the PPCS, by performing the following: <ul style="list-style-type: none"> On the "Sub/Delete/Restore" display Select Point ID L0427 Turn "OFF" scan processing. Select "Change". Answer prompts 	
	US	(Step 10) GO TO step 6.4.4	NOTE: The US will return to the body of the procedure.
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE			
	HCO	(Step 6.4.4) Reset PRZR heaters breakers as necessary.	

Op Test No.: N17-1 Scenario # 1 Event # 3 Page 25 of 59Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 6.4.5) Restore normal letdown as follows, if desired.	NOTE: If excess letdown was placed on service earlier then Section 6.6 (Removing Excess Letdown from Service) will be performed.
		<ul style="list-style-type: none"> COMPLETE removal of normal letdown from service per S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN. 	
		<ul style="list-style-type: none"> RESTORE normal letdown per S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN. 	
			NOTE: The US will continue with ER-INST.1.
S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN			
			NOTE: This action will complete the removal of Normal Letdown from Service.
	HCO/ CO	(Step 6.2.1) PLACE Charging Pumps in MANUAL	
	HCO/ CO	(Step 6.2.2) ENSURE CLOSED Letdown Orifice isolation valves. AOV-200A AOV-200B AOV-202	
	HCO/ CO	(Step 6.2.3) CLOSE LTDN ISOLATION VLV RHR to NRHX, AOV-427.	
	HCO/ CO	(Step 6.2.4) REDUCE charging flow while throttling closed charging flow to Regenerative Heat Exchanger HCV-142 to maintain greater than 20" RCP labyrinth seal ΔP .	

Op Test No.: N17-1 Scenario # 1 Event # 3 Page 26 of 59Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 6.2.5) CLOSE LETDOWN ISOL VLV RHR TO NRHX AOV-371.	
	HCO/ CO	(Step 6.2.6) PLACE NRHX LTDN OUTLET TEMP (TI-130) TCV-130 in MANUAL/ CLOSED.	
	HCO/ CO	(Step 6.3.1) Determine if a flush is required. If the letdown line has been isolated for less than one hour perform section 6.4 and N/A section 6.5 with permission of the Shift Manager or Control Room Supervisor.	NOTE: Since letdown has been isolated ONLY a few minutes, a flush will NOT be required.
	HCO/ CO	(Step 6.4.1) Restore Letdown Without a Flush	
	HCO/ CO	(Step 6.4.1.1) ENSURE letdown is secured PER Section 6.2 prior to restoring.	
	HCO/ CO	(Step 6.4.1.2) IF charging flowpath to Loop B COLD Leg is desired (preferred method), THEN PERFORM the following:	
		<ul style="list-style-type: none"> ENSURE CLOSED CHARGING VLV RHX TO LOOP B HOT, AOV-392A. 	
		<ul style="list-style-type: none"> OPEN CHARGING VLV RHX TO LOOP B COLD LEG AOV-294. 	
	HCO/ CO	(Step 6.4.1.3) IF Charging flowpath to Loop B HOT leg is desired,.....	NOTE: Charging alignment to the Hot Leg will NOT be desired.
	HCO/ CO	(Step 6.4.2) START a second Charging Pump at minimum speed.	
	HCO/ CO	(Step 6.4.3) SLOWLY OPEN charging flow to Regenerative Heat Exchanger HCV-142 to reduce labyrinth seal ΔP to - 40".	

Op Test No.: N17-1 Scenario # 1 Event # 3 Page 27 of 59Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 6.4.4) ADJUST Charging Pump speed while maintaining - 40" labyrinth seal ΔP UNTIL HCV-142 is fully OPEN.	
	HCO/ CO	(Step 6.4.5) ESTABLISH greater than or equal to 22 gpm charging line flow.	
	HCO/ CO	(Step 6.4.6) IF placing 40 GPM orifice in service	NOTE: A 60 gpm Orifice was previously in service.
	HCO/ CO	(Step 6.4.7) IF placing 60 GPM orifice in service THEN	
		<ul style="list-style-type: none"> PLACE LOW PRESS LTDN PRESS PCV-135 in MANUAL at - 60% open. 	
		<ul style="list-style-type: none"> PLACE NRHX LTDN OUTLET TEMP (TI-130) TCV-130 in MANUAL at - 60% open. 	
	HCO/ CO	(Step 6.4.8) OPEN LETDOWN ISOL VLV RHR TO NRHX AOV-371.	
	HCO/ CO	(Step 6.4.9) PLACE LTDN LOOP B COLD LEG TO RHX AOV-427 to OPEN and THEN to AUTO.	
	HCO/ CO	(Step 6.4.10) OPEN desired Letdown orifice valve AOV-200A, AOV-200B, or AOV-202 AND MARK AOV's not opened N/A.	
		AOV-200A	
		AOV-200B	
		AOV-202	
	HCO/ CO	(Step 6.4.11) ADJUST LOW PRESS LTDN PRESS PCV-135 to achieve Letdown pressure of - 250 psig on PI-135.	

Op Test No.: N17-1 Scenario # 1 Event # 3 Page 28 of 59Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 6.4.12) PLACE LOW PRESS LTDN PRESS, PCV-135 IN AUTO.	
	HCO/ CO	(Step 6.4.13) PLACE NRHX LTDN OUTLET TEMP (TI-130) TCV-130 in AUTO at the setpoint recorded in Step 5.4.	Examiner NOTE: At the discretion of the Lead Examiner move to Event #4. If the event is terminated HERE, check the TS evaluation after the scenario.
	HCO/ CO	(Step 6.4.14) PLACE Pressurizer level control (Charging Pump) to AUTO.	
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE			
	HCO	(Step 6.4.6) WHEN PRZR level is restored to normal, THEN place an operating charging pump controller in AUTO.	
	HCO	(Step 6.3.6) Open associated block valve closed in step 4.4.3	NOTE: No Block Valve was Closed.
	US	(Step 6.4.7) Check the following ITS Sections for LCOs:	
		• Section 3.3.1, Table 3.3.1-1, Function 8	
		• Section 3.3.3, Table 3.3.3-1, Function 2	
		• Section 3.4.9	
	US	(Step 6.4.8) GO TO Step 6.15.	
	HCO	(Step 6.15.1) IF necessary, VERIFY an operable channel is selected for the affected recorder.	

Op Test No.: N17-1 Scenario # 1 Event # 3 Page 29 of 59Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 6.15.2) Verify the following systems in AUTO if desired: <ul style="list-style-type: none"> o Rod Control 	
	CO	o Turbine EH control	
	HCO	o PRZR Pressure control <ul style="list-style-type: none"> • HC 431K • PRZR spray valves • PRZR heaters 	
	HCO	o PRZR level control	
	CO	o Steam Dump (unless 1 st stage pressure failed)	
	CO	o MFW control	
	CO	o S/G Atmos Relief Vlv Control	
	US	(Step 6.15.3) NOTIFY the following people: <ul style="list-style-type: none"> o Operations Supervision o STA o Work Week Manager 	NOTE: The US may notify the SM/STA/WWM. SIM DRIVER: as SM/STA/WWM, acknowledge.
	US	(Step 6.15.4) REFER to the following for Notification Requirements:	NOTE: The US may ask the SM. SIM DRIVER: as SM, acknowledge.
		• CNG-NL-1.01-1004, REGULATORY REPORTING	
		• OPG-NOTIFICATION, REQUIRED NOTIFICATIONS TO THE PSC/PIO/CEG SENIOR MANAGEMENT/OPERATIONS MANAGEMENT	
			NOTE: The US will address the Technical Specifications.
TECHNICAL SPECIFICATION 3.3.1, REACTOR TRIP (RTS) INSTRUMENTATION			
	US	LCO 3.3.1 The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.	

Op Test No.: N17-1 Scenario # 1 Event # 3 Page 30 of 59Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior			Comments
		APPLICABILITY: According to Table 3.3.1-1 (Function 8)			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	NOTE: Function 8 is affected. NOTE: The US will identify that Condition A&D are applicable.
		A. One or more functions with one channel inoperable.	A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s).	Immediately	
		D. As required by Required Action A.1 and referenced by Table 3.3.1-1	D.1 Place channel in trip	6 hours	
TECHNICAL SPECIFICATION 3.4.9, PRESSURIZER					
	US	LCO 3.4.9: The pressurizer shall be OPERABLE.			
	US	APPLICABILITY: modes 1, 2 and 3.			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	NOTE: The US will identify that the crew was in this TS LCO when the Heaters tripped on low pressurizer level, and out of this TS LCO when the heaters were reset.
		B. Pressurizer heaters capacity not within limits.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours. 12 hours.	
					NOTE: The US may address LCO 3.3.3, but determine that this TS is met using in-service instruments.
At the discretion of the Lead Examiner move to Event #4.					

Op Test No.: N17-1 Scenario # 1 Event # 4 Page 31 of 59Event Description: **Turbine Control Valve CV-L4 Drifts Closed/Downpower**

Then, turbine control valve CVL-4 will drift closed. The crew will respond per AP-TURB.2, "Turbine Load Rejection," begin a load reduction to less than 50% power using AP-TURB.5, "Rapid Load Reduction."

SIM DRIVER Instructions: Operate Trigger #3 (TUR11B (0 over 20 seconds))

Indications Available:

- MW lowering on turbine
- CLV-4 closing/closes
- Rx Power lowering (7-8% change)
- Tref lowering
- Rods stepping in to lower Tavg
- RCS Pressure lowering during transient
- MCB Annunciator G-15, STEAM DUMP ARMED
- Steam dumps cycle

Time	Pos.	Expected Actions/Behavior	Comments
AP-TURB.2, TURBINE LOAD REJECTION			
	HCO	(*Step 1) Monitor RCS Tavg	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		• Tavg-GREATER THAN 545°F	
		• Tavg-LESS THAN 579°F	
	CO	(Step 2) Check Turbine Valves:	
		• Turbine stop valves and reheat steam valves-OPEN	
		• Turbine control valves-ALL VALVES AT APPROXIMATELY THE SAME POSITION	

Op Test No.: N17-1 Scenario # 1 Event # 4 Page 32 of 59Event Description: **Turbine Control Valve CV-L4 Drifts Closed/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	US	(Step 2 RNO) If failure of turbine control valves indicated, THEN reduce power to less than 80% (refer to AP-TURB.5, RAPID LOAD REDUCTION).	NOTE: The US may use both AP-TURB.2 and 5 simultaneously during the downpower. SIM DRIVER: as Plant Management, direct that power be lowered to 70%.
			NOTE: The US will go to AP-TURB.5 and conduct Rapid Load Reduction Brief prior to commencing load reduction.
AP-TURB.5, RAPID LOAD REDUCTION			
	HCO	(Step 1) Initiate Load Reduction	
		<ul style="list-style-type: none"> Verify rods in AUTO 	
		<ul style="list-style-type: none"> Initiate boration at the rate determined in OPG-REACTIVITY-CALC. 	NOTE: The HCO will initiate a boration.
	CO	<ul style="list-style-type: none"> Reduce turbine load in Auto as follows: 	
		<ul style="list-style-type: none"> Place Turbine EH Control in OPER PAN., IMP PRESS IN, if desired. 	
		<ul style="list-style-type: none"> Select desired rate on thumbwheel 	NOTE: The CO will select 1%/Minute.
		<ul style="list-style-type: none"> Reduce the setter to the desired load 	
		<ul style="list-style-type: none"> Depress the GO button 	NOTE: The CO will start the load decrease.
	HCO	<ul style="list-style-type: none"> Place PRZR backup heaters switch to ON 	
	HCO	(*Step 2) Monitor RCS Tavg <ul style="list-style-type: none"> Tavg- GREATER THAN 545°F Tavg- LESS THAN 579°F 	NOTE: This is a Continuous Action. The US will make one or more board operators aware.

Op Test No.: N17-1 Scenario # 1 Event # 4 Page 33 of 59Event Description: **Turbine Control Valve CV-L4 Drifts Closed/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 3) Adjust Boric Acid Addition Rate As Necessary To (refer to OPG-REACTIVITY-CALC): <ul style="list-style-type: none"> • Maintain rods above the insertion limit • Match Tavg and Tref • Compensate for Xenon 	
	HCO	(*Step 4) Monitor PRZR Pressure-TRENDING TO 2235 PSIG IN AUTO	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	CO	(*Step 5) Monitor MFW Regulating Valves-RESTORING S/G LEVEL TO 52% IN AUTO	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	HCO	(*Step 6) Monitor PRZR Level- TRENDING TO PROGRAM IN AUTO CONTROL	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
			NOTE: PRZR Level control may still be in MANUAL.
	CO	(Step 7) Check IA Available To CNMT	
		<ul style="list-style-type: none"> • IA pressure - GREATER THAN 60 PSIG 	
		<ul style="list-style-type: none"> • Instr Air to CNMT Isol Valve, AOV-5392 - OPEN 	
	HCO/CO	(Step 8) Check Steam Dump Status:	
		<ul style="list-style-type: none"> • Annunciator G-15, STEAM DUMP ARMED - LIT 	NOTE: The Steam Dump System will be ARMED.
		<ul style="list-style-type: none"> • Steam dump operating properly in AUTO 	

Op Test No.: N17-1 Scenario # 1 Event # 4 Page 34 of 59Event Description: **Turbine Control Valve CV-L4 Drifts Closed/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 9) Check Hotwell Level:	NOTE: Depending on progress through this procedure, the crew may or may not perform the RNO. If not, MOVE to Step 10.
		<ul style="list-style-type: none"> Hotwell level controller in AUTO 	
		<ul style="list-style-type: none"> Controller demand LESS THAN 60% 	
		<ul style="list-style-type: none"> Hotwell level at setpoint 	
	CO	(Step 9 RNO) IF controller demand approaching 70% (Large Reject Valve Opens), THEN place controller in Manual and control level.	
	US/ CO	(Step 10) Check If Condensate Booster Pumps Should Be Secured	
		<ul style="list-style-type: none"> Condensate booster pumps – 2 PUMPS RUNNING 	NOTE: There are two Condensate Booster Pumps running.
		<ul style="list-style-type: none"> Verify the following: 	
		<ul style="list-style-type: none"> Verify reactor power is 70%-75% 	NOTE: Rx power is expected to be > 75%.
	US	(Step 10.b RNO) Go to Step 18.	
	US	(Step 18) Evaluate Plant Status	
		IF load was reduced more than 15% RTP in one hour, THEN notify RP to obtain primary samples required by ITS LCO 3.4.16	NOTE: The US may call Chemistry to address the samples. If so, SIM DRIVER acknowledge as Chemistry (Note that Sample Coolers were previously isolated).
			NOTE: The US may address remaining steps of AP-TURB.2 while continuing the power reduction.
At the discretion of the Lead Examiner move to Events #5-8.			

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 35 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

After this, a large steam break occurs downstream of the MSIVs in the Intermediate Building, and both MSIVs will fail to automatically or manually close. Simultaneously, the reactor will fail to trip automatically. The operator will need to manually trip the Reactor. Additionally, all AFW pumps fail to start due to the high-energy break. The crew will implement E-0, "Reactor Trip or Safety Injection." Both MSIVs will automatically close after 90 seconds. The crew will transition to FR-H.1, "Response to Loss of Secondary Heat Sink," at Step 9 of E-0; and will be required to initiate RCS Bleed and Feed. Upon successful implementation of RCS Bleed and Feed, the D SAFW Pump will become available, and the crew will restore a feed source to the B S/G in accordance with ATT-22.0, "Attachment Restoring Feed Flow." The scenario will terminate at Step 27.b of FR-H.1, after feed flow has been restored from the D SAFW Pump.

SIM DRIVER Instructions:

Operate Trigger #4 STM03 (2.4E7 No Ramp), STM05A=OPEN (Deleted after 90 Seconds), STM05B=OPEN (Deleted after 90 Seconds), FPS01-Z37 and Z38 (10 Seconds delayed))

Indications Available:

- Various MCB alarms
- Steam noise is heard in the Control Room
- Fire Alarms Z-37 and Z-38
- Lowering S/G levels
- No AFW flow
- Rx does NOT automatically trip when required.

Time	Pos.	Expected Actions/Behavior	Comments
E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO	(Step 1) Verify Reactor Trip:	Immediate Action
		<ul style="list-style-type: none"> • At least one train of reactor trip breakers – OPEN 	
		<ul style="list-style-type: none"> • Neutron flux - LOWERING 	
		<ul style="list-style-type: none"> • MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM with no instrument fluctuations concurrent with fire. 	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 36 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 1 RNO) Manually trip reactor.	Immediate Action
		<ul style="list-style-type: none"> IF reactor trip breakers NOT open OR there is a fire in the power block, THEN.... 	
		<ul style="list-style-type: none"> IF the reactor will NOT trip OR IF power range NIS indicates greater than 5%, THEN..... 	
<u>CRITICAL TASK:</u> Manually trip the reactor from the control room before transition to FR-S.1 (EOP Based) Safety Significance: Failure to manually trip the reactor causes a challenge to the subcriticality CSF beyond that irreparably introduced by the postulated conditions. Additionally, it constitutes an "incorrect performance that necessitates the crew taking action which complicates the event mitigation strategy that demonstrates the inability by the crew to recognize a failure of the automatic actuation of the RPS.			
	CO	(Step 2) Verify Turbine Stop Valves – CLOSED	Immediate Action
	CO	(Step 3) Verify sufficient AC Emergency buses Energized To At Least 440 VOLTS:	Immediate Action
		<ul style="list-style-type: none"> Bus 14 OR Bus 16 	
		AND	
		<ul style="list-style-type: none"> Bus 17 OR Bus 18 	
	HCO/ CO	(Step 4) Check if SI is Actuated:	Immediate Action
		<ul style="list-style-type: none"> Any SI Annunciator – LIT 	
		<ul style="list-style-type: none"> SI sequencing – BOTH TRAINS STARTED 	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 37 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of E-0.
		RCP TRIP CRITERIA	
		LOSS OF SW CRITERIA	
		AFW SUPPLY SWITCHOVER CRITERION	
		SFP COOLING CRITERIA	
	HCO	(*Step 5) Verify CNMT Spray Not Required:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Annunciator A-27, CNMT SPRAY EXTINGUISHED 	
		<ul style="list-style-type: none"> CNMT pressure – LESS THAN 28 PSIG 	
	CO	(Step 6) Direct Operator to Perform ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION	
			NOTE: The US will hand off ATT-27.0 to either the HCO or the CO, and continue with the other operator in E-0. Examiner following operator performing ATT-27.0 continue below. Examiner following operator NOT performing ATT-27.0 continue at Page 41 .
E-0, REACTOR TRIP OR SAFETY INJECTION, ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO/ CO	(Step 1) Verify SI and RHR Pumps Running:	
		<ul style="list-style-type: none"> All SI pumps – RUNNING 	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 38 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Both RHR pumps – RUNNING 	
	HCO/ CO	(Step 2) Verify CNMT RECIRC Fans RUNNING:	
		<ul style="list-style-type: none"> All fans RUNNING 	
		<ul style="list-style-type: none"> Charcoal filter dampers green status lights – EXTINGUISHED 	
	HCO/ CO	(Step 3) Check If Main Steamlines Should Be Isolated: Any MSIV - OPEN	NOTE: Although these valves failed to close immediately after the Steam Break, they automatically closed 90 seconds after the break, and are expected to be closed here.
	HCO/ CO	(Step 3.a RNO) Go to Step 4.	
	HCO/ CO	(Step 4) Verify MFW Isolation:	
		<ul style="list-style-type: none"> MFW pumps – TRIPPED 	
		<ul style="list-style-type: none"> MFW Isolation valves - CLOSED 	
		<ul style="list-style-type: none"> S/G A, AOV-3995 	
		<ul style="list-style-type: none"> S/G B, AOV-3994 	
		<ul style="list-style-type: none"> S/G blowdown and sample valves - CLOSED 	
	HCO/ CO	(Step 5) Verify At Least Two SW Pumps - RUNNING	
	HCO/ CO	(Step 6) Verify CI and CVI:	
		<ul style="list-style-type: none"> CI and CVI annunciators - LIT 	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 39 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Annunciator A-26, CNMT ISOLATION 	
		<ul style="list-style-type: none"> Annunciator A-25, CNMT VENTILATION ISOLATION 	
		<ul style="list-style-type: none"> Verify CI and CVI valve status lights - BRIGHT 	
		<ul style="list-style-type: none"> CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT 	
		<ul style="list-style-type: none"> FCV-4561 	
		<ul style="list-style-type: none"> FCV-4562 	
		<ul style="list-style-type: none"> Letdown orifice valves - CLOSED 	
		<ul style="list-style-type: none"> AOV-200A 	
		<ul style="list-style-type: none"> AOV-200B 	
		<ul style="list-style-type: none"> AOV-202 	
	HCO/ CO	(Step 7) Check CCW System Status:	
		<ul style="list-style-type: none"> Verify CCW pump – AT LEAST ONE RUNNING 	
	HCO/ CO	(Step 8) Verify SI And RHR Pump Flow:	
		<ul style="list-style-type: none"> SI flow indicators – CHECK FOR FLOW 	
		<ul style="list-style-type: none"> RHR flow indicator – CHECK FOR FLOW 	NOTE: RCS pressure is above the shutoff head of the RHR Pumps.
	HCO/ CO	(Step 8b RNO) IF RCS pressure less than 150 psig IF NOT, THEN go to Step 9.	
	HCO/ CO	(Step 9) Verify SI Pump And RHR Pump Emergency Alignment:	
		<ul style="list-style-type: none"> RHR pump discharge to Rx vessel deluge - OPEN 	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 40 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> MOV-852A 	
		<ul style="list-style-type: none"> MOV-852B 	
		<ul style="list-style-type: none"> Verify SI pump C – RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump A - RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump B – RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump C discharge valves - OPEN 	
		<ul style="list-style-type: none"> MOV-817A 	
		<ul style="list-style-type: none"> MOV-817B 	
	HCO/ CO	(Step 10) Verify CREATS Actuation:	
		<ul style="list-style-type: none"> At least one damper in each flowpath - CLOSED 	
		<ul style="list-style-type: none"> Normal Supply Air 	
		<ul style="list-style-type: none"> Normal Return Air 	
		<ul style="list-style-type: none"> Lavatory Exhaust Air 	
		<ul style="list-style-type: none"> CREATS fans – BOTH RUNNING 	
	HCO/ CO	(Step 11) Verify CI and CVI During a Fire Event	
		<ul style="list-style-type: none"> A confirmed fire has occurred in the control complex or cable tunnel (fire systems S05, S06, S08, Z05, Z18, or Z19). 	
	HCO/ CO	(Step 11 RNO) Go to END	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 41 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
E-0, REACTOR TRIP OR SAFETY INJECTION			
			Examiner following operator NOT performing ATT-27.0 continue HERE .
	CO/ HCO	(Step 7) Verify Both MDAFW Pumps RUNNING	NOTE: Neither MDAFW Pump is operating.
			NOTE: The US may direct the EO to investigate the failure of the AFW System. If so, SIM DRIVER acknowledge as EO, and report that the area is filled with steam.
	CO/ HCO	(Step 7 RNO) Manually start both MDAFW pumps.	NOTE: Neither MDAFW Pump will manually start.
		IF less than 2 MDAFW pumps are running, THEN manually open TDAFW pump steam supply valves.	NOTE: Although both Steam Supply Valves indicate OPEN, the TDAFW Pump has failed to supply flow.
		• MOV-3505A	
		• MOV-3504A	
	CO/ HCO	(Step 8) Verify AFW Valve Alignment:	
		• AFW flow – INDICATED TO BOTH S/G(s)	NOTE: There is no AFW flow indicated to either S/G.
	CO/ HCO	(Step 8 RNO) Manually align valves as necessary.	NOTE: AFW flow cannot be established to either S/G.
	CO/ HCO	(*Step 9) Monitor Heat Sink:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		• Check S/G narrow range level GREATER THAN 7% [25% adverse CNMT] in any S/G	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 42 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
	CO/ HCO	(Step 9.a RNO) Perform the following:	
		<ul style="list-style-type: none"> Verify total AFW flow - GREATER THAN 200 GPM 	NOTE: There is no AFW flow indicated to either S/G.
		<ul style="list-style-type: none"> IF total AFW is less than 200 gpm, THEN manually start pumps and align valves to establish greater than 200 gpm AFW flow. IF AFW flow greater than 200 gpm can NOT be established, THEN go to FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, Step 1. 	NOTE: AFW flow cannot be established to either S/G.
			NOTE: The US will transition to FR-H.1.
FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK			
	HCO/ CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of FR-H.1.
		LOSS OF SW CRITERIA	
	HCO	(Step 1) Check If Secondary Heat Sink Is Required: <ul style="list-style-type: none"> a) RCS pressure- GREATER THAN ANY NON-FAULTED S/G PRESSURE b) Check RCS cold leg temperature GREATER THAN 350°F 	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 43 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(*Step 2) Check if Bleed and Feed is Required	Examiner NOTE: The condition for RCS Bleed and Feed may NOT be met when the crew arrives at this step. However, these conditions will exist within 5-10 minutes. The crew will continue to Step 3, and then move forward to Step 13 when RCS Bleed and Feed conditions are met.
		<ul style="list-style-type: none"> Both S/G level wide range levels LESS THAN 120 inches [160 inches adverse CNMT] 	NOTE: Both S/G Wide Range levels are expected to be <120 inches.
		<ul style="list-style-type: none"> Stop both RCPs; 	
	US	<ul style="list-style-type: none"> Go to Step 13. 	
	HCO	(Step 13) Actuate SI and CI	
	HCO	(Step 14) Verify RCS Feed Path:	
		<ul style="list-style-type: none"> Check SI Pump Status – All Running 	
	HCO	(Step 15) Establish RCS Bleed Path:	
		<ul style="list-style-type: none"> Open both PRZR PORV block valves 	
		<ul style="list-style-type: none"> Place both PRZR PORV switches to OPEN 	
		<ul style="list-style-type: none"> Align RCS overpressure protection system to open both PRZR PORVs (Refer to ATT-12.0, ATTACHMENT N2 PORVS) 	
			NOTE: The HCO will perform ATT-12.0.
ATT-12.0, ATTACHMENT N2 PORVS			

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 44 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 1) WHEN IA to CNMT NOT available, THEN perform the following to operate one (or both) PRZR PORV(s) in accordance with guidance provided by the procedure step:	
		<ul style="list-style-type: none"> Select a PORV with an operable block valve, obtain a key for the RCS over-pressurization system, and perform the appropriate step below: 	
		<ul style="list-style-type: none"> PCV-431C 	
		<ul style="list-style-type: none"> Verify block valve MOV-515 – OPEN AND OPERABLE 	
		<ul style="list-style-type: none"> Place ACCUM TO SURGE TK VLV SOV-8616B to OPEN 	
		<ul style="list-style-type: none"> PCV-430 	
		<ul style="list-style-type: none"> Verify block valve MOV-516 – OPEN AND OPERABLE 	
		<ul style="list-style-type: none"> Place ACCUM TO SURGE TK VLV SOV-8616A to OPEN 	
		<ul style="list-style-type: none"> To depressurize the RCS in accordance with the guidance provided by the EOP step, perform the following: 	
		<ul style="list-style-type: none"> For PCV-431C, place over-pressurization system arming switch, N2 ARMING VLV SOV-8619B, to ARM 	
		<ul style="list-style-type: none"> For PCV-430, place over-pressurization system arming switch, N2 ARMING VLV SOV-8619A, to ARM 	
		<ul style="list-style-type: none"> IF it is desired to maintain PORV(s) open below 410 psig, THEN place over-pressure bistables to the trip position: (IF NOT, THEN go to step D) 	
		<ul style="list-style-type: none"> In R-2 Protection Channel 1 Rack 	
		<ul style="list-style-type: none"> 452B 	
		<ul style="list-style-type: none"> 452C 	
		<ul style="list-style-type: none"> In W-2 Protection Channel 2 Rack 	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 45 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> 451B 	
		<ul style="list-style-type: none"> 451C 	
		<ul style="list-style-type: none"> In B-2 Protection Channel 3 Rack 	
		<ul style="list-style-type: none"> 450B 	
		<ul style="list-style-type: none"> 450C 	
FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK			
	HCO	(Step 15.d) Verify PORVs – BOTH OPEN	
	HCO	(Step 16) Check If SI Can Be Reset:	
		<ul style="list-style-type: none"> Check SI blocked status light - EXTINGUISHED 	
		<ul style="list-style-type: none"> Check the following: 	
		<ul style="list-style-type: none"> PRZR pressure – LESS THAN 1750 PSIG 	
		OR	
		<ul style="list-style-type: none"> Either steamline pressure – LESS THAN 514 PSIG 	
		<ul style="list-style-type: none"> Reset SI 	
	HCO	(Step 17) Reset CI:	
		<ul style="list-style-type: none"> Depress CI reset pushbutton 	
		<ul style="list-style-type: none"> Verify annunciator A-26, CONTAINMENT ISOLATION- EXTINGUISHED 	
	CO	(Step 18) Verify Adequate SW Flow:	
		<ul style="list-style-type: none"> Verify at least two SW pumps - RUNNING 	
		<ul style="list-style-type: none"> Verify AUX BLDG SW isolation valves – AT LEAST ONE SET OPEN 	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 46 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> MOV-4615 and MOV-4734 	
		<ul style="list-style-type: none"> MOV-4615 and MOV-4735 	
	HCO	(Step 19) Establish IA to CNMT:	
		<ul style="list-style-type: none"> Verify non-safeguards buses energized from offsite power 	
		<ul style="list-style-type: none"> Bus 13 normal feed breaker - CLOSED 	
		OR	
		<ul style="list-style-type: none"> Bus 15 normal feed breaker - CLOSED 	
		<ul style="list-style-type: none"> Verify turbine building SW isolation valves - OPEN 	
		<ul style="list-style-type: none"> MOV-4613 and MOV-4670 	
		<ul style="list-style-type: none"> MOV-4614 and MOV-4664 	
		<ul style="list-style-type: none"> Verify adequate air compressor(s) - RUNNING 	NOTE: The C IA Compressor is running.
		<ul style="list-style-type: none"> Check IA supply: 	
		<ul style="list-style-type: none"> Pressure – GREATER THAN 60 PSIG 	
		<ul style="list-style-type: none"> Pressure – STABLE OR RISING 	
		<ul style="list-style-type: none"> Reset both trains of XY relays for IA to CNMT AOV-5392 	
		<ul style="list-style-type: none"> Verify IA to CNMT AOV-5392 - OPEN 	
	HCO	(Step 20) Restore RCS Overpressure Protection System to Standby:	
		<ul style="list-style-type: none"> Verify instrument bus D - ENERGIZED 	
		<ul style="list-style-type: none"> Place PORV PCV-430 and PCV-431C N₂ arming switches to BLOCK 	
		<ul style="list-style-type: none"> SOV-8619A 	
		<ul style="list-style-type: none"> SOV-8619B 	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 47 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Close PORV PCV-430 and PCV-431C N₂ SURGE TK VLVs 	
		<ul style="list-style-type: none"> SOV-8616A 	
		<ul style="list-style-type: none"> SOV-8616B 	
	HCO/ CO	(Step 21) Verify Adequate RCS Bleed Path:	
		<ul style="list-style-type: none"> Core exit T/Cs – STABLE OR LOWERING 	
		<ul style="list-style-type: none"> RVLIS Level (no RCPs) – GREATER THAN 77% [82% adverse CNMT] 	NOTE: Adverse Containment may exist.
	HCO/ CO	(Step 22) Complete Steps 1 through 7 of E-0, REACTOR TRIP OR SAFETY INJECTION While Continuing With This Procedure	

CRITICAL TASK:**Establish RCS bleed and feed so that the RCS depressurizes sufficiently such that the SI Pumps inject flow (EOP-Based)**

Safety Significance: Failure to initiate RCS bleed and feed before the RCS saturates at a pressure above the shutoff head of the high-head ECCS pumps results in significant and sustained core uncover. If RCS bleed is initiated so that the RCS is depressurized below the shutoff head of the high-head ECCS pumps, then core uncover is prevented or minimized.

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 48 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
			<p>NOTE: The US may assign the HCO/CO to perform this action.</p> <p>If so, HCO/CO Examiner follow actions of E-0. Other Examiners follow FR-H.1 Actions, Step 23, on Page 53.</p> <p>On the other hand, the US may recognize that each of the required E-0 Steps have been completed and proceed to Step 23 of FR-H.1.</p> <p>If so, ALL Examiners proceed to Step 23 of FR-H.1 action on Page 53.</p>
E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO/ CO	(Step 1) Verify Reactor Trip:	
		<ul style="list-style-type: none"> At least one train of reactor trip breakers – OPEN 	
		<ul style="list-style-type: none"> Neutron flux - LOWERING 	
		<ul style="list-style-type: none"> MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM with no instrument fluctuations concurrent with fire 	
	HCO/ CO	(Step 2) Verify Turbine Stop Valves – CLOSED	
	HCO/ CO	(Step 3) Verify sufficient AC Emergency Busses Energized to at Least 440 VOLTS:	
		<ul style="list-style-type: none"> Bus 14 or Bus 16 	
		AND	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 49 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Bus 17 or Bus 18 	
	HCO/ CO	(Step 4) Check if SI is Actuated:	
		<ul style="list-style-type: none"> Any SI Annunciator – LIT 	
		<ul style="list-style-type: none"> SI sequencing – BOTH TRAINS STARTED. 	
	HCO/ CO	(*Step 5) Verify CNMT Spray Not Required:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Annunciator A-27, CNMT SPRAY – EXTINGUISHED 	
		<ul style="list-style-type: none"> CNMT pressure – LESS THAN 28 PSIG 	
	HCO/ CO	(Step 6) Direct Operator to Perform ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION	
E-0, REACTOR TRIP OR SAFETY INJECTION, ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO/ CO	(Step 1) Verify SI and RHR Pumps Running:	
		<ul style="list-style-type: none"> All SI pumps – RUNNING 	
		<ul style="list-style-type: none"> Both RHR pumps – RUNNING 	
	HCO/ CO	(Step 2) Verify CNMT RECIRC Fans Running:	
		<ul style="list-style-type: none"> All fans – RUNNING 	
		<ul style="list-style-type: none"> Charcoal filter dampers green status lights – EXTINGUISHED 	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 50 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 3) Check If Main Steamlines Should Be Isolated: Any MSIV - OPEN	NOTE: Although these valves failed to close immediately after the Steam Break, they automatically closed 90 seconds after the break, and are expected to be closed here.
	HCO/ CO	(Step 3.a RNO) Go to Step 4.	
	HCO/ CO	(Step 4) Verify MFW Isolation:	
		• MFW pumps – TRIPPED	
		• MFW Isolation valves – CLOSED	
		• S/G A, AOV-3995	
		• S/G B, AOV-3994	
		• S/G Blowdown and sample valves - CLOSED	
	HCO/ CO	(Step 5) Verify At Least Two SW Pumps - RUNNING	
	HCO/ CO	(Step 6) Verify CI and CVI:	
		• CI and CVI annunciators - LIT	NOTE: With CI reset, Annunciators are NOT LIT.
		• Annunciator A-26, CNMT ISOLATION	
		• Annunciator A-25, CNMT VENTILATION ISOLATION	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 51 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 6.a RNO) Depress manual CI pushbutton.	NOTE: Although this action is directed, it will not be performed because a CAUTION prior to Step 22 of FR-H.1 directs the operator to not reverse any actions taken to establish RCS Bleed and Feed; and taking this action will isolate IA to Containment.
	HCO/ CO	<ul style="list-style-type: none"> (Step 6 Continued) Verify CI and CVI valve status lights – BRIGHT 	NOTE: AOV-5392 is NOT BRIGHT, but no action will be taken to reverse this.
		<ul style="list-style-type: none"> CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT 	
		<ul style="list-style-type: none"> FCV-4561 	
		<ul style="list-style-type: none"> FCV-4562 	
		<ul style="list-style-type: none"> Letdown orifice valves - CLOSED 	
		<ul style="list-style-type: none"> AOV-200A 	
		<ul style="list-style-type: none"> AOV-200B 	
		<ul style="list-style-type: none"> AOV-202 	
	HCO/ CO	(Step 7) Check CCW System Status:	
		<ul style="list-style-type: none"> Verify CCW pump – AT LEAST ONE RUNNING 	
	HCO/ CO	(Step 8) Verify SI And RHR Pump Flow:	
		<ul style="list-style-type: none"> SI flow indicators – CHECK FOR FLOW 	
		<ul style="list-style-type: none"> RHR flow indicator – CHECK FOR FLOW 	NOTE: RCS pressure is above the shutoff head of the RHR Pumps.

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 52 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 8b RNO) IF RCS pressure less than 150 psig IF NOT, THEN go to Step 9.	
	HCO/ CO	(Step 9) Verify SI Pump And RHR Pump Emergency Alignment:	
		<ul style="list-style-type: none"> RHR pump discharge to Rx vessel deluge - OPEN 	
		<ul style="list-style-type: none"> MOV-852A 	
		<ul style="list-style-type: none"> MOV-852B 	
		<ul style="list-style-type: none"> Verify SI pump C – RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump A - RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump B – RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump C discharge valves - OPEN 	
		<ul style="list-style-type: none"> MOV-817A 	
		<ul style="list-style-type: none"> MOV-817B 	
	HCO/ CO	(Step 10) Verify CREATS Actuation:	
		<ul style="list-style-type: none"> At least one damper in each flowpath - CLOSED 	
		<ul style="list-style-type: none"> Normal Supply Air 	
		<ul style="list-style-type: none"> Normal Return Air 	
		<ul style="list-style-type: none"> Lavatory Exhaust Air 	
		<ul style="list-style-type: none"> CREATS fans – BOTH RUNNING 	
	HCO/ CO	(Step 11) Verify CI and CVI During a Fire Event	
		<ul style="list-style-type: none"> A confirmed fire has occurred in the control complex or cable tunnel (fire systems S05, S06, S08, Z05, Z18, or Z19). 	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 53 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 11 RNO) Go to END	
E-0, REACTOR TRIP OR SAFETY INJECTION			
	CO	(Step 7) Verify Both MDAFW Pumps Running	NOTE: Neither MDAFW Pump is running.
	CO/ HCO	(Step 7 RNO) Manually start both MDAFW pumps.	NOTE: Neither MDAFW Pump will manually start.
		IF less than 2 MDAFW pumps are running, THEN manually open TDAFW pump steam supply valves.	NOTE: Although both Steam Supply Valves indicate OPEN, the TDAFW Pump has failed to supply flow.
		• MOV-3505A	
		• MOV-3504A	
			Examiner(s) following operator NOT performing E-0 Actions continue HERE .
FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK			
	CO/ HCO	(Step 23) Maintain RCS Heat Removal:	
		• Maintain SI flow	
		• Maintain both PRZR PORVs and block valves - OPEN	
	CO/ HCO	(Step 24) Check Power Availability to Charging Pumps:	
		• Check Normal power available to Charging Pumps	
		• Bus 14 normal feed breaker - CLOSED	
		• Bus 16 normal feed breaker - CLOSED	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 54 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Verify adequate Safeguard Bus capacity to run charging pumps. (6 amps each) 	
		<ul style="list-style-type: none"> Station Service transformer 14 ammeter. (278 amps) 	
		<ul style="list-style-type: none"> Station Service transformer 16 ammeter (278 amps) 	
	CO/ HCO	(Step 25) Check If Charging Flow Has Been Established:	
		<ul style="list-style-type: none"> Charging pumps – ANY RUNNING 	
	CO/ HCO	(Step 25.a RNO) Perform the following:	
		<ul style="list-style-type: none"> IF CCW flow is lost to any RCP thermal barrier OR any RCP #1 seal outlet temperature greater than 235°F, THEN..... 	
		<ul style="list-style-type: none"> Ensure HCV-142 open, demand at 0%. 	
	CO/ HCO	<ul style="list-style-type: none"> (Step 25 Continued) Align charging pump suction to RWST: 	
		<ul style="list-style-type: none"> LCV-112B- OPEN 	
		<ul style="list-style-type: none"> LCV-112C- CLOSED 	
		<ul style="list-style-type: none"> Start charging pumps to establish maximum charging flow 	NOTE: Two Charging Pumps will be started.
	CO/ HCO	(Step 26) Monitor IF CNMT Spray Should Be Stopped:	NOTE: There are no CS Pumps running.
		<ul style="list-style-type: none"> CNMT spray pumps – ANY RUNNING 	
	US	(Step 26 RNO) Go to Step 27.	
	CO/ HCO	(Step 27) Continue Attempts To Establish Secondary Heat Sink In At Least One S/G:	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 55 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Attempt to restore one or more of the following: 	
		<ul style="list-style-type: none"> AFW flow 	
		<ul style="list-style-type: none"> Main FW flow 	
		<ul style="list-style-type: none"> Standby AFW flow 	
		<ul style="list-style-type: none"> Condensate flow 	
		<ul style="list-style-type: none"> WHEN a feed source is available, THEN control feed flow per requirements of ATT-22, ATTACHMENT RESTORING FEED FLOW 	
		SIM DRIVER Instructions:	DELETE the following: OVR [DO] FDW35B=OFF OVR [DO] FDW37B=OFF OVR [DO] FDW43B=OFF OVR [DO] FDW35A=OFF OVR [DO] FDW37A=OFF Contact Control Room as WWM and state that the D SAFW has become available.
			NOTE: The US will use ATT-5.1 to restore AFW flow using the D AFW Pump.
ATTACHMENT-5.1, ATTACHMENT SAFW			
	CO	(Step A) IF SW is not available OR cannot support required SAFW flow, THEN.....	NOTE: SW is available.
	CO	(Step B) IF feeding both S/Gs using only one SAFW pump, THEN open either STANDBY AUX FW PUMP CROSSOVER VLV (SAFW pump area):	NOTE: SAFW will be aligned to feed BOTH SGs.
		<ul style="list-style-type: none"> STANDBY AUX FW PUMP CROSSOVER VLV, MOV-9703A 	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 56 of 59Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
		OR	
		<ul style="list-style-type: none"> STANDBY AUX FW PUMP CROSSOVER VLV, MOV-9703B 	
	CO	(Step C) Align SAFW Pump C to feed S/G A as follows:	NOTE: If the C SAFW Pump has NOT previously failed, the crew may try to start this pump as well; however, it will fail to start.
	CO	(Step D) Align SAFW Pump D to selected S/G as follows: <ol style="list-style-type: none"> Ensure SI reset Ensure the following valves open: <ul style="list-style-type: none"> MOV-9701B, SAFW PUMP D DISCHARGE MOV-4615, AUX BLDG SW ISOL VLVS MOV-9704B, SAFW PUMP D ISOL VLV MOV-9746, SAFW PMP D EMERG DISCH VLV Open MOV-9629B, SAFW PUMP D SUCTION VLV Verify at least 1 SW pump running To feed S/G B, go to step 6. Restore SAFW flow as directed by procedure in effect. 	NOTE: The crew will attempt to start the D SAFW Pump using the guidance of Step 27.a of FR-H.1.
			NOTE: Once the D SAFW Pump is started the crew will use the guidance of Step 27.b of FR-H.1 to restore flow to the S/Gs per ATT-22.0.
ATT-22.0, ATTACHMENT RESTORING FEED FLOW			
	HCO	(Step 1) Check affected S/G Loop RCS Temperature	

Op Test No.: N17-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 57 of 59

Event Description: **Steamline Break in Intermediate Building/Delayed closure of MSIVs/
Automatic Rx Trip/Manual Pushbutton Rx Trip fails/MDAFW and
TDAFW Pumps fail to start/D SAFW Pump is restored**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Affected Loop hot leg temperature Less Than 550°F. 	
	US	(Step 1.a RNO) Go to Step 2.	
	HCO	(Step 2) Determine S/G feed flowrate requirements:	
		<ul style="list-style-type: none"> Bleed and Feed initiated 	
		<ul style="list-style-type: none"> Check RCS temp stable or lowering 	
		<ul style="list-style-type: none"> Feed flow is restricted to less than or equal to 100 gpm to affected S/G. WHEN S/G level greater than 50 inches [100 inches adverse CNMT], THEN fill as desired to restore narrow range greater than 7% [25% adverse CNMT] 	NOTE: Adverse Containment may exist at this time.
At the discretion of the Lead Examiner terminate the exam.			

TURNOVER SHEET for NRC Exam Scenario #1

<p><u>Core Age: EOL</u></p> <p>100% Power, Equilibrium Xe</p> <p>Outside Air Temp = 82°F</p> <p>Water Temp = 70°F</p>	<p><u>Procedure in Use:</u></p> <p>P-17</p>	<p><u>ACTIONS/NOTES:</u></p> <ul style="list-style-type: none"> • The plant is at 100% power (EOL). • The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. • Per the daily work schedule, CROI-7, Swapping Service Water Pumps, is to be performed this shift, swapping from C to D Service Water pumps. • SW Pumps A/D are the SELECTED SW Pumps. • The Service Water system chlorination is NOT in service. • The 60 gpm letdown orifice is in service for Chemistry purposes. • The D SAFW Pump is OOS for breaker maintenance. • The Condensate Booster Pump A is OOS for thrust bearing replacement. • Protected equipment IAW OPG Protected Equipment.
<p>Boron: 339 ppm</p> <p>BAST: 17,400 ppm</p> <p>RCS Activity: Normal</p>	<p><u>RCS LEAKAGE:</u> (gpm)</p> <p>Total: .021</p> <p>Identified: .003</p> <p>Unidentified: .018</p>	

TURNOVER SHEET for NRC Exam Scenario #1

<u>Equipment Problems/OOS:</u> See NOTES	<u>Planned Activities for Shift:</u> <ul style="list-style-type: none"> Swap C & D SW Pumps 	<u>Electrical System Operator Declarations</u> None in effect
---	--	--

A-52.4					
EQUIPMENT	DATE/TIME OOS	LCO	TITLE	EXP DATE	ECD
D SAFW Pump	Yesterday, 24hrs ago	3.7.5	Auxiliary Feedwater (AFW) System	14 Days	18 hours
A-52.12					
EQUIPMENT	DATE/TIME OOS	TRM /ODCM	TITLE	EXP DATE	ECD
A Condensate Booster Pump	Yesterday				Indefinitely

Facility:	Ginna	Scenario No.:	3	Op Test No.:	N17-1
Examiners:	_____	Operators:	_____	(SRO)	
	_____		_____	(RO)	
	_____		_____	(BOP)	

Initial Conditions:	The plant is at 70% power (BOL). The plant was taken to 50% due to a failure of the B MFW Pump. Corrective Maintenance was performed and plant power raised to 70% four days ago. It is intended to observe the B MFW operation for two more days at this power level and then raise power to 100%. The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. It is expected to perform post-maintenance testing on the B RHR Pump on this shift.
Turnover:	The following equipment is Out-Of-Service: The A Control Rod Shroud Fan is OOS for breaker maintenance, and the Condensate Booster Pump A is OOS for thrust bearing replacement.

Event No.	Malfunction No.	Event Type*	Event Description
1	1	C-RO C(TS)-SRO	Failure of B RHR Pump During Surveillance
2	2	C-BOP C-SRO	A ARV Fails OPEN (3411)
3	3	I-RO I(TS)-SRO	Master Pressure Controller (431K) Fails HIGH
4	NA	R-RO N-BOP N-SRO	Unscheduled Trip of Transmission Circuits/Downpower
5	4	C-BOP C-SRO	B FRV fails AS-IS (Manual Control Available)
6	5	M-RO M-BOP M-SRO	Ejected Control Rod
7	6	C-BOP C-SRO	Failure of Turbine to Trip on Rx Trip
8	7	C-RO C-SRO	Failure of A and B SI Pumps to Auto Start
9	8	NA	A RHR Pumps trips

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Ginna 2017 NRC Scenario #3

The plant is at 70% power (BOL). The plant was taken to 50% due to a failure of the B MFW Pump. Corrective Maintenance was performed and plant power raised to 70% four days ago. It is intended to observe the B MFW operation for two more days at this power level and then raise power to 100%. The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. It is expected to perform post-maintenance testing on the B RHR Pump on this shift.

The following equipment is Out-Of-Service: The A Control Rod Shroud Fan is OOS for breaker maintenance, and the Condensate Booster Pump A is OOS for thrust bearing replacement.

Shortly after taking the watch, the operator will start the B RHR Pump per STP-O-2.2.-COMP-B, "Residual Heat Removal Pump B Comprehensive Test," and then stop the pump due to a pump seal water cooler failure using the guidance of A-503.1, "Emergency and Abnormal Operating Procedures User's Guide." The operator will respond using AP-CCW.2, "Loss of CCW During Power Operation." The operator will address Technical Specification LCO 3.5.2, "ECCS - MODES 1, 2, and 3."

Following this, the controller for the A SG ARV will fail such that the valve will travel to the full OPEN position. The operator will respond using A-503.1, "Emergency and Abnormal Operating Procedures Users Guide," and/or AP-FW.2, "Secondary Coolant Leak," and take manual control of the ARV-3411, and close the valve.

Subsequently, the Master Pressure Controller (431K) will fail such that the output in Automatic goes to 100%, causing both Pressurizer Spray Valves to OPEN, and RCS Pressure to LOWER. The operator will respond using AR-F-10, "PRESSURIZER LO PRESS 2205 PSI," and enter AP-PRZR.1, "Abnormal Pressurizer Pressure." The operator will address Technical Specification LCO 3.4.1, "RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits," and Technical Requirements Manual TR-3.4.3, "Anticipated Transients Without Scram (ATWS) Mitigation."

Then, the off-site transmission circuit 908 will de-energize, and the RG&E Energy Control Center (ECC) will request that Ginna verbally certify that the plant is capable of ramping down to 360 MWe net generation in 14 minutes upon Subsequent notification from ECC. The operator will respond in accordance with AR-J-28, "STATION 13A TROUBLE," enter O-6.9, "Operating Limits for Ginna Station Transmission," and prepare for plant shutdown. After this, the off-site transmission circuit 913 will also de-energize and the ECC will call requesting that the previously agreed to downpower be executed. The operating crew will enter AP-TURB.5, "Rapid Load Reduction," and lower plant power to 340 MWe.

During the load reduction, a failure of the B FRV to control in AUTO will occur. The operator will respond per AR-G-5, "S/G/ B LEVEL DEVIATION $\pm 7\%$," or upon observing an abnormally high level in the B Steam Generator and control the B FRV manually.

After this, Shutdown Bank Control Rod K-9 will be ejected from the core causing a LOCA, and an automatic Rx Trip/SI signal will occur. On the trip the Main Turbine will fail to trip, and the operator will need to manually trip the Turbine. Additionally, the A and the B SI Pumps will fail to start automatically. The operator will be required to manually start both SI Pumps. The operator will enter E-0, "Reactor Trip or Safety Injection," and transition to E-1, "Loss of Reactor or Secondary Coolant."

Shortly after transition to E-1 the A RHR Pump will trip. The operator will transition to ECA-1.1, "Loss of Emergency Coolant Recirculation," due to a loss of both RHR Pumps. The operator will take actions to minimize the inventory loss from the RWST.

The scenario will terminate at Step 10.a RNO of ECA-1.1, after the crew has stopped one SI Pump.

Critical Tasks:

Trip all RCPs within 5 minutes of reaching trip criteria (EOP-Based)

Safety Significance: Failure to trip all RCPs when required can lead to core uncover and to fuel temperatures in excess of 2200°F. Analyses have shown that if the RCPs are tripped within 5 minutes of the trip criteria being met, PCT will remain below 2200°F, and if this action is delayed beyond 5 minutes, this PCT will be exceeded. It is a management expectation that the RCPs be tripped as quickly as possible, but within 5 minutes when the trip criteria is met. Failure to take this action represents mis-operation by the operator which leads to degradation of the fuel cladding fission product barrier, and a violation of a license condition.

Direct that actions be taken to prepare to establish, or establish Makeup to RWST; and minimize RWST outflow prior to the completion of Step 10.a of ECA-1.1 (EOP-Based)

Safety Significance: Under the postulated plant conditions, failure to establish makeup flow to the RWST and/or to minimize RWST outflow leads to (or accelerates) depletion of RWST inventory to the point at which ECCS pumps taking suction on the RWST must be stopped. Loss of pumped injection (coincident with loss of emergency cooling recirculation) will lead to a severe or an extreme challenge to the core cooling CSF. Failure to perform the critical task causes these challenges to occur needlessly or, at best, prematurely (that is, before they would occur if the critical task is performed). Thus, failure to perform the critical task under the postulated plant conditions leads to "a significant reduction of safety margin beyond that irreparably introduced by the scenario." It also represents a demonstrated inability by the crew to "take one or more actions that would prevent a challenge to plant safety."

PROGRAM: Ginna Operations Training

MODULE: Initial License Operator Training Class 15-1

TOPIC: NRC Simulator Exam

Scenario N17-1-3

REFERENCES:

1. Technical Specification LCO 3.5.2, "ECCS - MODES 1, 2, and 3" (Amendment 118)
2. STP-O-2.2.-COMP-B, "Residual Heat Removal Pump B Comprehensive Test" (Rev 007)
3. AR-A-9, "RHR PUMP COOLING WATER OUTLET LO FLOW 15 GPM" (Rev 00701)
4. AP-CCW.2, "Loss of CCW During Power Operation" (Rev 02300)
5. A-503.1, "Emergency and Abnormal Operating Procedures Users Guide" (Rev 04600)
6. AP-FW.2, "Secondary Coolant Leak" (Rev 00100)
7. AR-F-10, "PRESSURIZER LO PRESS 2205 PSI" (Rev 10)
8. AP-PRZR.1, "Abnormal Pressurizer Pressure" (Rev 01700)
9. Technical Specification LCO 3.4.1, "RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits" (Amendment 80)
10. Technical Requirements Manual TR-3.4.3, "Anticipated Transients Without Scram (ATWS) Mitigation" (Rev 61)
11. AR-J-28, "STATION 13A TROUBLE" (Rev 010)
12. O-6.9, "Operating Limits for Ginna Station Transmission" (Rev 035)
13. AP-TURB.5, "Rapid Load Reduction" (Rev 01700)
14. AR-G-5, "S/G/ B LEVEL DEVIATION $\pm 7\%$ " (Rev 00701)
15. Technical Specification LCO 3.7.3, "Main Feedwater Isolation Valves (MFIVs), Main Feedwater Regulating Valves (MFRVs), and Associated Bypass Valves" (Amendment 95)
16. E-0, "Reactor Trip or Safety Injection," (Rev 048)
17. ATT-27.0, "Attachment Automatic Action Verification" (Rev 00400)
18. E-1, "Loss of Reactor or Secondary Coolant" (Rev 04100)
19. ECA-1.1, "Loss of Emergency Coolant Recirculation" (Rev 02801)
20. ATT-8.1, "Attachment D/G Stop" (Rev 6)

Validation Time: 87 minutes

Author: David Lazarony, Essential Training & Consulting, LLC

Facility Review: _____

Rev. 022217

Scenario Event Description
NRC Scenario 3

Facility:	Ginna	Scenario No.:	3	Op Test No.:	N17-1
Examiners:	_____	Operators:	_____	(SRO)	
	_____		_____	(RO)	
	_____		_____	(BOP)	
Initial Conditions:		<p>The plant is at 70% power (BOL). The plant was taken to 50% due to a failure of the B MFW Pump. Corrective Maintenance was performed and plant power raised to 70% four days ago. It is intended to observe the B MFW operation for two more days at this power level and then raise power to 100%. The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. It is expected to perform post-maintenance testing on the B RHR Pump on this shift.</p>			
Turnover:		<p>The following equipment is Out-Of-Service: The A Control Rod Shroud Fan is OOS for breaker maintenance, and the Condensate Booster Pump A is OOS for thrust bearing replacement.</p>			
Event No.	Malf. No.	Event Type*	Event Description		
1	1	C-RO C(TS)-SRO	Failure of B RHR Pump During Surveillance		
2	2	C-BOP C-SRO	A ARV Fails OPEN (3411)		
3	3	I-RO I(TS)-SRO	Master Pressure Controller (431K) Fails HIGH		
4	NA	R-RO N-BOP N-SRO	Unscheduled Trip of Transmission Circuits/Downpower		
5	4	C-BOP C-SRO	B FRV fails AS-IS (Manual Control Available)		
6	5	M-RO M-BOP M-SRO	Ejected Control Rod		
7	6	C-BOP C-SRO	Failure of Turbine to Trip on Rx Trip		
8	7	C-RO C-SRO	Failure of A and B SI Pumps to Auto Start		
9	8	NA	A RHR Pumps trips		
<p>* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor</p>					

Scenario Event Description
NRC Scenario 3

Ginna 2017 NRC Scenario #3

The plant is at 70% power (BOL). The plant was taken to 50% due to a failure of the B MFW Pump. Corrective Maintenance was performed and plant power raised to 70% four days ago. It is intended to observe the B MFW operation for two more days at this power level and then raise power to 100%. The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. It is expected to perform post-maintenance testing on the B RHR Pump on this shift.

The following equipment is Out-Of-Service: The A Control Rod Shroud Fan is OOS for breaker maintenance, and the Condensate Booster Pump A is OOS for thrust bearing replacement.

Shortly after taking the watch, the operator will start the B RHR Pump per STP-O-2.2.-COMP-B, "Residual Heat Removal Pump B Comprehensive Test," and then stop the pump due to a pump seal water cooler failure using the guidance of A-503.1, "Emergency and Abnormal Operating Procedures User's Guide." The operator will respond using AP-CCW.2, "Loss of CCW During Power Operation." The operator will address Technical Specification LCO 3.5.2, "ECCS - MODES 1, 2, and 3."

Following this, the controller for the A SG ARV will fail such that the valve will travel to the full OPEN position. The operator will respond using A-503.1, "Emergency and Abnormal Operating Procedures Users Guide," and/or AP-FW.2, "Secondary Coolant Leak," and take manual control of the ARV-3411, and close the valve.

Subsequently, the Master Pressure Controller (431K) will fail such that the output in Automatic goes to 100%, causing both Pressurizer Spray Valves to OPEN, and RCS Pressure to LOWER. The operator will respond using AR-F-10, "PRESSURIZER LO PRESS 2205 PSI," and enter AP-PRZR.1, "Abnormal Pressurizer Pressure." The operator will address Technical Specification LCO 3.4.1, "RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits," and Technical Requirements Manual TR-3.4.3, "Anticipated Transients Without Scram (ATWS) Mitigation."

Then, the off-site transmission circuit 908 will de-energize, and the RG&E Energy Control Center (ECC) will request that Ginna verbally certify that the plant is capable of ramping down to 360 MWe net generation in 14 minutes upon Subsequent notification from ECC. The operator will respond in accordance with AR-J-28, "STATION 13A TROUBLE," enter O-6.9, "Operating Limits for Ginna Station Transmission," and prepare for plant shutdown. After this, the off-site transmission circuit 913 will also de-energize and the ECC will call requesting that the previously agreed to downpower be executed. The operating crew will enter AP-TURB.5, "Rapid Load Reduction," and lower plant power to 340 MWe.

During the load reduction, a failure of the B FRV to control in AUTO will occur. The operator will respond per AR-G-5, "S/G/ B LEVEL DEVIATION $\pm 7\%$," or upon observing an abnormally high level in the B Steam Generator and control the B FRV manually.

After this, Shutdown Bank Control Rod K-9 will be ejected from the core causing a LOCA, and an automatic Rx Trip/SI signal will occur. On the trip the Main Turbine will fail to trip, and the operator will need to manually trip the Turbine. Additionally, the A and the B SI Pumps will fail to start automatically. The operator will be required to manually start both SI Pumps. The operator will enter E-0, "Reactor Trip or Safety Injection," and transition to E-1, "Loss of Reactor or Secondary Coolant."

Scenario Event Description
NRC Scenario 3

Shortly after transition to E-1 the A RHR Pump will trip. The operator will transition to ECA-1.1, "Loss of Emergency Coolant Recirculation," due to a loss of both RHR Pumps. The operator will take actions to minimize the inventory loss from the RWST.

The scenario will terminate at Step 10.a RNO of ECA-1.1, after the crew has stopped one SI Pump.

Critical Tasks:

Trip all RCPs within 5 minutes of reaching trip criteria (EOP-Based)

Safety Significance: Failure to trip all RCPs when required can lead to core uncover and to fuel temperatures in excess of 2200°F. Analyses have shown that if the RCPs are tripped within 5 minutes of the trip criteria being met, PCT will remain below 2200°F, and if this action is delayed beyond 5 minutes, this PCT will be exceeded. It is a management expectation that the RCPs be tripped as quickly as possible, but within 5 minutes when the trip criteria is met. Failure to take this action represents mis-operation by the operator which leads to degradation of the fuel cladding fission product barrier, and a violation of a license condition.

Direct that actions be taken to prepare to establish, or establish Makeup to RWST; and minimize RWST outflow prior to the completion of Step 10.a of ECA-1.1 (EOP-Based)

Safety Significance: Under the postulated plant conditions, failure to establish makeup flow to the RWST and/or to minimize RWST outflow leads to (or accelerates) depletion of RWST inventory to the point at which ECCS pumps taking suction on the RWST must be stopped. Loss of pumped injection (coincident with loss of emergency cooling recirculation) will lead to a severe or an extreme challenge to the core cooling CSF. Failure to perform the critical task causes these challenges to occur needlessly or, at best, prematurely (that is, before they would occur if the critical task is performed). Thus, failure to perform the critical task under the postulated plant conditions leads to "a significant reduction of safety margin beyond that irreparably introduced by the scenario." It also represents a demonstrated inability by the crew to "take one or more actions that would prevent a challenge to plant safety."

Scenario Event Description
NRC Scenario 3

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>		Reset to Temp IC 157 (Originally IC-26).	<p>T = 0 (From IC-26):</p> <p>Perform STP-O-2.2-COMP-B up to Step 6.1.9. Take the Control Rod Shroud Fan A Control Switch to the PULL STOP position. Take A CB Pump Control Switch to TRIP Insert OVR-CND04A = OFF Hang LOTO Tags as necessary</p> <p>Insert MALF TUR02 (Turbine Fails to Trip on Rx Trip) Insert MALF RPS07A (A SI Pump fails to AUTO Start) Insert MALF RPS07B (B SI Pump fails to AUTO Start) Insert MALF RHR01A (A RHR Pump trips) Insert the following on T-8 (X07I198D==1 [B RHR Pump control switch to PULL STOP]):</p> <ul style="list-style-type: none"> • MALF RHR01B (B RHR Pump trips) • OVR-RHR06A = OFF • OVR-RHR06B = OFF • OVR-RHR06C = OFF <p>Insert MALF ANN-A-RHR02 = ON (60 seconds after B RHR Pump Start) on T-1 (X07O198R==1 [B RHR Red status light is LIT]) Insert MALF CLG05=10 (CCW Leak) on T-1 (X07O198R==1 [B RHR Red status light is LIT]) Insert MALF STM04A (100 over 45 second Ramp) on T-2 Insert MALF PZR04 (100%, No RAMP) on T-3 Insert REM-EDS-025 (OPEN) on T-4 Insert REM-EDS-023 (OPEN) on T-4 Insert REM-EDS-031 (OPEN) on T-5 Insert MALF FDW07C (Current Controller Output) on T-6 Insert MALF ROD05-K9 (1400 gpm, No Ramp) on T-7</p> <p>Ensure P_{RCS}-P_{SIG} graphed during the scenario.</p>
<input type="checkbox"/>	Prior to Crew Briefing		<ul style="list-style-type: none"> • Hang Protective Tags per OPG-Protective Equipment.

Scenario Event Description
NRC Scenario 3

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	Crew Briefing <ul style="list-style-type: none"> Assign Crew Positions based on evaluation requirements Review the Shift Turnover Information with the crew. Provide crew with marked up copy of STP-O-2.2-COMP-B to Step 6.1.9. Handout current Reactivity Plan. 		
<input type="checkbox"/>	T-0	Begin Familiarization Period	
<input type="checkbox"/>	At direction of examiner	Event 1 Trigger#1 MALF ANN-A-RHR02 = ON (60 seconds after B RHR Pump Start) MALF CLG05=10 (CCW Leak)	Failure of B RHR Pump During Surveillance
<input type="checkbox"/>	At direction of examiner	Event 2 Trigger#2 STM04A (100 over 45 second Ramp)	A ARV Fails OPEN (3411)
<input type="checkbox"/>	At direction of examiner	Event 3 Trigger#3 PZR04 (100%, No RAMP)	Master Pressure Controller (431K) Fails HIGH
<input type="checkbox"/>	At direction of examiner	Event 4 Trigger #4 Circuit Breaker 90812 - REM-EDS-025 (OPEN) Circuit Breaker 7X13A72 - REM-EDS-023 (OPEN) Trigger #5 Circuit Breaker 91302 - REM-EDS-031 (OPEN) (Loss of Circuit 913)	Unscheduled Trip of Transmission Circuits/Downpower Note: Loss of Circuit 908 (Followed by Phone Call) Note: Loss of Circuit 913 (Followed by Phone Call)

Scenario Event Description
NRC Scenario 3

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	Turbine Load at 380 MWe	Event 5 Trigger #6 FDW07C (Current Controller Output)	B FRV fails AS-IS (Manual Control Available)
<input type="checkbox"/>	At direction of examiner	Event 6 Trigger #7 ROD05-K9 (1400 gpm, No Ramp)	Ejected Control Rod
<input type="checkbox"/>	Post-Rx Trip	Event 7 TUR02	Failure of Turbine to Trip on Rx Trip Note: This malfunction is inserted at T=0.
<input type="checkbox"/>	Post-Rx Trip	Event 8 RPS07A RPS07B	Failure of A and B SI Pumps to Auto Start Note: These malfunctions are inserted at T=0.
<input type="checkbox"/>	Post-Rx Trip	Event 9 RHR01A	A RHR Pumps trips Note: This malfunction is inserted at T=0, conditional on SI Actuation.
<input type="checkbox"/>	Terminate the scenario upon direction of Lead Examiner		

Op Test No.: N17-1 Scenario # 3 Event # 1 Page 8 of 59Event Description: **Failure of B RHR Pump During Surveillance**

Shortly after taking the watch, the operator will start the B RHR Pump per STP-O-2.2.-COMP-B, "Residual Heat Removal Pump B Comprehensive Test," and then stop the pump due to a pump seal water cooler failure using the guidance of A-503.1, "Emergency and Abnormal Operating Procedures User's Guide." The operator will respond using AP-CCW.2, "Loss of CCW During Power Operation." The operator will address Technical Specification LCO 3.5.2, "ECCS - MODES 1, 2, and 3."

SIM DRIVER Instructions: Operate Trigger #1 (MALF ANN-A-RHR02 = ON (60 seconds after B RHR Pump Start) MALF CLG05=10 (CCW Leak))

Indications Available:

- MCB Annunciator A-9, RHR PUMP COOLING WATER OUTLET LO FLOW 15 GPM

Time	Pos.	Expected Actions/Behavior	Comments
STP-O-2.2-COMP-B, RESIDUAL HEAT REMOVAL PUMP B COMPREHENSIVE TEST			
	HCO	(Step 6.1.9) WHEN notified that PART A – Pre Run Readings of Attachment 5, RHR Pump B Discharge Pressure Readings, has been completed, THEN CONTINUE with this procedure.	SIM DRIVER: As EO report that Part A of Attachment 5 is complete.
	HCO	(Step 6.1.10) START RHR Pump B	
	HCO	(Step 6.1.11) RECORD RHR Pump B start time:	
	HCO	(Step 6.1.12) VERIFY flow is being indicated on recirculation flow meter, FI-672.	NOTE: The HCO will contact the EO, and direct that flow be verified. SIM DRIVER: as EO, acknowledge and report that FI-672 is indicating 225 gpm.
	HCO	(Step 6.1.13) RECORD the flow indicated on FI-672.	

Op Test No.: N17-1 Scenario # 3 Event # 1 Page 9 of 59Event Description: **Failure of B RHR Pump During Surveillance**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 6.1.14) CHECK RHR Pump B Recirculation Flow Acceptance Criteria is met.	NOTE: The HCO will determine that the recirculation flow acceptance criteria is met.
	HCO	(Step 6.1.15) IF RHR Pump B Recirculation Flow Acceptance Criteria is NOT met,.....	
	HCO	(Step 6.1.16) INSPECT all accessible areas of the RHR System for leakage, (that is, areas that can be entered without creating ALARA concerns), including piping, valves and heat exchangers.	NOTE: The HCO will contact the EO, and direct that accessible areas be inspected. SIM DRIVER: as EO, acknowledge.
AR-A-9, RHR PUMP COOLING WATER OUTLET LO FLOW 15 GPM			
			NOTE: The HCO will contact the EO, and direct that the alarm be investigated. SIM DRIVER: as EO, acknowledge, and report that there is yellow water spraying out of the B RHR Seal Water Heat Exchanger and accumulating on the floor.
	US	(Step 1) GO TO the applicable AP-CCW procedure:	NOTE: The US will select AP-CCW.2.
		<ul style="list-style-type: none"> AP-CCW.2, LOSS OF CCW DURING POWER OPERATION 	
		<ul style="list-style-type: none"> AP-CCW.3, LOSS OF CCW - PLANT SHUTDOWN 	
A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE			

Op Test No.: N17-1 Scenario # 3 Event # 1 Page 10 of 59Event Description: **Failure of B RHR Pump During Surveillance**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 5.3.A.5) Actions are permitted to mitigate or compensate for equipment or controller failures to isolate leaks. Permitted actions include those actions necessary to take manual control and stabilize the affected parameters, or to isolate a leak. Examples include closing or isolating a failed open PORV, taking manual control of a failed FRV controller, etc. These deviations fall under the Maintenance Rule. Therefore, 50.59 is not required.	NOTE: It is expected that the HCO will stop the B RHR Pump based on this guidance.
			NOTE: The US will go to AP-CCW.2.
AP-CCW.2, LOSS OF CCW DURING POWER OPERATION			
	HCO	(Step 1) Check CCW Pump Status:	
		<ul style="list-style-type: none"> Both CCW pump breaker white lights – EXTINGUISHED 	
		<ul style="list-style-type: none"> Annunciator A-17, MOTOR OFF RCP CCWP - EXTINGUISHED 	
	HCO	(*Step 2) Monitor CCW Surge Tank Level – APPROXIMATELY 50% AND STABLE....	<p>NOTE: This is a Continuous Action. The US will make one or more board operators aware.</p> <p>NOTE: The CCW Surge Tank Level is lowering, however, the level is lowering slowly. The HCO may or may not refill the Surge Tank. If not, go to Step 3.</p>
	HCO	(Step 2 RNO) Perform the following:	
		<ul style="list-style-type: none"> Open RMW to CCW surge tank, MOV-823. 	
		<ul style="list-style-type: none"> Start RMW pump(s). 	
		<ul style="list-style-type: none"> IF surge tank level stable or rising, THEN control level at approximately 50% while continuing with Step 3. 	NOTE: The makeup flow into the CCW Surge Tank will be able to stabilize the tank level.

Op Test No.: N17-1 Scenario # 3 Event # 1 Page 11 of 59Event Description: **Failure of B RHR Pump During Surveillance**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(*Step 3) Monitor CCW Hx Outlet Temperature (MCB rear or PPCS point ID T0621)	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> CCW Hx Outlet temperature – LESS THAN 120°F 	
	HCO	(*Step 4) Monitor RCP Indications:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Annunciator A-7 (A-15), RCP 1A (1B) CCW return Hi Temp or low flow 165 gpm 125°F alarm – EXTINGUISHED 	
		<ul style="list-style-type: none"> RCP motor bearings temperature (PPCS Group Display – RCPS OR RXP temperature monitor RK-30A recorder) - ≤ 200°F 	
	HCO	(*Step 5) Monitor If Letdown Should Be Isolated:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Check annunciator A-12, Non-Regen Hx Letdown Out Hi Temp 145°F - EXTINGUISHED 	
		<ul style="list-style-type: none"> Check excess letdown temperature – LESS THAN 195°F 	
	HCO	(Step 6) Check CCW Valve Alignment - NORMAL	
		<ul style="list-style-type: none"> Check MCB CCW valves (Refer to ATT-1.0, ATTACHMENT AT POWER CCW ALIGNMENT) 	
		<ul style="list-style-type: none"> Direct AO to check local flow indications per ATT-1.1, ATTACHMENT NORMAL CCW FLOW 	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge.

Op Test No.: N17-1 Scenario # 3 Event # 1 Page 12 of 59Event Description: **Failure of B RHR Pump During Surveillance**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 7) Locally Check Seal Water Hx CCW Outlet Flow – NORMAL (FI-605)	NOTE: The US may direct the EO to report status of Seal Water Hx CCW Outlet Flow. If so, SIM DRIVER acknowledge as EO, and report flow is 15 gpm .
	HCO	(Step 8) Check for CCW Leakage In CNMT:	
		• Check CNMT sump A level:	
		• Level – STABLE	
		• Sump A pumps – OFF	
		• RCP oil levels - STABLE	
	HCO/ EO	(Step 9) Check for CCW Leakage In AUX BLDG:	NOTE: The EO has already reported CCW leakage in the Aux Building.
		• Start frequency of AUX BLDG sump pump(s) – NORMAL (Refer to RCS daily leakage log)	
		• Waste holdup tank level – STABLE OR RISING AS EXPECTED	
	HCO	(Step 10) Verify CCW System Leak - IDENTIFIED	
		• Leak identified	NOTE: The leak has been discovered.
		• Isolate leak if possible	NOTE: The US/HCO may direct the EO to isolate the leak by closing V707B and 708B. If so, SIM DRIVER acknowledge as EO , and DELETE MALFCLG05 60 seconds after the direction to isolate the leak. THEN , report that the valves have been closed .

Op Test No.: N17-1 Scenario # 3 Event # 1 Page 13 of 59Event Description: **Failure of B RHR Pump During Surveillance**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Refer to IP-ENV-3, RESPONSE TO A SPILL OF HAZARDOUS MATERIAL/WASTE 	NOTE: The US may ask the SM or WCCS to address. If so, SIM DRIVER acknowledge as needed.
	HCO	(Step 11) Check Normal or Excess Letdown – IN SERVICE	
	HCO	(Step 12) Check CCW System Leak Isolated	
		<ul style="list-style-type: none"> Surge tank level – APPROXIMATELY 50% 	
		<ul style="list-style-type: none"> (Step 12a RNO) IF level less than 50%, THEN continue filling. 	NOTE: The Surge Tank may or may not be being filled. If it is, the Step 12 RNO will be performed.
		IF $\geq 50\%$ THEN perform the following:	
		<ul style="list-style-type: none"> Stop RMW pump(s). 	
		<ul style="list-style-type: none"> Close MOV-823. 	
		<ul style="list-style-type: none"> (Step 12 Continued) Surge tank level - STABLE 	
	HCO	(Step 13) Direct RP To Sample CCW System For Chromates	NOTE: The US may notify RP. SIM DRIVER: as RP, acknowledge.
	HCO/CO	(Step 14) Evaluate MCB Annunciator Status (Refer to AR Procedures)	
	US	(Step 15) Evaluate Plant Conditions:	
		<ul style="list-style-type: none"> CCW system malfunction – IDENTIFIED AND CORRECTED. 	
		<ul style="list-style-type: none"> CCW system status adequate for power operation (Refer to ITS Section 3.7.7). 	

Op Test No.: N17-1 Scenario # 3 Event # 1 Page 14 of 59Event Description: **Failure of B RHR Pump During Surveillance**

Time	Pos.	Expected Actions/Behavior	Comments
	US	(Step 16) Notify Higher Supervision	NOTE: The US may notify the WCC. SIM DRIVER: as WCCS, acknowledge.
	US	(Step 17) Return To Procedure Or Guidance In Effect	
			NOTE: The US will likely check the Tech Specs.
TECHNICAL SPECIFICATION LCO 3.5.2, ECCS – MODES 1, 2 AND 3			
	US	LCO 3.5.2 Two ECCS trains shall be OPERABLE	
	US	APPLICABILITY: MODES 1, 2, and 3.	

Op Test No.: N17-1 Scenario # 3 Event # 1 Page 15 of 59Event Description: **Failure of B RHR Pump During Surveillance**

Time	Pos.	Expected Actions/Behavior			Comments
		CONDITION	REQUIRED ACTION	COMPLETION TIME	<p>The US will enter Condition B based on the failure of the B RHR Pump to successfully complete Post-Maintenance Testing and an expiring Completion Time.</p> <p>NOTE: The US may call WCCS/Supervision to address the Tech Spec Required Shutdown.</p> <p>If so, SIM DRIVER acknowledge as WCCS/Plant Supervision; and state that management will call back with a Shutdown direction.</p>
		<p>A. One train inoperable</p> <p>AND</p> <p>At least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.</p>	A.1 Restore train to OPERABLE status.	72 hours	
		B. Required Action and associated Completion Time not met.	<p>B.1 Be in Mode 3.</p> <p>AND</p> <p>B.2 Be in Mode 4</p>	<p>6 hours</p> <p>12 hours</p>	
					<p>NOTE: The US may call WCC/Maintenance to address the failed RHR Pump.</p> <p>If so, SIM DRIVER acknowledge as WCC; and direct that the B RHR Pump be placed in PULL STOP.</p>
					<p>NOTE: The US will likely conduct a Plant Status Brief.</p>
At the discretion of the Lead Examiner move to Event #2.					

Op Test No.: N17-1 Scenario # 3 Event # 2 Page 16 of 59Event Description: **A ARV Fails OPEN (3411)**

Following this, the controller for the A SG ARV will fail such that the valve will travel to the full OPEN position. The operator will respond using A-503.1, "Emergency and Abnormal Operating Procedures Users Guide," and/or AP-FW.2, "Secondary Coolant Leak," and take manual control of the ARV-3411, and close the valve.

SIM DRIVER Instructions: **Operate Trigger #2 (STM04A (100% - 45 second ramp))**

Indications Available:

- Steam Noise is heard as the valve OPENS
- AOV-3411 Controller Green Status Light goes DARK.
- AOV-3411 Red Status light on MCB Panel 6 is LIT (Vertical Section).
- AOV-3411 Controller output goes toward 100% demand.
- Tavg decreases slightly
- Pzr Pressure decreases slightly
- Rx power increases slightly
- PPCS Alarm Point V3411 A ARV OPEN goes into ALARM
- Turbine load reduces automatically

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The crew may take early action per the guidance of A-503.1 and/or go to AP-FW.2.
A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE			
	CO	(Step 5.3.A.5) Actions are permitted to mitigate or compensate for equipment or controller failures to isolate leaks. Permitted actions include those actions necessary to take manual control and stabilize the affected parameters, or to isolate a leak. Examples include closing or isolating a failed open PORV, taking manual control of a failed FRV controller, etc. These deviations fall under the Maintenance Rule. Therefore, 50.59 is not required.	NOTE: It is expected that the CO will take manual control of the valve.
		OR	
AP-FW.2, LOSS OF SECONDARY COOLANT			

Op Test No.: N17-1 Scenario # 3 Event # 2 Page 17 of 59Event Description: **A ARV Fails OPEN (3411)**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(*Step 1) Determine if Plant Operation can continue:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Leak does not present an unmanageable safety threat. 	
		<ul style="list-style-type: none"> CNMT Pressure is being maintained less than 2 psig. 	
		<ul style="list-style-type: none"> CNMT Temperature is being maintained less than 125°F. 	
		<ul style="list-style-type: none"> Safe Shutdown Equipment Operability is not affected. 	
		<ul style="list-style-type: none"> Leakage is within make-up capability (GE BETZ). 	
		<ul style="list-style-type: none"> S/G Level Stable at or Trending to 52%. 	
	HCO/ CO	(*Step 2) Determine if a Load Reduction is required:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Rx Power less than or equal to 100%. 	
		<ul style="list-style-type: none"> S/G Level Stable at or Trending to 52%. 	
		<ul style="list-style-type: none"> MFW Pump Suction Pressure greater than 200 psig and stable. 	
	HCO	(Step 3) Check Containment conditions NORMAL.	
		<ul style="list-style-type: none"> CNMT Humidity (PPCS Point: TCVDEW-S) 	
		<ul style="list-style-type: none"> CNMT Pressure 	
		<ul style="list-style-type: none"> CNMT Sump A Level 	
		<ul style="list-style-type: none"> CNMT Air Temperature (PPCS Point: TCV17) 	
		<ul style="list-style-type: none"> CNMT Recirc Fan Cooler Dump Frequency 	

Op Test No.: N17-1 Scenario # 3 Event # 2 Page 18 of 59Event Description: **A ARV Fails OPEN (3411)**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 4) Check for Secondary Leak to Atmosphere.	NOTE: The A ARV has failed OPEN.
		<ul style="list-style-type: none"> Check S/G Safety Valves CLOSED (PPCS POINTS: VMSSVA and VMSSVB) 	
		<ul style="list-style-type: none"> Check S/G ARVs CLOSED 	
	CO	(Step 4.b RNO) Place the ARV controllers in Manual and Close the Valves.	NOTE: Early action may have been taken to close the A ARV.
		IF the Valve will not close THEN...	
	CO	<ul style="list-style-type: none"> (Step 4 Continued) Verify no Steam or Feedwater Leakage in the Turbine or Intermediate Building (cleanside) 	
		<ul style="list-style-type: none"> Dispatch AO as necessary to investigate leakage. 	NOTE: An EO may not be dispatched to look for leaks because the Steam Noise has been eliminated when action was taken to close the A ARV manually.
	HCO/ CO	(Step 5) Check Condenser Steam dump valves shut if not required for RCS Temp Control	
	HCO/ CO	(Step 6) Check MSR Tubes intact:	
		<ul style="list-style-type: none"> Check PPCS Server group MSR reading normal for each MSR 	
		<ul style="list-style-type: none"> Consult with System Engineering to determine if MSR Isolation is required. 	
	CO	(Step 7) Check Feedwater Heater intact:	
		<ul style="list-style-type: none"> Check MCB Alarm H-29 FDWTR HTR and Drain Tank Hi-Lo level Extinguished. 	
		<ul style="list-style-type: none"> Dump Valves Shut: (HDT Page on PPCS) 	

Op Test No.: N17-1 Scenario # 3 Event # 2 Page 19 of 59Event Description: **A ARV Fails OPEN (3411)**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> V-3343 for HDT 	
		<ul style="list-style-type: none"> V-5557 for 3A Heater 	
		<ul style="list-style-type: none"> V-3347 for 5A Heater 	
		<ul style="list-style-type: none"> V-5560 for 3B Heater 	
		<ul style="list-style-type: none"> V-3348 for 5B Heater 	
		<ul style="list-style-type: none"> V-5561 for 1A Heater 	
		<ul style="list-style-type: none"> V-5559 for 2A Heater 	
		<ul style="list-style-type: none"> V-5556 for 1B Heater 	
		<ul style="list-style-type: none"> V-5558 for 2B Heater 	
	US	(Step 8) Evaluate effect on continued Plant operation:	
		<ul style="list-style-type: none"> Refer to the following Technical Specifications: 	NOTE: The US may refer to Technical Specification 3.7.4, however, it will be determined that LCO 3.7.4 is met.
		<ul style="list-style-type: none"> ITS Section 3.7 Plant System 	
		<ul style="list-style-type: none"> ITS Section 3.7.4 ARV's 	
		<ul style="list-style-type: none"> ITS Section 3.7.6 CST's 	
		<ul style="list-style-type: none"> ITS Section 3.6.4 Containment Pressure 	
		<ul style="list-style-type: none"> ITS Section 3.6.5 Containment Temperature 	
	US	(Step 9) Check if Plant Shutdown and Cooldown Required:	
		<ul style="list-style-type: none"> Consult with SM and Plant Management if plant shutdown and cooldown required 	<p>NOTE: The US may call WCCS/Supervision to address the Tech Spec Required Shutdown (Previous Event) and the ARV failure.</p> <p>If so, SIM DRIVER acknowledge as WCCS/Plant Supervision; and state that management will call back with a Shutdown direction.</p>

Op Test No.: N17-1 Scenario # 3 Event # 2 Page 20 of 59Event Description: **A ARV Fails OPEN (3411)**

Time	Pos.	Expected Actions/Behavior			Comments
	US	(Step 9.a RNO) Return to Procedure and Step in effect.			
TECHNICAL SPECIFICATION 3.7.4, ATMOSPHERIC RELIEF VALVES (ARVs)					
	US	LCO 3.7.4 Two ARV lines shall be OPERABLE			
	US	APPLICABILITY: MODES 1, 2, MODE 3 with Reactor Coolant System average temperature (T_{avg}) $\geq 500^{\circ}\text{F}$			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	NOTE: The US will determine that the failed ARV is OPERABLE.
		A. One ARV line inoperable.	A.1 Restore ARV line to OPERABLE status.	7 days	
					NOTE: The US will likely conduct a Plant Status Brief.
At the discretion of the Lead Examiner move to Event #3.					

Op Test No.: N17-1 Scenario # 3 Event # 3 Page 21 of 59Event Description: **Master Pressure Controller (431K) Fails HIGH**

Subsequently, the Master Pressure Controller (431K) will fail such that the output in Automatic goes to 100%, causing both Pressurizer Spray Valves to OPEN, and RCS Pressure to LOWER. The operator will respond using AR-F-10, "PRESSURIZER LO PRESS 2205 PSI," and enter AP-PRZR.1, "Abnormal Pressurizer Pressure." The operator will address Technical Specification LCO 3.4.1, "RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits," and Technical Requirements Manual TR-3.4.3, "Anticipated Transients Without Scram (ATWS) Mitigation."

SIM DRIVER Instructions: Operate Trigger #3 (PZR04 (100, No Ramp))**Indications Available:**

- Annunciator F-2, PRESSURIZER PRESSURE HI
- Annunciator F-10, PRESSURIZER LO PRESS 2205 PSI
- AOV-431A goes to full OPEN
- AOV-431B goes to full OPEN
- 431K Output moves to 100%
- All four PZR Pressure channels are lowering

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The crew may enter AP-PRZR.1 directly.
AR-F-10, PRESSURIZER LO PRESS 2205 PSI			
	HCO	(Step 1) Perform a channel check.	
	HCO	(Step 2) Go to the applicable procedure:	
	US	<ul style="list-style-type: none"> • AP-PRZR.1, if pressure is abnormal for plant condition 	
			NOTE: The HCO may take action to place 431K in MANUAL control before arriving at the procedurally directed step, per the Guidance of A-503.1.
AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE			
	HCO	(Step 1) Check PZR Pressure:	
		<ul style="list-style-type: none"> • All 4 narrow range channels – APPROXIMATELY EQUAL 	

Op Test No.: N17-1 Scenario # 3 Event # 3 Page 22 of 59Event Description: **Master Pressure Controller (431K) Fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> All 4 narrow range channels – TRENDING TOGETHER 	
	HCO	(Step 2) Check Reactor Power - STABLE	
	HCO	(Step 3) Check PRZR Pressure:	
		<ul style="list-style-type: none"> Pressure – LESS THAN 2235 PSIG 	
		<ul style="list-style-type: none"> Pressure – GREATER THAN 2000 PSIG 	
	HCO	(Step 4) Check PRZR Heater Status:	
		<ul style="list-style-type: none"> PRZR proportional heater breaker – CLOSED 	
		<ul style="list-style-type: none"> PRZR heater backup group – ON 	
	HCO	(Step 5) Verify Normal PRZR Spray valves – CLOSED	NOTE: The Spray Valves should be CLOSED now, but were previously opened.
		<ul style="list-style-type: none"> AOV-431A 	
		<ul style="list-style-type: none"> AOV-431B 	
	HCO	(Step 6) Check PRZR Pressure Controller, 431K, Demand – LESS THAN 50%	NOTE: The 431K Output is at 100%.
	HCO	(Step 6 RNO) Place 431K in MANUAL and lower output to restore PRZR pressure to 2235 psig.	NOTE: This may have already been accomplished, per the Guidance of A-503.1.
	HCO	(Step 7) Check PZR PORVs:	
		<ul style="list-style-type: none"> PORVs – CLOSED 	
		<ul style="list-style-type: none"> Annunciator F-19, PRZR PORV OUTLET HI TEMP 145°F - EXTINGUISHED 	
	US	<ul style="list-style-type: none"> Go to Step 9. 	

Op Test No.: N17-1 Scenario # 3 Event # 3 Page 23 of 59Event Description: **Master Pressure Controller (431K) Fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 9) Check PRZR Safety Valves:	
		<ul style="list-style-type: none"> Position indicator – LESS THAN 0.1 INCH 	
	HCO	<ul style="list-style-type: none"> Annunciator F-18, PRZR SAFETY VLV OUTLET HI TEMP 145°F - EXTINGUISHED 	
		<ul style="list-style-type: none"> Annunciator AA-13, PRESSURIZER SAFETY VALVE POSITION - EXTINGUISHED 	
	HCO	(Step 10) Check AUX Spray Valve, AOV-296 - CLOSED	
	HCO	(Step 11) Check PRZR Pressure Control	
		<ul style="list-style-type: none"> Pressure – TRENDING TO 2235 PSIG 	NOTE: With the HCO controlling PRZR pressure in MANUAL, pressure is restoring to normal.
	US	<ul style="list-style-type: none"> Go to Step 16. 	
	HCO	(Step 16) Check PRT Indications:	
		<ul style="list-style-type: none"> Level – BETWEEN 61% AND 84% 	
		<ul style="list-style-type: none"> Pressure – APPROXIMATELY 1.5 PSIG AND STABLE 	
		<ul style="list-style-type: none"> Temperature – AT CNMT AMBIENT TEMPERATURE AND STABLE 	
	HCO	(Step 17) Establish PRZR Pressure Control In Auto:	
		<ul style="list-style-type: none"> Verify 431K in AUTO 	
	HCO	(Step 17 RNO) Place 431K in AUTO, if desired.	NOTE: Since the controller has failed, this will NOT be desired.

Op Test No.: N17-1 Scenario # 3 Event # 3 Page 24 of 59Event Description: **Master Pressure Controller (431K) Fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	<ul style="list-style-type: none"> (Step 17b) Verify PRZR spray valves in AUTO. 	
		<ul style="list-style-type: none"> Verify PRZR heaters restored: 	
		<ul style="list-style-type: none"> PRZR proportional heaters breaker – CLOSED 	
		<ul style="list-style-type: none"> PRZR backup heaters breaker – RESET, IN AUTO. 	
	US	(Step 18) Evaluate MCB Annunciator Status (Refer to AR Procedures)	
	US	(Step 19) Notify Higher Supervision	NOTE: The US may call WCC/Maintenance to address the failed controller. If so, SIM DRIVER acknowledge as WCC.
	US	(Step 20) Notify Reactor Engineer for Transient Monitoring Program	NOTE: The US may call RE. If so, SIM DRIVER acknowledge as RE.
TECHNICAL SPECIFICATION 3.4.1, RCS TEMPERATURE, PRESSURE, AND FLOW DEPARTURE FROM NUCLEATE BOILING (DNB) LIMITS			
	US	(LCO 3.4.1) RCS DNB parameters for pressurizer pressure, RCS average temperature, and RCS total flow rate shall be within the limits specified in the COLR.	NOTE: According to Section 2.10.1 of the COLR, the Przr Pressure shall be ≥ 2175 psig.
		APPLICABILITY MODE 1.	
		<div>CONDITION</div>	<div>REQUIRED ACTION</div>
		<div>COMPLETION TIME</div>	NOTE: The US will identify that

Op Test No.: N17-1 Scenario # 3 Event # 3 Page 25 of 59Event Description: **Master Pressure Controller (431K) Fails HIGH**

Time	Pos.	Expected Actions/Behavior			Comments
		A. One or more RCS DNB parameters not within limits.	A.1 Restore RCS DNB parameters(s) to within limit.	2 hours	this TS was entered and exited if and when RCS pressure lowers to (and then rises above) 2175 psig.
TECHNICAL REQUIREMENT 3.4.3, ANTICIPATED TRANSIENTS WITHOUT SCRAM (ATWS) MITIGATION					
	US	(TR 3.4.3) ATWS Mitigation shall be OPERABLE as follows: Each PORV shall be capable of automatic actuation and each block valve shall be OPEN			
		APPLICABILITY MODE 1 > 45%.			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	The US will determine that Condition A is required to be entered.
		A. One or more PORV automatic flow path inoperable.	A.1 declare ATWS mitigating capability inoperable.	immediately	
At the discretion of the Lead Examiner move to Event #4.					

Op Test No.: N17-1 Scenario # 3 Event # 4 Page 26 of 59Event Description: **Unscheduled Trip of Transmission Circuits/Downpower**

Then, the off-site transmission circuit 908 will de-energize, and the RG&E Energy Control Center (ECC) will request that Ginna verbally certify that the plant is capable of ramping down to 360 MWe net generation in 14 minutes upon Subsequent notification from ECC. The operator will respond in accordance with AR-J-28, "STATION 13A TROUBLE," enter O-6.9, "Operating Limits for Ginna Station Transmission," and prepare for plant shutdown. After this, the off-site transmission circuit 913 will also de-energize and the ECC will call requesting that the previously agreed to downpower be executed. The operating crew will enter AP-TURB.5, "Rapid Load Reduction," and lower plant power to 340 MWe.

SIM DRIVER Instructions: Operate Trigger #4 (Circuit Breaker 90812 - REM-EDS-025 (OPEN) Circuit Breaker 7X13A72 - REM-EDS-023 (OPEN) (Loss of Circuit 908)

Immediately after the recognition of the PPCS Alarms, contact the Control Room as RG&E ECC and state the following:

This is RG&E Energy Control Center. Circuit 908 has been lost, the exact cause is unknown, and crews are in route. There is no net generation reduction required at this time. RG&E ECC requests that Ginna verbally certify that the plant is capable of ramping down to 340 MWe net generation in 14 minutes upon Subsequent notification from RG&E ECC.

Indications Available:

- PPCS Alarm Point B7X13A72 Station 13A Breaker 7X13A72 in ALARM
- PPCS Alarm Point B90812 Station 13A Breaker 90812 in ALARM
- MCB Annunciator J-28, STATION 13A TROUBLE

Time	Pos.	Expected Actions/Behavior	Comments
AR-J-28, STATION 13A TROUBLE			
	US	(Step 4.1) Notify Plant electricians to investigate.	NOTE: The US may notify the WCC/Electricians. SIM DRIVER: as WCCS, acknowledge.
	CO	(Step 4.2) Verify proper generator/system voltages.	

Op Test No.: N17-1 Scenario # 3 Event # 4 Page 27 of 59Event Description: **Unscheduled Trip of Transmission Circuits/Downpower**

	CO	(Step 4.3) Verify proper breaker alignment. Refer to PPCS Electrical Distribution Display by clicking on "Station 13 Electrical" in the top menu display.	
	US	(Step 4.4) REFER to O-6.9, OPERATING LIMITS FOR GINNA STATION TRANSMISSION.	
			NOTE: The US will go to O-6.9.
O-6.9, OPERATING LIMITS FOR GINNA STATION TRANSMISSION			
	US	(Step 6.1.1) AFTER CONFERING with an SRO THEN INFORM RG&E ECC the plant is capable of meeting the reduced net generation level within 4, 14 or 29 minutes upon SUBSEQUENT notification.	NOTE: The US/CO may notify RG&E ECC that the plant is capable of meeting the reduced net generation level within 4, 14 or 29 minutes upon SUBSEQUENT notification. SIM DRIVER: as RG&E ECC, acknowledge.
	US	(Step 6.1.2) Shift Manager SHALL COMPLETE Attachment 1, Generation Output Ramp Down Written Certification, AND FAX a copy to RG&E ECC within 15 minutes of being notified of certification request.	NOTE: The US will direct the SM to perform this action. SIM DRIVER: as SM, acknowledge.
	US	(Step 6.1.3) IMMEDIATELY REDUCE net generation to the level directed by RG&E ECC for the trip or scheduled outage of a transmission circuit. OTHERWISE, MARK this Step N/A.	NOTE: The US will mark this Step NA.
	US	(Step 6.1.4) REFER TO AP-TURB.5, Rapid Load Reduction, for preparations to meet the load reduction time limit(s).	
	US	(Step 6.1.5) IF either generator output breaker (1G13A72 or 9X13A72) is out of service OR has tripped....	NOTE: Neither breaker is OOS or tripped.

Op Test No.: N17-1 Scenario # 3 Event # 4 Page 28 of 59Event Description: **Unscheduled Trip of Transmission Circuits/Downpower**

	US	(Step 6.1.6) IF NECESSARY COORDINATE with RG&E ECC in lowering VAR's to lower generator output current. OTHERWISE, MARK this Step N/A.	
	US	(Step 6.1.7) PERFORM a Pre Job Briefing so that immediate load reductions can commence upon notification from RG&E ECC of a subsequent circuit failure.	
	US	(Step 6.1.8) WHEN notification is received from RG&E ECC that a SUBSEQUENT loss of transmission circuit has occurred, THEN REDUCE net generation to the level directed by RG&E ECC within the required time limit(s).	
SIM DRIVER Instructions: Operate Trigger #5 (Circuit Breaker 91302 - REM-EDS-031 (OPEN) (Loss of Circuit 913)			
Immediately after the recognition of the PPCS Alarms, contact the Control Room as RG&E ECC and state the following:			
<p>This is RG&E Energy Control Center. Circuit 913 has been lost, the exact cause is unknown, and crews are in route. Reduce net generation to the level directed by the previous guarantee 340 MWe net generation within 14 minutes.</p>			
Indications Available:			
<ul style="list-style-type: none"> PPCS Alarm Point B91302 Station 13A Breaker 91302 in ALARM MCB Annunciator J-28, STATION 13A TROUBLE 			
			NOTE: The US has already conducted a Power Reduction Brief.
AP-TURB.5, RAPID LOAD REDUCTION			
			Examiner NOTE: When Turbine Load lowers to 380 MWe (Gross) Move to Event 5.
	HCO	(Step 1) Initiate Load Reduction	
		<ul style="list-style-type: none"> Verify rods in AUTO 	

Op Test No.: N17-1 Scenario # 3 Event # 4 Page 29 of 59Event Description: **Unscheduled Trip of Transmission Circuits/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	<ul style="list-style-type: none"> Initiate boration at the rate determined in OPG-REACTIVITY-CALC. 	NOTE: The HCO will initiate a boration.
	CO	<ul style="list-style-type: none"> Reduce turbine load in Auto as follows: <ul style="list-style-type: none"> Place Turbine EH Control in OPER PAN., IMP PRESS IN, if desired. Select desired rate on thumbwheel 	NOTE: The CO will 1%/Minute.
		<ul style="list-style-type: none"> Reduce the setter to the desired load 	
		<ul style="list-style-type: none"> Depress the GO button 	
	HCO	<ul style="list-style-type: none"> Place PRZR backup heaters switch to ON 	
	HCO	(*Step 2) Monitor RCS Tavg	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Tavg – GREATER THAN 545°F 	
		<ul style="list-style-type: none"> Tavg – LESS THAN 579°F 	
	HCO	(Step 3) Adjust Boric Acid Addition Rate As Necessary To (refer to OPG-REACTIVITY-CALC):	
		<ul style="list-style-type: none"> Maintain rods above the insertion limit 	
		<ul style="list-style-type: none"> Match Tavg and Tref 	
		<ul style="list-style-type: none"> Compensate for Xenon 	
SIM DRIVER: Operate Trigger #6 (FDW07C (Current Controller Output in %)) to initiate Event 5.			
	HCO	(*Step 4) Monitor PRZR Pressure – TRENDING TO 2235 PSIG IN AUTO	NOTE: This is a Continuous Action. The US will make one or more board operators aware.

Op Test No.: N17-1 Scenario # 3 Event # 4 Page 30 of 59Event Description: **Unscheduled Trip of Transmission Circuits/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 4 RNO) Control PRZR pressure by one of the following:	NOTE: Controller 431K is in MANUAL from a previous malfunction.
		<ul style="list-style-type: none"> • 431K in MANUAL 	
		<ul style="list-style-type: none"> • Manual control of PRZR heaters and sprays 	
		<ul style="list-style-type: none"> • IF PRZR pressure can NOT be controlled manually, THEN..... 	
	CO	(*Step 5) Monitor MFW Regulating Valves – RESTORING S/G LEVEL TO 52% IN AUTO	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	HCO	(*Step 6) Monitor PRZR Level – TRENDING TO PROGRAM IN AUTO CONTROL	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	CO	(Step 7) Check IA Available to CNMT	
		<ul style="list-style-type: none"> • IA pressure – GREATER THAN 60 PSIG 	
		<ul style="list-style-type: none"> • Instr Air to CNMT Isol Valve, AOV-5392 - OPEN 	
	CO	(*Step 8) Check Steam Dump Status:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> • Annunciator G-15, STEAM DUMP ARMED - LIT 	
		<ul style="list-style-type: none"> • Steam dump operating properly in AUTO 	
	CO	(Step 9) Check Hotwell Level:	
		<ul style="list-style-type: none"> • Hotwell level controller in AUTO 	
		<ul style="list-style-type: none"> • Controller demand LESS THAN 60% 	

Op Test No.: N17-1 Scenario # 3 Event # 4 Page 31 of 59Event Description: **Unscheduled Trip of Transmission Circuits/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Hotwell level at setpoint 	
	CO	(*Step 10) Check If Condensate Booster Pumps Should Be Secured	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		Condensate booster pumps – 2 PUMPS RUNNING	NOTE: There are no Condensate Booster Pumps running.
	US	(Step 10.a RNO) IF no pumps running THEN go to step 11.	
	CO	(Step 11) Check If One MFW Pump Should Be Secured	
		<ul style="list-style-type: none"> Power LESS THAN 50% 	
	US	(Step 11a RNO) GO TO Step 18.	
	US	(Step 18) Evaluate Plant Status	
		<ul style="list-style-type: none"> IF load was reduced more than 15% RTP in one hour, THEN notify RP to obtain primary samples required by ITS LCO 3.4.16 	NOTE: The US will contact RP. SIM DRIVER: as RP, acknowledge
		<ul style="list-style-type: none"> Power stable at desired level 	
		(Step 18b RNO) IF power greater than 20% and further reduction is required, THEN continue load reduction and return to Step 2.	

When the Crew diagnoses the failed Feed Reg Valve, Lead Examiner move to Event #5.

Op Test No.: N17-1 Scenario # 3 Event # 5 Page 32 of 59Event Description: **B FRV fails AS-IS (Manual Control Available)**

During the load reduction, a failure of the B FRV to control in AUTO will occur. The operator will respond per AR-G-5, "S/G/ B LEVEL DEVIATION $\pm 7\%$," or upon observing an abnormally high level in the B Steam Generator and control the B FRV manually.

SIM DRIVER Instructions: Operate Trigger #6 (FDW07C (Current Controller Output in %))

Indications Available:

- Feed flow in the B SG will stabilize during the downpower
- B SG level starts to rise.
- MCB Annunciator G-22, ADFCS SYSTEM TROUBLE
- MCB Annunciator G-5, S/G LEVEL DEVIATION $\pm 7\%$

Time	Pos.	Expected Actions/Behavior	Comments
			<p>NOTE: The CO will dispatch the EO to the relay room to check the ADFCS Panel.</p> <p>SIM DRIVER: as EO report that ADFCS Panel indicates "Control Card Failure" after 3 minutes.</p>
AR-G-5, S/G LEVEL DEVIATION $\pm 7\%$			
	CO	(Step 4.1) PERFORM a channel check of the following:	
		• LI-471	
		• LI-472	
		• LI-473	
	CO	(Step 4.2) IF Main Feedwater is supplying the S/G, THEN PERFORM the following as necessary:	
		• PLACE SG B MFW REG VLV HCV-476 in MANUAL.	<p>NOTE: The CO will take manual control of the B FRV, and control B S/G level manually.</p>
		• PLACE FW FLOW LOOP B BYPASS VLV HCV-481 in MANUAL.	
		• CONTROL SG level manually.	

Op Test No.: N17-1 Scenario # 3 Event # 5 Page 33 of 59Event Description: **B FRV fails AS-IS (Manual Control Available)**

Time	Pos.	Expected Actions/Behavior			Comments
					NOTE: The US may check the Tech Specs.
TECHNICAL SPECIFICATION 3.7.3, MAIN FEEDWATER ISOLATION VALVES (MFIVS), MAIN FEEDWATER REGULATING VALVES (MFRVS), AND ASSOCIATED BYPASS VALVES					
	US	3.7.3 Two MFIVs, two MFRVs, and associated bypass valves shall be OPERABLE.			
	US	APPLICABILITY: MODES 1, 2, and 3 except when both steam generators are isolated from both main feedwater pumps.			
		ACTIONS			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	NOTE: The US will determine that the failed FRV controller does NOT render the FRV inoperable.
		B. One or more MFRV(s) inoperable.	B.1 Close or isolate MFRV(s). AND B.2 Verify MFRV(s) is closed or isolated.	72 hours Once per 7 day	
At the discretion of the Lead Examiner move to Events #6-9.					

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 34 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

After this, Shutdown Bank Control Rod K-9 will be ejected from the core causing a LOCA, and an automatic Rx Trip/SI signal will occur. On the trip the Main Turbine will fail to trip, and the operator will need to manually trip the Turbine. Additionally, the A and the B SI Pumps will fail to start automatically. The operator will be required to manually start both SI Pumps. The operator will enter E-0, "Reactor Trip or Safety Injection," and transition to E-1, "Loss of Reactor or Secondary Coolant." Shortly after transition to E-1 the A RHR Pump will trip. The operator will transition to ECA-1.1, "Loss of Emergency Coolant Recirculation," due to a loss of both RHR Pumps. The operator will take actions to minimize the inventory loss from the RWST. The scenario will terminate at Step 10.a RNO of ECA-1.1, after the crew has stopped one SI Pump.

SIM DRIVER Instructions:**Operate Trigger #7 ROD05-K9 (1400 gpm, No Ramp)****Indications Available:**

- Pressurizer Pressure starts to lower.
- Containment Pressure starts to rise.
- MRPI indicates a Control Rod K-9 error.

Time	Pos.	Expected Actions/Behavior	Comments
			Examiner NOTE: RCS pressure will drop to within 210 psig [240 psig Adverse Containment] of Maximum SG Pressure shortly after the LOCA, and the SI Pumps are operating. The five minute Clock to stop the RCPs should start when this occurs. Record Time: _____
E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO	(Step 1) Verify Reactor Trip:	Immediate Action
		<ul style="list-style-type: none"> • At least one train of reactor trip breakers – OPEN 	
		<ul style="list-style-type: none"> • Neutron flux – LOWERING 	
		<ul style="list-style-type: none"> • MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM with no instrument fluctuations concurrent with fire. 	NOTE: One Control Rod (K-9) does NOT indicate on the Bottom.

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 35 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 1 RNO) Manually trip reactor.	
		<ul style="list-style-type: none"> IF reactor trip breakers NOT open OR there is a fire in the power block, THEN..... 	
		<ul style="list-style-type: none"> IF the reactor will NOT trip OR IF power range NIS indicates greater than 5%, THEN..... 	
	CO	(Step 2) Verify Turbine Stop Valves - CLOSED	Immediate Action
	CO	(Step 2 RNO) Manually trip turbine.	
		IF turbine trip can NOT be verified, THEN.....	
	CO	(Step 3) Verify sufficient AC Emergency buses Energized To At Least 440 VOLTS:	Immediate Action
		<ul style="list-style-type: none"> Bus 14 OR Bus 16 	
		AND	
		<ul style="list-style-type: none"> Bus 17 OR Bus 18 	
	HCO/CO	(Step 4) Check if SI is Actuated:	Immediate Action
		<ul style="list-style-type: none"> Any SI Annunciator – LIT 	
		<ul style="list-style-type: none"> SI sequencing – BOTH TRAINS STARTED 	
	HCO/CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of E-0.
		RCP TRIP CRITERIA	NOTE: This condition is expected to be met.
		<ul style="list-style-type: none"> IF BOTH conditions listed below occur, THEN trip both RCPs: 	

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 36 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> SI pumps - AT LEAST TWO RUNNING 	
		<ul style="list-style-type: none"> RCS pressure minus maximum S/G pressure - LESS THAN 210 psi [240 psi adverse CNMT] 	
		LOSS OF SW CRITERIA	
		AFW SUPPLY SWITCHOVER CRITERION	
		SFP COOLING CRITERIA	
	HCO	(*Step 5) Verify CNMT Spray Not Required:	<p>NOTE: This is a Continuous Action. The US will make one or more board operators aware.</p> <p>NOTE: The Containment Pressure is expected to be ≈ 2 psig and rising slowly.</p>
		<ul style="list-style-type: none"> Annunciator A-27, CNMT SPRAY EXTINGUISHED 	
		<ul style="list-style-type: none"> CNMT pressure – LESS THAN 28 PSIG 	
	CO	(Step 6) Direct Operator to Perform ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION	
			<p>NOTE: The US will hand off ATT-27.0 to either the HCO or the CO, and continue with the other operator in E-0.</p> <p>Examiner following operator performing ATT-27.0 continue below.</p> <p>Examiner following operator NOT performing ATT-27.0 continue at Page 40.</p>
E-0, REACTOR TRIP OR SAFETY INJECTION, ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO/CO	(Step 1) Verify SI and RHR Pumps Running:	

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 37 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> All SI pumps – RUNNING 	NOTE: The A and B SI Pumps are NOT running.
	HCO/CO	(Step 1.a RNO) Manually start SI Pumps	
		<ul style="list-style-type: none"> Both RHR pumps – RUNNING 	NOTE: There are NO RHR Pumps running.
	HCO/CO	(Step 1.b RNO) Manually start RHR Pumps	NOTE: No RHR Pumps can be started.
	HCO/CO	(Step 2) Verify CNMT RECIRC Fans RUNNING:	
		<ul style="list-style-type: none"> All fans RUNNING 	
		<ul style="list-style-type: none"> Charcoal filter dampers green status lights – EXTINGUISHED 	
	HCO/CO	(Step 3) Check If Main Steamlines Should Be Isolated:	
		<ul style="list-style-type: none"> Any MSIV – OPEN 	
		<ul style="list-style-type: none"> Check CNMT pressure – LESS THAN 18 PSIG 	
		<ul style="list-style-type: none"> Check if ANY main steamlines should be isolated 	
		<ul style="list-style-type: none"> Low Tavg (545°F) AND high steam flow (0.5×10^6 lb/hr) from either S/G 	
		OR	
		<ul style="list-style-type: none"> High-High steam flow (4.4×10^6 lb/hr) from either S/G 	
		<ul style="list-style-type: none"> (Step3c RNO) Go to Step 4. 	
	HCO/CO	(Step 4) Verify MFW Isolation:	

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 38 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> MFW pumps – TRIPPED 	
		<ul style="list-style-type: none"> MFW Isolation valves - CLOSED 	
		<ul style="list-style-type: none"> S/G A, AOV-3995 	
		<ul style="list-style-type: none"> S/G B, AOV-3994 	
		<ul style="list-style-type: none"> S/G blowdown and sample valves - CLOSED 	
	HCO/ CO	(Step 5) Verify At Least Two SW Pumps - RUNNING	
	HCO/ CO	(Step 6) Verify CI and CVI:	
		<ul style="list-style-type: none"> CI and CVI annunciators - LIT 	
		<ul style="list-style-type: none"> Annunciator A-26, CNMT ISOLATION 	
		<ul style="list-style-type: none"> Annunciator A-25, CNMT VENTILATION ISOLATION 	
		<ul style="list-style-type: none"> Verify CI and CVI valve status lights - BRIGHT 	
		<ul style="list-style-type: none"> CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT 	
		<ul style="list-style-type: none"> FCV-4561 	
		<ul style="list-style-type: none"> FCV-4562 	
		<ul style="list-style-type: none"> Letdown orifice valves - CLOSED 	
		<ul style="list-style-type: none"> AOV-200A 	
		<ul style="list-style-type: none"> AOV-200B 	
		<ul style="list-style-type: none"> AOV-202 	
	HCO/ CO	(Step 7) Check CCW System Status:	
		<ul style="list-style-type: none"> Verify CCW pump – AT LEAST ONE RUNNING 	

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 39 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 8) Verify SI And RHR Pump Flow:	
		<ul style="list-style-type: none"> SI flow indicators – CHECK FOR FLOW 	
		<ul style="list-style-type: none"> RHR flow indicator – CHECK FOR FLOW 	NOTE: There are NO RHR Pumps running.
		<ul style="list-style-type: none"> (Step 8b RNO) IF RCS pressure less than 150 psig manually start pumps and align valves. IF NOT, THEN go to Step 9. 	
	HCO/ CO	(Step 9) Verify SI Pump And RHR Pump Emergency Alignment:	
		<ul style="list-style-type: none"> RHR pump discharge to Rx vessel deluge - OPEN 	
		<ul style="list-style-type: none"> MOV-852A 	
		<ul style="list-style-type: none"> MOV-852B 	
		<ul style="list-style-type: none"> Verify SI pump C – RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump A - RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump B – RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump C discharge valves - OPEN 	NOTE: These valves are CLOSED.
		<ul style="list-style-type: none"> MOV-817A 	
		<ul style="list-style-type: none"> MOV-817B 	
	HCO/ CO	(Step 9.e RNO) Manually open valves as necessary.	
	HCO/ CO	(Step 10) Verify CREATS Actuation:	
		<ul style="list-style-type: none"> At least one damper in each flowpath - CLOSED 	
		<ul style="list-style-type: none"> Normal Supply Air 	
		<ul style="list-style-type: none"> Normal Return Air 	

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 40 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Lavatory Exhaust Air 	
		<ul style="list-style-type: none"> CREATS fans – BOTH RUNNING 	
	HCO/ CO	(Step 11) Verify CI and CVI During a Fire Event	
		<ul style="list-style-type: none"> A confirmed fire has occurred in the control complex or cable tunnel (fire systems S05, S06, S08, Z05, Z18, or Z19). 	
	HCO/ CO	(Step 11 RNO) Go to END	
E-0, REACTOR TRIP OR SAFETY INJECTION			
			Examiner following operator NOT performing ATT-27.0 continue HERE .
	CO/ HCO	(Step 7) Verify Both MDAFW Pumps RUNNING	
	CO/ HCO	(Step 8) Verify AFW Valve Alignment:	
		<ul style="list-style-type: none"> AFW flow – INDICATED TO BOTH S/G(s) 	
		<ul style="list-style-type: none"> AFW flow from each MDAFW pump LESS THAN 230 GPM 	
	CO/ HCO	(*Step 9) Monitor Heat Sink:	
		<ul style="list-style-type: none"> Check S/G narrow range level GREATER THAN 7% [25% adverse CNMT] in any S/G 	NOTE: Adverse Containment may exist at this time.
		<ul style="list-style-type: none"> Check S/G narrow range level BOTH S/G LESS THAN 50% 	
		<ul style="list-style-type: none"> Control feed flow to maintain S/G narrow range level between 7% [25% adverse CNMT] and 50%. 	NOTE: Adverse Containment may exist at this time.

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 41 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
	CO/ HCO	(Step 10) Check If TDAFW Pump Can Be Stopped:	
		<ul style="list-style-type: none"> Both MDAFW pumps – RUNNING 	
		<ul style="list-style-type: none"> PULL STOP TDAFW pump steam supply valves 	
		<ul style="list-style-type: none"> MOV-3504A 	
		<ul style="list-style-type: none"> MOV-3505A 	
	CO/ HCO	(Step 11) Check CCW Flow to RCP thermal Barriers:	
		<ul style="list-style-type: none"> Annunciator A-7. RCP 1A CCW RETURN HI TEMP OR LOW FLOW - EXTINGUISHED 	
		<ul style="list-style-type: none"> Annunciator A-15, RCP 1B CCW RETURN HI TEMP OR LOW FLOW EXTINGUISHED 	
	CO/ HCO	(*Step 12) Monitor RCS Tav _g – STABLE AT OR TRENDING TO 547°F	NOTE: Tav _g is expected to be less than 547°F and lowering.
	CO/ HCO	(Step 12 RNO) IF temperature less than 547°F and lowering, THEN perform the following:	
		<ul style="list-style-type: none"> Stop dumping steam. 	
		<ul style="list-style-type: none"> Ensure reheater steam supply valves are closed. 	
		<ul style="list-style-type: none"> IF cooldown continues, THEN control total feed flow between 200 gpm to 230 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G. 	NOTE: Adverse Containment may exist at this time.
		<ul style="list-style-type: none"> WHEN S/G level greater than 7% [25% adverse CNMT] in one S/G, THEN limit feed flow to that required to maintain level in at least one S/G. 	

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 42 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> IF cooldown continues, THEN close both MSIVs. 	
	CO/ HCO	(Step 13) Check PRZR PORVS And Spray Valves:	
		<ul style="list-style-type: none"> PORVs – CLOSED 	
		<ul style="list-style-type: none"> Auxiliary spray valve (AOV-296) - CLOSED 	
		<ul style="list-style-type: none"> Check PRZR pressure - LESS THAN 2260 PSIG 	
		<ul style="list-style-type: none"> Normal PRZR spray valves - CLOSED 	
		<ul style="list-style-type: none"> PCV-431A 	
		<ul style="list-style-type: none"> PCV-431B 	
	CO/ HCO	(Step 14) Monitor RCP Trip Criteria:	
		<ul style="list-style-type: none"> RCP status – ANY RCP RUNNING 	
		<ul style="list-style-type: none"> SI pumps - AT LEAST TWO RUNNING 	
		<ul style="list-style-type: none"> RCS pressure minus maximum S/G pressure - LESS THAN 210 psi [240 psi adverse CNMT] 	NOTE: Adverse Containment may exist at this time.
		<ul style="list-style-type: none"> Stop both RCPs 	NOTE: If RCP Trip Criteria is NOT met, the RNO will be performed (Go to Step 15); and RCP Trip Criteria is expected to be met later.

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 43 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
<u>CRITICAL TASK:</u>			
Trip all RCPs within 5 minutes of reaching trip criteria			
<p>Safety Significance: Failure to trip all RCPs when required can lead to core uncover and to fuel temperatures in excess of 2200°F. Analyses have shown that if the RCPs are tripped within 5 minutes of the trip criteria being met, PCT will remain below 2200°F, and if this action is delayed beyond 5 minutes, this PCT will be exceeded. It is a management expectation that the RCPs be tripped as quickly as possible, but within 5 minutes when the trip criteria is met. Failure to take this action represents mis-operation by the operator which leads to degradation of the fuel cladding fission produce barrier, and a violation of a license condition.</p>			
<p>Record Pump Stop Time: _____</p> <p>Subtract time recorded at time of the RCP Trip Criteria met on Page 34 _____ = _____ minutes.</p>			
	CO/ HCO	(Step 15) Check If S/G Secondary Side Is Intact:	
		<ul style="list-style-type: none"> Pressure in both S/G's-STABLE OR Rising 	
		<ul style="list-style-type: none"> Pressure in both S/G's -GREATER THAN 110 PSIG 	
	CO/ HCO	(Step 16) Check if S/G Tubes are intact:	
		<ul style="list-style-type: none"> Air Ejector radiation monitors (R-15, R-47, R-48) - NORMAL 	
		<ul style="list-style-type: none"> S/G blowdown radiation monitors (R-19) - NORMAL 	
		<ul style="list-style-type: none"> Steamline radiation monitors (R-31, R-32) - NORMAL 	
	CO/ HCO	(Step 17) Check if RCS is intact:	

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 44 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> • CNMT area radiation monitors – NORMAL 	NOTE: Containment Radiation Monitors are in alarm.
		<ul style="list-style-type: none"> • R-2 	
		<ul style="list-style-type: none"> • R-7 	
		<ul style="list-style-type: none"> • R-29 	
		<ul style="list-style-type: none"> • R-30 	
		<ul style="list-style-type: none"> • CNMT pressure – LESS than 0.5 psig 	
	US	(Step 17.a RNO) Go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.	
			NOTE: The US will go to E-1. The US will conduct an alignment brief.
E-1, LOSS OF REACTOR OR SECONDARY COOLANT			
	HCO/CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of E-1.
		RCP TRIP CRITERIA	NOTE: This condition is expected to be met.
		<ul style="list-style-type: none"> • IF BOTH conditions listed below occur, THEN trip both RCPs: 	
		<ul style="list-style-type: none"> • SI pumps - AT LEAST TWO RUNNING 	
		<ul style="list-style-type: none"> • RCS pressure minus maximum S/G pressure - LESS THAN 210 psi [240 psi adverse CNMT] 	NOTE: Adverse Containment is likely to exist at this time.
		LOSS OF SW CRITERIA	
		SI REINITIATION CRITERIA	
		SI TERMINATION CRITERIA	
		SECONDARY INTEGRITY CRITERIA	
		E-3 TRANSITION CRITERIA	

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 45 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
		COLD LEG RECIRCULATION SWITCHOVER CRITERION	
		AFW SUPPLY SWITCHOVER CRITERION	
	HCO	(Step 1) Monitor RCP Trip Criteria:	
		<ul style="list-style-type: none"> RCP status – ANY RCP RUNNING 	
		<ul style="list-style-type: none"> SI pumps – AT LEAST TWO RUNNING 	
		<ul style="list-style-type: none"> RCS pressure minus maximum S/G pressure – LESS THAN 210 psi [240 psi adverse CNMT] 	
		<ul style="list-style-type: none"> Stop both RCPs 	NOTE: If the RCPs have NOT been stopped prior to this step, they will be stopped here.

CRITICAL TASK:**Trip all RCPs within 5 minutes of reaching trip criteria**

Safety Significance: Failure to trip all RCPs when required can lead to core uncover and to fuel temperatures in excess of 2200°F. Analyses have shown that if the RCPs are tripped within 5 minutes of the trip criteria being met, PCT will remain below 2200°F, and if this action is delayed beyond 5 minutes, this PCT will be exceeded. It is a management expectation that the RCPs be tripped as quickly as possible, but within 5 minutes when the trip criteria is met. Failure to take this action represents mis-operation by the operator which leads to degradation of the fuel cladding fission produce barrier, and a violation of a license condition.

Record Pump Stop Time: _____

Subtract time recorded at time of the RCP Trip Criteria met on Page 34 _____ = _____ minutes.

	HCO/CO	(Step 2) Check If S/G Secondary Side Is Intact:	
		<ul style="list-style-type: none"> Pressure in both S/Gs – STABLE OR RISING 	

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 46 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Pressure in both S/Gs – GREATER THAN 110 PSIG 	
	CO	(*Step 3) Monitor Intact S/G Levels:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Narrow range level – GREATER THAN 7% [25% adverse CNMT] 	NOTE: Adverse Containment is likely to exist at this time.
		<ul style="list-style-type: none"> Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50% 	NOTE: Adverse Containment is likely to exist at this time.
	HCO	(Step 4) Monitor If Secondary Radiation Levels Are Normal	
		<ul style="list-style-type: none"> Steamline radiation monitor (R-31 and R-32) 	
		<ul style="list-style-type: none"> Request Chem Tech sample S/Gs for activity 	NOTE: The US may contact Chemistry. SIM DRIVER: as Chemistry, acknowledge.
	HCO	(*Step 5) Monitor PRZR PORV Status:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Power to PORV block valves – AVAILABLE 	
		<ul style="list-style-type: none"> PORVs – CLOSED 	
		<ul style="list-style-type: none"> Block valves – AT LEAST ONE OPEN. 	
	HCO	(Step 6) Reset SI.	
	HCO	(Step 7) Reset CI:	
		<ul style="list-style-type: none"> Depress CI reset pushbutton 	

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 47 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Verify annunciator A-26, CNMT ISOLATION – EXTINGUISHED 	
	CO	(Step 8) Verify Adequate SW Flow:	
		<ul style="list-style-type: none"> Check at least two SW pumps RUNNING 	
		<ul style="list-style-type: none"> Dispatch AO to establish normal shutdown alignment (Refer to ATT-17.0, ATTACHMENT SD-1) 	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge and perform Schedule File SD-1.
	HCO/ CO	(Step 9) Establish IA to CNMT:	
		<ul style="list-style-type: none"> Verify non-safeguards busses energized from offsite power 	
		<ul style="list-style-type: none"> Bus 13 normal feed – CLOSED 	
		OR	
		<ul style="list-style-type: none"> Bus 15 normal feed – CLOSED 	
		<ul style="list-style-type: none"> Verify turbine building SW isolation valves - OPEN 	
		<ul style="list-style-type: none"> MOV-4613 and MOV-4670 	
		<ul style="list-style-type: none"> MOV-4614 and MOV-4664 	
		<ul style="list-style-type: none"> Verify adequate air compressors – RUNNING 	NOTE: The C IA Compressor is running.
		<ul style="list-style-type: none"> Check IA supply: 	
		<ul style="list-style-type: none"> Pressure – GREATER THAN 60 PSIG 	
		<ul style="list-style-type: none"> Pressure – STABLE OR RISING 	
		<ul style="list-style-type: none"> Reset both trains of XY relays for IA to CNMT AOV-5392 	
		<ul style="list-style-type: none"> Verify IA to CNMT AOV-5392 – OPEN 	

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 48 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 10) Check Normal Power Available To Charging Pumps:	
		<ul style="list-style-type: none"> Check Normal Power Available To Charging Pumps: 	
		<ul style="list-style-type: none"> Bus 14 normal feed breaker – CLOSED 	
		<ul style="list-style-type: none"> Bus 16 normal feed breaker – CLOSED 	
		<ul style="list-style-type: none"> Verify adequate Safeguards Bus capacity to run charging pumps (6 amps each) 	
		<ul style="list-style-type: none"> Station Service transformer 14 ammeter 	
		<ul style="list-style-type: none"> Station Service transformer 16 ammeter 	
	HCO	(Step 11) Check If Charging Flow Has Been Established:	
		<ul style="list-style-type: none"> Charging pumps – ANY RUNNING 	NOTE: There are NO Charging Pumps running.
		<ul style="list-style-type: none"> (Step 11a RNO) Perform the following: 	
		<ul style="list-style-type: none"> IF CCW flow is lost to any RCP thermal barrier OR any RCP #1 seal outlet temperature greater than 235°F, THEN..... 	NOTE: CCW flow to the RCP has NOT been lost, nor is any RCP #1 seal outlet temperature greater than 235°F.
		<ul style="list-style-type: none"> Ensure HCV-142 open, demand at 0%. 	
		<ul style="list-style-type: none"> (Step 11 Continued) Charging pump suction aligned to RWST: 	
		<ul style="list-style-type: none"> LCV-112B – OPEN 	
		<ul style="list-style-type: none"> LCV-1112C – CLOSED 	

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 49 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> (Step 11b RNO) manually align valves as necessary. 	
		<ul style="list-style-type: none"> (Step 11 Continued) Start charging pumps and adjust charging flow as necessary to restore PRZR level 	NOTE: The HCO will start two Charging Pumps.
	HCO	(Step 12) Check If SI Should Be Terminated:	
		<ul style="list-style-type: none"> RCS pressure: 	
		<ul style="list-style-type: none"> Pressure – GREATER THAN 1650 psig [1650 psig adverse CNMT] 	NOTE: Adverse Containment is likely to exist at this time. RCS pressure is expected to be ≈1000 psig and stable.
		<ul style="list-style-type: none"> Pressure – STABLE OR RISING 	
	US	<ul style="list-style-type: none"> (Step 12a RNO) Do NOT stop SI pumps. Go to Step 13. 	
	HCO	(*Step 13) Monitor If CNMT Spray Should Be Stopped:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> CNMT spray pumps – ANY RUNNING 	NOTE: No CS pumps running.
	US	<ul style="list-style-type: none"> (Step 13a RNO) Go to Step 14. 	
	HCO	(*Step 14) Monitor IF RHR Pumps Should Be Stopped:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Check RCS pressure: 	
		<ul style="list-style-type: none"> Pressure – GREATER THAN 300 psig [350 psig adverse CNMT] 	NOTE: Adverse Containment is likely to exist at this time.

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 50 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> RCS pressure – STABLE OR RISING 	
		<ul style="list-style-type: none"> RHR pumps – ANY RUNNING IN INJECTION MODE 	NOTE: There are NO RHR Pumps running.
	US	(Step 14.b RNO) Go to Step 15.	
	CO	(Step 15) Check RCS And S/G Pressures	
		<ul style="list-style-type: none"> Check pressures in both S/Gs – STABLE OR RISING 	
		<ul style="list-style-type: none"> Check pressures in both S/Gs – GREATER THAN 110 PSIG 	
		<ul style="list-style-type: none"> Check RCS pressure – STABLE OR LOWERING 	
	CO	(Step 16) CHECK IF EMERGENCY D/Gs Should Be Stopped:	
		<ul style="list-style-type: none"> Verify Safeguards busses 14, 16, 17, and 18 voltage – GREATER THAN 440 VOLTS 	
		<ul style="list-style-type: none"> Verify Safeguards busses 14, 16, 17, and 18 voltage energized by offsite power: 	
		<ul style="list-style-type: none"> Emergency D/G output breakers – OPEN 	
		<ul style="list-style-type: none"> AC emergency bus normal feed breakers - CLOSED 	
		<ul style="list-style-type: none"> Stop any unloaded emergency D/G and place in standby (Refer to ATT-8.1, ATTACHMENT D/G STOP) 	NOTE: Both D/Gs are running unloaded.
			Examiner NOTE: The US will hand this off to the HCO/CO. Other Examiners continue on Page 52.

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 51 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
ATT-8.1, ATTACHMENT D/G STOP			
	CO	(Step A) Perform the following to STOP D/G A and restore to AUTO:	
		<ul style="list-style-type: none"> Verify D/G A Bus 14 supply breaker is OPEN. 	
		<ul style="list-style-type: none"> Verify D/G A Bus 18 supply breaker is OPEN. 	
		<ul style="list-style-type: none"> Using D/G A GOVERNOR, adjust D/G A speed to return frequency to 60Hz. 	
		<ul style="list-style-type: none"> Using D/G A AUTO VOLTAGE CONTROL rheostat adjust D/G A voltage to 480 volts. 	
		<ul style="list-style-type: none"> Place D/G A CONTROL switch to STOP AND immediately depress D/G A VOLTAGE SHUTDOWN button until voltage decays to zero. 	
		<ul style="list-style-type: none"> After ~60 seconds, perform the following: 	
		<ul style="list-style-type: none"> Depress D/G A FIELD RESET 	
		<ul style="list-style-type: none"> Depress D/G A RESET 	
		<ul style="list-style-type: none"> Verify D/G A AIR START SOLENOID lights – LIT 	
		<ul style="list-style-type: none"> Verify D/G A START RELAY lights - LIT 	
		<ul style="list-style-type: none"> IF alternate cooling is being supplied to the D/G A..... 	NOTE: Alternate Cooling is NOT being supplied.
	CO	(Step B) Perform the following to STOP D/G B and restore to AUTO:	
		<ul style="list-style-type: none"> Verify D/G B Bus 16 supply breaker is OPEN. 	
		<ul style="list-style-type: none"> Verify D/G B Bus 17 supply breaker is OPEN. 	
		<ul style="list-style-type: none"> Using D/G B GOVERNOR, adjust D/G B speed to return frequency to 60Hz. 	

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 52 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Using D/G B AUTO VOLTAGE CONTROL rheostat adjust D/G B voltage to 480 volts. 	
		<ul style="list-style-type: none"> Place D/G B CONTROL switch to STOP AND immediately depress D/G B VOLTAGE SHUTDOWN button until voltage decays to zero. 	
		<ul style="list-style-type: none"> After ~60 seconds, perform the following: 	
		<ul style="list-style-type: none"> Depress D/G B FIELD RESET 	
		<ul style="list-style-type: none"> Depress D/G B RESET 	
		<ul style="list-style-type: none"> Verify D/G B AIR START SOLENOID lights - LIT 	
		<ul style="list-style-type: none"> Verify D/G b START RELAY lights - LIT 	
		<ul style="list-style-type: none"> IF alternate cooling is being supplied to the D/G B..... 	NOTE: Alternate Cooling is NOT being supplied.
E-1, LOSS OF REACTOR OR SECONDARY COOLANT			
			Other Examiners continue HERE.
	HCO	(Step 17) Evaluate Plant Status:	
		<ul style="list-style-type: none"> Check auxiliary building radiation - NORMAL 	
		<ul style="list-style-type: none"> Plant vent iodine (R-10B) 	
		<ul style="list-style-type: none"> Plant vent particulate (R-13) 	
		<ul style="list-style-type: none"> Plant vent gas (R-14) 	
		<ul style="list-style-type: none"> CCW liquid monitor (R-17) 	
		<ul style="list-style-type: none"> LTDN line monitor (R-9) 	
		<ul style="list-style-type: none"> CHG pump room (R-4) 	
		<ul style="list-style-type: none"> WHEN TSC is manned, THEN request evaluation of sampling requirements. 	NOTE: The TSC will NOT be manned.
		<ul style="list-style-type: none"> RCS boron 	
		<ul style="list-style-type: none"> RCS activity 	
		<ul style="list-style-type: none"> CNMT hydrogen 	

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 53 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> • CNMT sump boron 	
		<ul style="list-style-type: none"> • CNMT Sump pH 	
		<ul style="list-style-type: none"> • Verify adequate Rx head cooling: 	
		<ul style="list-style-type: none"> • Verify at least one control rod shroud fan - RUNNING 	
		<ul style="list-style-type: none"> • Verify one Rx compartment cooling fan - RUNNING 	
	HCO	(Step 18) Verify CNMT Sump Recirculation Capability:	
		<ul style="list-style-type: none"> • Check RHR and Support systems: 	
		<ul style="list-style-type: none"> • At least one recirculation flowpath, including required power supplies, from Sump B and back to RCS available per ATT-14.5, ATTACHMENT RHR SYSTEM 	NOTE: There are NO RHR Pumps running.
	US	(Step 18.a RNO) IF at least one flowpath of cold leg recirculation capability can NOT be verified, THEN go to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION.	
			NOTE: The US will transition to ECA-1.1.
ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION			
	HCO/CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of ECA-1.1.
		LOSS OF SW CRITERIA	
	HCO	(Step 1) Verify CNMT Sump Recirculation Capability:	
		<ul style="list-style-type: none"> • Check CNMT Sump B Level – AT LEAST 113 INCHES 	

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 54 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 1.a RNO) IF Sump B level less than 113 inches due to a loss of RCS inventory outside CNMT. THEN go to Step 2.	NOTE: There is no LOCA outside Containment.
	HCO	<ul style="list-style-type: none"> (Step 1.b) Check RHR system: 	
		<ul style="list-style-type: none"> RHR pumps - OPERABLE 	NOTE: There are NO RHR Pumps running or available.
	HCO	(Step 1.b RNO) Perform the following:	
		<ul style="list-style-type: none"> Manually or locally try to restore at least one flowpath (Refer to ATT-14.5, ATTACHMENT RHR SYSTEM to identify minimum components for one flowpath). 	NOTE: The US may call WCC/Maintenance to address the need for an RHR Pump. If so, SIM DRIVER acknowledge as WCC.
	US	<ul style="list-style-type: none"> Continue with Step 2. WHEN at least one flowpath is available. THEN do Steps 1c, 1d and 1e. 	
	HCO	(Step 2) Verify CNMT RECIRC Fans Running:	
		<ul style="list-style-type: none"> All fans - RUNNING 	
		<ul style="list-style-type: none"> Charcoal filter dampers green status lights - EXTINGUISHED 	
	HCO	(Step 3) Monitor RWST Level – GREATER THAN 15%	
	HCO	(Step 4) Determine CNMT Spray Requirements:	
		<ul style="list-style-type: none"> Determine number of CNMT spray pumps required from table: 	
		<ul style="list-style-type: none"> CNMT spray pumps running – EQUAL TO MINIMUM NUMBER REQUIRED 	NOTE: There are NO CS Pumps running or required to be running.

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 55 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 5) Add Makeup To RWST As Necessary	
		<ul style="list-style-type: none"> Refer to ATT-18.0, ATTACHMENT SFP-RWST (~ 400 gpm can be expected) 	<p>NOTE: The US/HCO may direct the EO to initiate makeup to the RWST. If so, SIM DRIVER acknowledge as EO, and use the following Remotes:</p> <p>V804 – CLG050=0 V789 – CLG089=1 V790 – CLG049=0 V803 – CLG052=1</p> <p>Ramped over 60 seconds. THEN report that Makeup has been initiated from the SFP.</p>
		OR	
		<ul style="list-style-type: none"> Refer to S-3.2D. TRANSFERRING WATER FROM CVCS HUT(S) TO RWST OR SFP (~ 69 gpm can be expected) 	
		OR	
		<ul style="list-style-type: none"> Refer to S-9J, BLENDING TO RWST (~ 50 gpm can be expected) 	
	CO	(Step 6) Monitor Intact S/G Levels:	
		<ul style="list-style-type: none"> Narrow range level – GREATER THAN 7% [25% adverse CNMT] 	
		<ul style="list-style-type: none"> Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%. 	
	CO	(Step 7) Initiate RCS Cooldown To Cold Shutdown:	
		<ul style="list-style-type: none"> Establish and maintain cooldown rate in RCS cold legs – LESS THAN 100°F/HR 	<p>NOTE: The current cooldown rate is slightly > 100°F/hour.</p>

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 56 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Dump steam to condenser form intact S/G(s) 	
	HCO	(Step 8) Check ECCS Pump Status:	
		<ul style="list-style-type: none"> SI Pumps – ANY RUNNING 	NOTE: All three SI Pumps are running.
		OR	
		<ul style="list-style-type: none"> RHR Pumps – ANY RUNNING IN INJECTION MODE 	NOTE: There are NO RHR Pumps running.
	HCO	(Step 9) Reset SI If Necessary	
	HCO	(Step 10) Establish One Train Of SI Flow	
		<ul style="list-style-type: none"> SI pumps – LESS THAN THREE RUNNING 	
	HCO	(Step 10.a RNO) Stop one SI pump.	

CRITICAL TASK:

Direct that actions be taken to prepare to establish, or establish Makeup to RWST; and minimize RWST outflow prior to the completion of Step 10.a of ECA-1.1 (EOP-Based)

Safety Significance: Under the postulated plant conditions, failure to establish makeup flow to the RWST and/or to minimize RWST outflow leads to (or accelerates) depletion of RWST inventory to the point at which ECCS pumps taking suction on the RWST must be stopped. Loss of pumped injection (coincident with loss of emergency cooling recirculation) will lead to a severe or an extreme challenge to the core cooling CSF. Failure to perform the critical task causes these challenges to occur needlessly or, at best, prematurely (that is, before they would occur if the critical task is performed). Thus, failure to perform the critical task under the postulated plant conditions leads to “a significant reduction of safety margin beyond that irreparably introduced by the scenario.” It also represents a demonstrated inability by the crew to “take one or more actions that would prevent a challenge to plant safety.”

Op Test No.: N17-1 Scenario # 3 Event # 6, 7, 8 & 9 Page 57 of 59Event Description: **Ejected Control Rod/ Failure of Turbine to Trip on Rx Trip/ Failure of A and B SI Pumps to Auto Start/ A RHR Pumps trips**

Time	Pos.	Expected Actions/Behavior	Comments
At the discretion of the Lead Examiner terminate the exam.			

TURNOVER SHEET for NRC Exam Scenario #3

<p><u>Core Age: BOL</u></p> <p>70% Power, Equilibrium Xe</p> <p>Outside Air Temp = 51°F</p> <p>Water Temp = 45°F</p>	<p><u>Procedure in Use:</u></p> <p>STP-O-2.2-COMP-B</p>	<p><u>ACTIONS/NOTES:</u></p> <ul style="list-style-type: none"> • The plant is at 70% power (BOL). • The plant was taken to 50% due to a failure of the B MFW Pump. Corrective Maintenance was performed and plant power raised to 70% four days ago. • It is intended to observe the B MFW operation for two more days at this power level and then raise power to 100%. • The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. • The B RHR Pump is OOS for Seal Cooling Heat exchanger replacement. • It is expected to perform post-maintenance testing on the B RHR Pump on this shift. • The A Control Rod Shroud Fan is OOS for breaker maintenance. • The Condensate Booster Pump A is OOS for thrust bearing replacement. • Protected equipment IAW OPG Protected Equipment.
<p>Boron: 1612 ppm</p> <p>BAST: 17,400 ppm</p> <p>RCS Activity: Normal</p>	<p><u>RCS LEAKAGE:</u> (gpm)</p> <p>Total: .021</p> <p>Identified: .003</p> <p>Unidentified: .018</p>	

TURNOVER SHEET for NRC Exam Scenario #3

<u>Equipment Problems/OOS:</u> See NOTES	<u>Planned Activities for Shift:</u> <ul style="list-style-type: none"> Perform post-maintenance testing on the B RHR Pump using STP-O-2.2-COMP-B 	<u>Electrical System Operator Declarations</u> None in effect
---	--	--

A-52.4					
EQUIPMENT	DATE/TIME OOS	LCO	TITLE	EXP DATE	ECD
B RHR Pump	71 hours ago	3.5.2	ECCS – Modes 1, 2 and 3	72 hours	1 hour
A-52.12					
EQUIPMENT	DATE/TIME OOS	TRM /ODCM	TITLE	EXP DATE	ECD
A Control Rod Shroud Fan	Yesterday				Indefinitely
A Condensate Booster Pump	Yesterday				Indefinitely

Facility:	Ginna	Scenario No.:	5	Op Test No.:	N17-1
Examiners:	_____	Operators:	_____	(SRO)	
	_____		_____	(RO)	
	_____		_____	(BOP)	
Initial Conditions:		The plant is at 48% power (MOL). The plant was taken to 50% due to a failure of the B MFW Pump. Station Management has decided to shutdown the plant and repair the pump, and conduct other maintenance activities. The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. The crew is expected to lower power and proceed to Mode 3 on this shift.			
Turnover:		The following equipment is Out-Of-Service: The B MFW is OOS for bearing replacement, and the Condensate Booster Pump A is OOS for thrust bearing replacement.			
Event No.	Malf. No.	Event Type*	Event Description		
1	1	C-RO C-BOP C(TS)-SRO	Loss of B Instrument Bus		
2	NA	R-RO N-BOP N-SRO	Load Reduction		
3	2	C-RO C(TS)-SRO	PORV Leak/Block Valve Failure		
4	3	C-BOP C-SRO	Downpower/Failure of Turbine Control/EHC		
5	4	M-RO M-BOP M-SRO	Inadvertent Main Steam Line Isolation Signal		
6	5	C-RO C-BOP C-SRO	Failure of the Reactor to trip from the Control Room/ATWS		
7	6	C-BOP C-SRO	One S/G Safety Valve on each S/G Lifts and sticks partially OPEN		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Ginna 2017 NRC Scenario #5

The plant is at 48% power (MOL). The plant was taken to 50% due to a failure of the B MFW Pump. Station Management has decided to shutdown the plant and repair the pump, and conduct other maintenance activities. The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. The crew is expected to lower power and proceed to Mode 3 on this shift.

The following equipment is Out-Of-Service: The B MFW is OOS for bearing replacement, and the Condensate Booster Pump A is OOS for thrust bearing replacement.

Shortly after taking the watch, the operator will attempt to lower power in accordance with O-5.1, "Load Reduction," however, a loss of the B Instrument Bus will occur prior to the start of the load reduction. The operator will respond in accordance with AR-E-14, "LOSS B INSTR. BUS." Power will be restored to the bus per guidance in ER-INST.3, "Instrument Bus Power Restoration," which will include the isolation and re-establishment of Normal Letdown in accordance with S-3.2E, "Placing In or Removing From Service Normal Letdown/Excess Letdown." The operator will address AR-K-32, "CV AIR DRYER LOW PRESS SG B/D TANK HIGH LEVEL," while restoring from the transient. The operator will address Technical Specification LCO 3.8.7, "AC Instrument Bus Sources Modes 1-4," and LCO 3.8.9, "Distribution Systems – Modes 1, 2, 3 and 4."

Following this, the operator will lower power in accordance with O-5.1, "Load Reduction." The operator will address S-3.1, "Boron Concentration Control," to start the load reduction.

Subsequently, Pressurizer PORV-431C will fail partially open. The operator will respond in accordance with AR-F-19, "PRZR PORV OUTLET HI TEMP 145°F," and enter AP-PRZR.1, "Abnormal Pressurizer Pressure." When the operator attempts to isolate the PORV, the Block Valve will fail to shut fully resulting in a 2-5 gpm leak into the PRT. The crew may implement AP-RCS.1, "Reactor Coolant Leak," and prepare to make a Containment entry. Ultimately, the crew will be directed to take the unit off-line. The operator will address Technical Specification LCO 3.4.11, "Pressurizer Power Operated Relief Valves," LCO 3.4.13, "RCS Operational Leakage," LCO 3.4.1 "RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits," as well as Technical Requirements Manual TR 3.4.3, "Anticipated Transients Without Scram (ATWS) Mitigation."

Then, the operator will take the unit off line in accordance with AP-TURB.5, "Rapid Load Reduction." The Main Turbine will fail in automatic control. The operator will diagnose the failure and use manual control of the turbine to conduct the downpower.

After this, an inadvertent Main Steam Line Isolation Signal will occur and both MSIVs will close. The reactor will fail to automatically trip and the operator will attempt to trip the reactor manually. The crew will enter E-0, "Reactor Trip or Safety Injection."

The reactor will fail to trip manually from the control room, and the crew will enter FR-S.1, "Response to Reactor Restart/ATWS." On the trip one S/G Safety Valve on each S/G lifted and stuck partially OPEN.

The crew will successfully de-energize the Rod Drive MG set(s) causing to control rods to drop into the core. Upon completion of FR-S.1, the crew will transition back to E-0, and then to E-1, "Loss of Reactor or Secondary Coolant," based on the failed Pressurizer PORV and Block Valve. Shortly after entry into E-1, the crew will transition to E-2, "Faulted Steam Generator Isolation." While implementing E-2, the crew will recognize that both S/Gs are faulted and transition to ECA-2.1,

“Uncontrolled Depressurization of Both Steam Generators.” The crew may take a pre-emptive action of throttling AFW flow to both S/Gs per A-503.1, “Emergency and Abnormal Operating Procedures Users Guide.”

The scenario will terminate at Step 7 of ECA-2.1, after the crew has stopped the RHR Pumps.

Critical Tasks:

Upon diagnosing an ATWS, manually insert the control rods within 1 minute, and continue insertion until the reactor is tripped or the rods are on the bottom (EOP-Based)

Safety Significance: failure to insert negative reactivity, under the postulated plant conditions, results in an unnecessary situation in which the reactor power remains higher than it otherwise would if the action is taken. Performance of the critical task would move the reactor power lower to prevent a subsequent unnecessary challenge to reactor core operational limits. A failure to insert negative reactivity constitutes a mis-operation or incorrect crew performance which leads to incorrect reactivity control.

Control the AFW flowrate to 50 gpm per SG in order to minimize the RCS Cooldown rate before an extreme challenge (Red Path) develops to the integrity CSF (EOP-Based)

Safety Significance: Failure to control the AFW flow rate to the SGs leads to an unnecessary and avoidable extreme challenge to the integrity CSF. Also, failure to perform the Critical Task increases challenges to the SUBCRITICALITY Critical Safety Function which otherwise would not occur.

PROGRAM: Ginna Operations Training

MODULE: Initial License Operator Training Class 15-1

TOPIC: NRC Simulator Exam

Scenario N17-1-5

REFERENCES:

1. AR-E-14, "LOSS B INSTR. BUS" (Rev 12)
2. ER-INST.3, "Instrument Bus Power Restoration" (Rev 01200)
3. S-3.2E, "Placing In or Removing From Service Normal Letdown/Excess Letdown" (Rev 02700)
4. AR-K-32, "CV AIR DRYER LOW PRESS SG B/D TANK HIGH LEVEL" (Rev 01000)
5. Technical Specification LCO 3.8.7, "AC Instrument Bus Sources Modes 1-4" (Amendment 80)
6. Technical Specification LCO 3.8.9, "Distribution Systems – Modes 1, 2, 3 and 4" (Amendment 80)
7. O-5.1, "Load Reduction" (Rev 05901)
8. S-3.1, "Boron Concentration Control" (Rev 03200)
9. AR-F-19, "PRZR PORV OUTLET HI TEMP 145°F" (Rev 01101)
10. AP-PRZR.1, "Abnormal Pressurizer Pressure" (Rev 01700)
11. AP-RCS.1, "Reactor Coolant Leak" (Rev 02100)
12. Technical Specification LCO 3.4.11, "Pressurizer Power Operated Relief Valves" (Amendment 88)
13. Technical Specification LCO 3.4.1 "RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits" (Amendment 80)
14. Technical Specification LCO 3.4.13, "RCS Operational Leakage" (Amendment 100)
15. Technical Requirements Manual TR 3.4.3, "Anticipated Transients Without Scram (ATWS) Mitigation" (Rev 61)
16. AP-TURB.5, "Rapid Load Reduction" (Rev 01700)
17. ATT-23.0, "Attachment Transfer 4160V Loads" (Rev 0)
18. E-0, "Reactor Trip or Safety Injection" (Rev 048)
19. FR-S.1, "Response to Reactor Restart/ATWS" (Rev 021)
20. E-1, "Loss of Reactor or Secondary Coolant" (Rev 04100)
21. A-503.1 "Emergency and Abnormal Operating Procedures Users Guide" (Rev 04600)
22. E-2, "Faulted Steam Generator Isolation" (Rev 01302)
23. ECA-2.1, "Uncontrolled Depressurization of Both Steam Generators" (Rev 03601)

Validation Time: 77 minutes

Author: David Lazarony, Essential Training & Consulting, LLC

Facility Review: _____

Rev. 022217

Scenario Event Description
NRC Scenario 5

Facility:	Ginna	Scenario No.:	5	Op Test No.:	N17-1
Examiners:	_____	Operators:	_____	(SRO)	
	_____		_____	(RO)	
	_____		_____	(BOP)	
Initial Conditions:		The plant is at 48% power (MOL). The plant was taken to 50% due to a failure of the B MFW Pump. Station Management has decided to shutdown the plant and repair the pump, and conduct other maintenance activities. The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. The crew is expected to lower power and proceed to Mode 3 on this shift.			
Turnover:		The following equipment is Out-Of-Service: The B MFW is OOS for bearing replacement, and the Condensate Booster Pump A is OOS for thrust bearing replacement.			
Event No.	Malf. No.	Event Type*	Event Description		
1	1	C-RO C-BOP C(TS)-SRO	Loss of B Instrument Bus		
2	NA	R-RO N-BOP N-SRO	Load Reduction		
3	2	C-RO C(TS)-SRO	PORV Leak/Block Valve Failure		
4	3	C-BOP C-SRO	Downpower/Failure of Turbine Control/EHC		
5	4	M-RO M-BOP M-SRO	Inadvertent Main Steam Line Isolation Signal		
6	5	C-RO C-BOP C-SRO	Failure of the Reactor to trip from the Control Room/ATWS		
7	6	C-BOP C-SRO	One S/G Safety Valve on each S/G Lifts and sticks partially OPEN		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Scenario Event Description
NRC Scenario 5

Ginna 2017 NRC Scenario #5

The plant is at 48% power (MOL). The plant was taken to 50% due to a failure of the B MFW Pump. Station Management has decided to shutdown the plant and repair the pump, and conduct other maintenance activities. The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. The crew is expected to lower power and proceed to Mode 3 on this shift.

The following equipment is Out-Of-Service: The B MFW is OOS for bearing replacement, and the Condensate Booster Pump A is OOS for thrust bearing replacement.

Shortly after taking the watch, the operator will attempt to lower power in accordance with O-5.1, "Load Reduction," however, a loss of the B Instrument Bus will occur prior to the start of the load reduction. The operator will respond in accordance with AR-E-14, "LOSS B INSTR. BUS." Power will be restored to the bus per guidance in ER-INST.3, "Instrument Bus Power Restoration," which will include the isolation and re-establishment of Normal Letdown in accordance with S-3.2E, "Placing In or Removing From Service Normal Letdown/Excess Letdown." The operator will address AR-K-32, "CV AIR DRYER LOW PRESS SG B/D TANK HIGH LEVEL," while restoring from the transient. The operator will address Technical Specification LCO 3.8.7, "AC Instrument Bus Sources Modes 1-4," and LCO 3.8.9, "Distribution Systems – Modes 1, 2, 3 and 4."

Following this, the operator will lower power in accordance with O-5.1, "Load Reduction." The operator will address S-3.1, "Boron Concentration Control," to start the load reduction.

Subsequently, Pressurizer PORV-431C will fail partially open. The operator will respond in accordance with AR-F-19, "PRZR PORV OUTLET HI TEMP 145°F," and enter AP-PRZR.1, "Abnormal Pressurizer Pressure." When the operator attempts to isolate the PORV, the Block Valve will fail to shut fully resulting in a 2-5 gpm leak into the PRT. The crew may implement AP-RCS.1, "Reactor Coolant Leak," and prepare to make a Containment entry. Ultimately, the crew will be directed to take the unit off-line. The operator will address Technical Specification LCO 3.4.11, "Pressurizer Power Operated Relief Valves," LCO 3.4.13, "RCS Operational Leakage," LCO 3.4.1 "RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits," as well as Technical Requirements Manual TR 3.4.3, "Anticipated Transients Without Scram (ATWS) Mitigation."

Then, the operator will take the unit off line in accordance with AP-TURB.5, "Rapid Load Reduction." The Main Turbine will fail in automatic control. The operator will diagnose the failure and use manual control of the turbine to conduct the downpower.

After this, an inadvertent Main Steam Line Isolation Signal will occur and both MSIVs will close. The reactor will fail to automatically trip and the operator will attempt to trip the reactor manually. The crew will enter E-0, "Reactor Trip or Safety Injection."

The reactor will fail to trip manually from the control room, and the crew will enter FR-S.1, "Response to Reactor Restart/ATWS." On the trip one S/G Safety Valve on each S/G lifted and stuck partially OPEN.

The crew will successfully de-energize the Rod Drive MG set(s) causing to control rods to drop into the core. Upon completion of FR-S.1, the crew will transition back to E-0, and then to E-1, "Loss of Reactor or Secondary Coolant," based on the failed Pressurizer PORV and Block Valve. Shortly after entry into E-1, the crew will transition to E-2, "Faulted Steam Generator Isolation." While implementing E-2, the crew will recognize that both S/Gs are faulted and transition to ECA-

Scenario Event Description
NRC Scenario 5

2.1, "Uncontrolled Depressurization of Both Steam Generators." The crew may take a pre-emptive action of throttling AFW flow to both S/Gs per A-503.1, "Emergency and Abnormal Operating Procedures Users Guide."

The scenario will terminate at Step 7 of ECA-2.1, after the crew has stopped the RHR Pumps.

Critical Tasks:

Upon diagnosing an ATWS, manually insert the control rods within 1 minute, and continue insertion until the reactor is tripped or the rods are on the bottom (EOP-Based)

Safety Significance: failure to insert negative reactivity, under the postulated plant conditions, results in an unnecessary situation in which the reactor power remains higher than it otherwise would if the action is taken. Performance of the critical task would move the reactor power lower to prevent a subsequent unnecessary challenge to reactor core operational limits. A failure to insert negative reactivity constitutes a mis-operation or incorrect crew performance which leads to incorrect reactivity control.

Control the AFW flowrate to 50 gpm per SG in order to minimize the RCS Cooldown rate before an extreme challenge (Red Path) develops to the integrity CSF (EOP-Based)

Safety Significance: Failure to control the AFW flow rate to the SGs leads to an unnecessary and avoidable extreme challenge to the integrity CSF. Also, failure to perform the Critical Task increases challenges to the SUBCRITICALITY Critical Safety Function which otherwise would not occur.

Scenario Event Description
NRC Scenario 5

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>		Reset to Temp IC 159 (Originally IC-20).	<p>T = 0 (From IC-20):</p> <p>Energize the Pressurizer Backup Heaters Place the B MFW Pump Control Switch to PULL STOP Place the B MFW Pump DC Oil Pump Control Switch to PULL STOP Place the B MFW Pump AC Oil Pump Control Switch to OFF Remove the B MFW Pump AC Oil Pump from service by inserting the following:</p> <ul style="list-style-type: none"> • OVR-FDW20A=OFF • OVR-FDW20C=OFF • OVR-FDW08A=OFF <p>Take A CB Pump Control Switch to TRIP Insert OVR-CND04A=OFF Hang LOTO Tags as necessary</p> <p>Insert MALF RPS05A, No Manual, Reactor Trip BKR A Failure Insert MALF RPS05B, No Manual, Reactor Trip BKR B Failure Insert OVR-EDS47D and 47G = FALSE (Bus 15 Low Side Breaker) Insert OVR-EDS34D and 34G = FALSE (Bus 15 High Side Breaker) Set T-29 = x06i230a==1 (Close for MOV-515) Set Trigger 30 = True when a reactor trip signal occurs on either Train A or B Insert MALF STM09A, 30%, 0 ramp, T-30 (Safety valve 3508 on B SG opens after Rx trip) Insert MALF STM09B, 30%, 0 ramp, T-30 (Safety valve 3509 on A SG opens after Rx trip)</p> <p>Insert MALF EDS07B on T-1 Insert MALF PZR05B 5%, No Ramp (Throttled back to 2% after the operator attempts to close the PORV Block Valve) on T-2 Insert MALF TUR09D on T-3 OVR-TUR05O=OFF on T-3 OVR-TUR05P=OFF on T-3 Insert MALF STM05A (0%, No Ramp) on T-4 Insert MALF STM05B (0%, No Ramp) on T-4 OVR-PZR04A, ON (Green light LIT) on T-29 OVR-PZR04B, ON (Red light LIT) on T-29 OVR-PZR04C, FALSE (Close signal) on T-29 OVR-PZR04D, TRUE (Open signal) on T-29 PZR05B (2%) on T-29</p>

Scenario Event Description
NRC Scenario 5

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	Prior to Crew Briefing		<ul style="list-style-type: none"> • Hang Protective Tags per OPG-Protective Equipment. • Place Black Dot on all required MCB Annunciators (H-2 and H-4)
<input type="checkbox"/>	Crew Briefing <ul style="list-style-type: none"> • Assign Crew Positions based on evaluation requirements. • Review the Shift Turnover Information with the crew. • Provide the crew with a copy of O-5.1 complete through Section 6.1 and S-3.1. • Handout current Reactivity Plan. 		
<input type="checkbox"/>	T-0	Begin Familiarization Period	
<input type="checkbox"/>	At direction of examiner	Event 1 Trigger #1 EDS07B	Loss of B Instrument Bus
<input type="checkbox"/>	At direction of examiner	Event 2	Load Reduction
<input type="checkbox"/>	At direction of examiner	Event 3 Trigger #2 PZR05B 5%, No Ramp (Throttled back to 2% after the operator attempts to close the PORV Block Valve) Trigger #29 (Block Valve CS to CLOSE) OVR-PZR04A, ON (Green light LIT) OVR-PZR04B, ON (Red light LIT) OVR-PZR04C, FALSE (Close signal) OVR-PZR04D, TRUE (Open signal)	PORV Leak/Block Valve Failure

Scenario Event Description
NRC Scenario 5

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	At direction of examiner	Event 4 Trigger #3 TUR09D OVR-TUR05O=OFF OVR-TUR05P=OFF	Downpower/Failure of Turbine Control/EHC
<input type="checkbox"/>	At direction of examiner	Event 5 Trigger #4 STM05A (0%, No Ramp) STM05B (0%, No Ramp)	Inadvertent Main Steam Line Isolation Signal
<input type="checkbox"/>	Post-Rx Trip	Event 6 RPS05A, No Manual RPS05B, No Manual	Failure of the Reactor to trip from the Control Room/ATWS Note: These malfunctions are inserted at T=0.
<input type="checkbox"/>	Post-Rx Trip	Event 7 STM09A, 30%, 0 ramp STM09B, 30%, 0 ramp	One S/G Safety Valve on each S/G Lifts and sticks partially OPEN Note: These malfunctions are inserted at T=0, conditional on Rx Trip (T-30).
<input type="checkbox"/>	Terminate the scenario upon direction of Lead Examiner		

Op Test No.: N17-1 Scenario # 5 Event # 1 Page 8 of 66Event Description: **Loss of B Instrument Bus**

Shortly after taking the watch, the operator will attempt to lower power in accordance with O-5.1, "Load Reduction," however, a loss of the B Instrument Bus will occur prior to the start of the load reduction. The operator will respond in accordance with AR-E-14, "LOSS B INSTR. BUS." Power will be restored to the bus per guidance in ER-INST.3, "Instrument Bus Power Restoration," which will include the isolation and re-establishment of Normal Letdown in accordance with S-3.2E, "Placing In or Removing From Service Normal Letdown/Excess Letdown." The operator will address AR-K-32, "CV AIR DRYER LOW PRESS SG B/D TANK HIGH LEVEL," while restoring from the transient. The operator will address Technical Specification LCO 3.8.7, "AC Instrument Bus Sources Modes 1-4," and LCO 3.8.9, "Distribution Systems – Modes 1, 2, 3 and 4."

SIM DRIVER Instructions: **Operate Trigger #1 (EDS07B)**

Indications Available:

- Multiple MCB Annunciators
- MCB Annunciator E-14, LOSS B INSTR. BUS
- White and Red Bistable Status lights extinguish
- VCT Level (LT-112) fails low causing continuous Auto Makeup
- Tavq-Tref is 12°F (1st Stage Pressure has failed Low), with an Auto Rod Inward green Status light, but NO Auto Rod motion
- Normal Letdown has isolated due to one PZR level channel failing low

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The crew may enter ER-INST.3 directly.
AR-E-14, LOSS B INSTR BUS			
	US	1. Restore power to Instrument Bus B (Refer to ER-INST.3, INSTRUMENT BUS POWER RESTORATION)	
	US	2. Evaluate plant conditions to determine if additional action is required by referring to the following: <ul style="list-style-type: none"> ○ ITS LCO 3.8.7 and 3.8.8 	
	US	3. Notify the following: <ul style="list-style-type: none"> • SM • Electricians • Electrical Planner 	NOTE: The US may notify the WCC. SIM DRIVER: as WCCS , acknowledge.

Op Test No.: N17-1 Scenario # 5 Event # 1 Page 9 of 66Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US will go to ER-INST.3.
ER-INST.3, INSTRUMENT BUS POWER RESTORATION			
	CO	(Step 6.1.1) IF Any instrument bus is deenergized THEN PERFORM the following:	
		<ul style="list-style-type: none"> Verify an alternate power supply is available by checking supply voltage as follows: 	
		<ul style="list-style-type: none"> Maintenance- Supply voltage approximately 120 volts (EI/CVTAUX, above Instr Bus D) 	
		<ul style="list-style-type: none"> Normal - Inst Bus B -Annunciator E-14, LOSS B INSTR. BUS, extinguished 	
	HCO	(Step 6.1.2) Close letdown isolation valve, AOV-427.	NOTE: The HCO will isolate Normal Letdown.
			NOTE: VCT level indication is lost, and with L/D isolated, actual level is lowering, and US may direct EO to monitor VCT level locally (no ER-INST.3 procedure guidance) If so, SIM DRIVER: as EO, acknowledge, and Use Insight from Scenario Setup, or Monitor VCT level on drawing VCT1 and report value to US (When requested or the remainder of the scenario).
	HCO	(Step 6.1.3) Place charging pump controllers in MANUAL	NOTE: The HCO will place Charging Pump speed control in Manual OR may secure one of the two Charging Pumps altogether.

Op Test No.: N17-1 Scenario # 5 Event # 1 Page 10 of 66Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The HCO may place the Auto Makeup to the VCT in Manual to prevent overfilling the VCT.
	CO	(Step 6.1.4) Place hotwell level controller to manual, if desired.	
	HCO	(Step 6.1.5) Place PRZR PRESS CONTROLLER 431K in MANUAL, if necessary.	
	HCO	(Step 6.1.6) Place rods in MANUAL.	NOTE: The HCO will place Rods in Manual.
	US	(Step 6.1.7) Transfer Instrument Bus to an available power supply. (Maintenance or Normal)	NOTE: The US will direct the bus to be energized from the Maintenance supply. (The US may direct the use of Attachment 2 of ER-INST.3, however, this is NOT required).
	CO	<ul style="list-style-type: none"> IF on NORMAL FEED AND MAINTENANCE FEED desired, THEN TRANSFER to MAINTENANCE 	NOTE: Instrument Bus B is now re-energized.
	CO	(Step 6.1.8) CHECK Instrument Bus supply voltage within ITS limits. (Refer to O-6.11, SURVEILLANCE REQUIREMENT/ROUTINE OPERATIONS CHECK SHEET)	NOTE: O-6.11 requires voltage between 113-123V.
	US	(Step 6.1.9) Go to Step 6.4	
	HCO	(Step 6.4.1) VERIFY one Charging Pump in AUTO, IF desired.	
	HCO	(Step 6.4.2) VERIFY PRZR PRESS CONTROLLER 431K in AUTO.	

Op Test No.: N17-1 Scenario # 5 Event # 1 Page 11 of 66Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 6.4.3) RESTORE PRZR Heaters as required.	NOTE: Both the Proportional and the Backup Heaters will be reset.
	HCO	(step 6.4.4) IF letdown isolation valve, AOV-427 has been closed, THEN RESTORE Letdown as follows:	
	HCO	(Step 6.4.4.1) COMPLETE removal of normal letdown from service per S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN	NOTE: Removed per Section 6.2 of S-3.2E
			NOTE: The US will hand this off to the HCO or the CO, and continue on in ER-INST.3.
			NOTE: The US may call WCC/Maintenance to address the failed Instrument Bus. If so, SIM DRIVER acknowledge as WCC/Maintenance.
S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN			
	HCO/ CO	(Step 6.2.1) PLACE Charging Pumps in MANUAL	
	HCO/ CO	(Step 6.2.2) ENSURE CLOSED Letdown Orifice isolation valves. <ul style="list-style-type: none"> • AOV-200A • AOV-200B • AOV-202 	
	HCO/ CO	(Step 6.2.3) CLOSE LTDN ISOLATION VLV RHR to NRHX, AOV-427.	

Op Test No.: N17-1 Scenario # 5 Event # 1 Page 12 of 66Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 6.2.4) REDUCE charging flow while throttling closed charging flow to Regenerative Heat Exchanger HCV-142 to maintain greater than 20" RCP labyrinth seal ΔP .	
	HCO/ CO	(Step 6.2.5) CLOSE LETDOWN ISOL VLV RHR TO NRHX AOV-371.	
	HCO/ CO	(Step 6.2.6) PLACE NRHX LTDN OUTLET TEMP (TI-130) TCV-130 in MANUAL/ CLOSED.	NOTE: TCV-130 Controller will be placed in MANUAL.
			NOTE: The US will continue with ER-INST.3.
ER-INST.3, INSTRUMENT BUS POWER RESTORATION			
	US	(Step 6.4.3.2) RESTORE normal letdown per S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN.	NOTE: Restored per Section 6.3 and 6.4 of S-3.2E.
			NOTE: The US will hand this off to the HCO or the CO, and continue on in ER-INST.3.
S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN			
	HCO/ CO	(Step 6.3.1) Determine if a flush is required. If the letdown line has been isolated for less than one hour perform section 6.4 and N/A section 6.5 with permission of the Shift Manager or Control Room Supervisor.	NOTE: Since letdown has been isolated ONLY a few minutes, a flush will NOT be required.
	HCO/ CO	(Step 6.4.1) IF the letdown line has been isolated for less than one hour or as desired by the CRS, THEN PERFORM the following: OTHERWISE, MARK this Step N/A.	
	HCO/ CO	(Step 6.4.1.1) ENSURE letdown is secured PER Section 6.2 prior to restoring.	

Op Test No.: N17-1 Scenario # 5 Event # 1 Page 13 of 66Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 6.4.1.2) IF charging flowpath to Loop B COLD Leg is desired (preferred method), THEN PERFORM the following:	
		<ul style="list-style-type: none"> ENSURE CLOSED CHARGING VLV RHX TO LOOP B HOT, AOV-392A. 	
		<ul style="list-style-type: none"> OPEN CHARGING VLV RHX TO LOOP B COLD LEG AOV-294. 	
	HCO/ CO	(Step 6.4.1.3) IF Charging flowpath to Loop B HOT leg is desired,.....	NOTE: Charging alignment to the Hot Leg will NOT be desired.
	HCO/ CO	(Step 6.4.2) START a second Charging Pump at minimum speed.	NOTE: It is likely that two charging pumps will be running.
	HCO/ CO	(Step 6.4.3) SLOWLY OPEN charging flow to Regenerative Heat Exchanger HCV-142 to reduce labyrinth seal ΔP to - 40".	
	HCO/ CO	(Step 6.4.4) ADJUST Charging Pump speed while maintaining - 40" labyrinth seal ΔP UNTIL HCV-142 is fully OPEN.	
	HCO/ CO	(Step 6.4.5) ESTABLISH greater than or equal to 22 gpm charging line flow.	
	HCO/ CO	(Step 6.4.6) IF placing 40 GPM orifice in service THEN PERFORM the following	NOTE: A 40 gpm Orifice was previously in service.
		<ul style="list-style-type: none"> PLACE LOW PRESS LTDN PRESS PCV-135 in MANUAL at - 40% open. 	
		<ul style="list-style-type: none"> PLACE NRHX LTDN OUTLET TEMP (TI-130) TCV-130 in MANUAL at -40% open. 	

Op Test No.: N17-1 Scenario # 5 Event # 1 Page 14 of 66Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 6.4.7) IF placing 60 GPM orifice in service THEN	
	HCO/ CO	(Step 6.4.8) OPEN LETDOWN ISOL VLV RHR TO NRHX AOV-371.	
	HCO/ CO	(Step 6.4.9) PLACE LTDN LOOP B COLD LEG TO RHX AOV-427 to OPEN and THEN to AUTO.	
	HCO/ CO	(Step 6.4.10) OPEN desired Letdown orifice valve AOV-200A, AOV-200B, or AOV-202 AND MARK AOV's not opened N/A.	NOTE: AOV-200B was previously opened.
		• AOV-200A	
		• AOV-200B	
		• AOV-200	
	HCO/ CO	(Step 6.4.11) ADJUST LOW PRESS LTDN PRESS PCV-135 to achieve Letdown pressure of 250 psig on PI-135.	
	HCO/ CO	(Step 6.4.12) PLACE LOW PRESS LTDN PRESS, PCV-135 IN AUTO.	
	HCO/ CO	(Step 6.4.13) PLACE NRHX LTDN OUTLET TEMP (TI-130) TCV-130 in AUTO at the setpoint recorded in Step 5.4.	
	HCO/ CO	(Step 6.4.14) PLACE Pressurizer level control (Charging Pump) to AUTO.	NOTE: With Pzr Level high, the HCO may leave the Charging Pumps in MANUAL.
			NOTE: The US will continue with ER-INST.3, Step 6.4.5.
ER-INST.3, INSTRUMENT BUS POWER RESTORATION			

Op Test No.: N17-1 Scenario # 5 Event # 1 Page 15 of 66Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 6.4.5) RESTORE EH control to AUTO/IMP IN, If desired.	
	HCO	(Step 6.4.6) RESTORE ROD CONTROL BANK SELECTOR Switch to AUTO, if desired.	NOTE: The HCO will place the Rods back in Auto.
	HCO	(Step 6.4.7) VERIFY CNMT ventilation isolation is reset.	
	HCO	(Step 6.4.8) VERIFY Hotwell level controller in AUTO, if desired.	
	CO	(Step 6.4.9) RESTORE desired SW pump alignment.	
	CO	(Step 6.4.10) ENSURE motor fire pump breaker closed.	
	CO/EO	(Step 6.4.11) DISPATCH an AO to verify proper operation of Battery Chargers if necessary.	NOTE: The US may dispatch an EO. If so, SIM DRIVER: as EO, acknowledge.
	HCO/ CO	(Step 6.4.12) EVALUATE MCB Annunciator status (refer to AR procedures)	NOTE: Annunciator K-32 needs follow-up.
AR-K-32, SG BLOWDOWN TANK HIGH LEVEL			
	CO	(All Steps) Direct AO to remove and then restore Blowdown per T-14.F.1, SG Blowdown System Operation	NOTE: The US may dispatch an EO. If so, SIM DRIVER: as EO, acknowledge. Use REM-SGN01=0/1 and REM-SGN02=0/1 as needed, report Flash Tank Level, and use REM-SGN05=RESET.

Op Test No.: N17-1 Scenario # 5 Event # 1 Page 16 of 66Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
ER-INST.3, INSTRUMENT BUS POWER RESTORATION			
	US	(Step 6.4.13) IF Instrument Bus D was affected, THEN	NOTE: Instrument Bus D was NOT affected.
	US	(Step 6.4.14) IF Instrument Bus A or C is being powered from associated emergency AC Bus, then	NOTE: Instrument Bus A or C is NOT being powered from the emergency AC Bus.
	US	(Step 6.4.15) RETURN to procedure or guidance in effect.	
			NOTE: The US will likely conduct a Plant Status Brief.
			NOTE: The US will address the Technical Specifications.
TECHNICAL SPECIFICATION 3.8.7, AC INSTRUMENT BUS SOURCES – MODES 1, 2, 3 AND 4			
	US	LCO 3.8.7 The following AC instrument bus power sources shall be OPERABLE: a) Inverters for Instrument Buses A and C; and b) Class 1E constant voltage transformer (CVT) for Instrument Bus B.	
	US	APPLICABILITY: MODES 1, 2, 3, AND 4.	

Op Test No.: N17-1 Scenario # 5 Event # 1 Page 17 of 66Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior			Comments
		CONDITION	REQUIRED ACTION	COMPLETION TIME	NOTE: The US will take ACTIONS B.1 and B.2.
		B. Class 1E CVT for AC Instrument Bus B inoperable	B.1 Power AC Instrument Bus B from its non-Class 1E CVT.	2 hours	
			AND		
			B.2 Restore Class 1E CVT for AC Instrument Bus B to OPERABLE status.	7 Days	
TECHNICAL SPECIFICATION 3.8.9, DISTRIBUTION SYSTEMS – MODES 1, 2, 3 AND 4					
	US	LCO 3.8.9 Train A and Train B of the following electrical power distribution subsystems shall be OPERABLE: a) AC power; b) AC instrument bus power; and c) DC power			
	US	APPLICABILITY: modes 1, 2, 3 and 4.			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	NOTE: The US will note that while Instrument Bus B was de-energized, they were in B.1, but came out of this action when power to the Bus was restored.
		B. One AC Instrument bus electrical power distribution train inoperable.	B.1 Restore AC Instrument bus electrical power distribution train to OPERABLE status.	2 hours.	
					SIM DRIVER: If the crew delays returning to the planned load reduction, Call as the WCCS, and state that Plant Management desires to initiate the load reduction to Mode 3.
At the discretion of the Lead Examiner move to Event #2.					

Op Test No.: N17-1 Scenario # 5 Event # 2 Page 18 of 66Event Description: **Load Reduction**

Following this, the operator will lower power in accordance with O-5.1, "Load Reduction." The operator will address S-3.1, "Boron Concentration Control," to start the load reduction.

SIM DRIVER Instructions: **NA**Indications Available: **NA**

Time	Pos.	Expected Actions/Behavior	Comments
O-5.1, LOAD REDUCTION			
	US	(Step 6.2.1) IF desired to lower H2 concentration of the RCS during the load reduction, THEN REFER TO Procedure S-3.3C, H2 or O2 Removal From Primary System by Burping Volume Control Tank With N2. OTHERWISE, MARK this Step N/A.	
	HCO	(Step 6.2.2) ENSURE the ROD CONTROL BANK SELECTOR switch is in the desired A (AUTOMATIC) OR M (MANUAL) position AND MARK the position NOT used N/A.	NOTE: The HCO will likely have the control rods in AUTO.
		• AUTOMATIC (A)	
		• MANUAL (M)	
	HCO	(Step 6.2.3) REFER TO S-3.1, Boron Concentration Control, and OPG Reactivity Calculation, AND INITIATE Boric Acid additions to the Reactor Coolant System, as necessary.	
S-3.1, BORON CONCENTRATION CONTROL ATTACHMENT 2, NORMAL BORATION			
	HCO	(Step 1) ENSURE Attachment 1, Makeup Determinations, is complete.	NOTE: The HCO will address Attachment 1.
	HCO	(Step 2) Board operator SHALL inform US of intent to change core reactivity.	

Op Test No.: N17-1 Scenario # 5 Event # 2 Page 19 of 66Event Description: **Load Reduction**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> US SHALL acknowledge reactivity manipulation and provide input and oversight. [G0092]. 	
	HCO	(Step 3) PLACE RMW MODE SELECTOR control switch to BORATE position.	
	HCO	(Step 4) SET BA TO BA BLENDER FLOW CONTROL VALVE, HCV-110A, controller to flow rate determined in Attachment 1, Makeup Determinations, Step 1.1.	
	HCO	(Step 5) SET BA COUNTER, YIC-110, to quantity determined in Attachment 1.	
	HCO	(Step 6) PLACE RMW CONTROL switch to START position.	
	HCO	(Step 7) Verify the following:	
		<ul style="list-style-type: none"> BORIC ACID TRANSFER PUMP A OR B starts. 	
		<ul style="list-style-type: none"> BA TO BA BLENDER FLOW CONTROL VALVE, HCV-110A, throttles open to preset flow position. 	
		<ul style="list-style-type: none"> REACTOR MAKEUP TO CHG PUMP, AOV-110B, opens. 	
	HCO	(Step 8) WHEN boration is complete, THEN PERFORM the following:	NOTE: The remainder of the Attachment 2 will be performed when the boration is complete.
		<ul style="list-style-type: none"> PLACE RMW MODE SELECTOR control switch to AUTO position. 	
		<ul style="list-style-type: none"> PLACE RMW CONTORL switch to START position and VERIFY RMW control red light ILLUMINATED. 	

Op Test No.: N17-1 Scenario # 5 Event # 2 Page 20 of 66Event Description: **Load Reduction**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> SET BA TO BA BLENDER FLOW CONTROL VALVE, HCV-110A, for current RCS boron concentration PER Boration/Dilution tables OR PPCS Engineering Menu Boration/Dilution display. 	
	HCO	(Step 9) PLACE "BORATE" Human Performance Label next to RMW Mode Selector switch on MCB.	
	HCO	(Step 10) Board operator SHALL inform US that reactivity manipulation is complete. [G0092].	
	HCO	(Step 11) RECORD amount of boric acid added on S-12.4, RCS Leakage Surveillance Record Instructions, Attachment RCS Leakage Surveillance Record.	
O-5.1, LOAD REDUCTION			
	CO	(Step 6.2.4) START the load reduction at the EH Control Panel as follows:	
		<ul style="list-style-type: none"> IF the EH Control Panel is in OPER PAN, control, THEN PERFORM the following: OTHERWISE, MARK this Substep N/A. 	NOTE: Power is already less than 98%, and the CO will use IMP PRESS IN.
		<ul style="list-style-type: none"> LOWER the SETTER setpoint to the desired value using the ▼ pushbutton. 	
		<ul style="list-style-type: none"> DEPRESS to GO pushbutton. 	
		<ul style="list-style-type: none"> OBSERVE the desired rate of load reduction. 	
		<ul style="list-style-type: none"> MAINTAIN the VPL set point approximately 10% above the indicated REFERENCE value as load decreases. 	

Op Test No.: N17-1 Scenario # 5 Event # 2 Page 21 of 66Event Description: **Load Reduction**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	<ul style="list-style-type: none"> WHEN less than or equal to 98% power AND it is desired to place EHC Control in the IMP IN mode THEN PERFORM the following: OTHERWISE, MARK this step N/A. 	
		<ul style="list-style-type: none"> DEPRESS the HOLD pushbutton on the EHC Control panel. 	
		<ul style="list-style-type: none"> DEPRESS the IMP PRESS IN pushbutton. 	
		<ul style="list-style-type: none"> VERIFY the IMP PRESS IN pushbutton back light is ILLUMINATED. 	
		<ul style="list-style-type: none"> DEPRESS the GO pushbutton to resume power reduction. 	
		<ul style="list-style-type: none"> IF the EH Control Panel is in TURB, MANUAL control, THEN DEPRESS MANUAL CONTROL VALVE LOWER pushbutton, as directed by Plant Management, to attain the desired rate of load reduction, OTHERWISE, MARK this substep N/A. 	NOTE: The US will recognize that Section 6.3 of O-5.1 is NA, and proceed to Section 6.4.
	CO	(Step 6.4.1) WHEN at approximately 50% power, THEN REMOVE ONE Main Feedwater Pump from service.	NOTE: The B MFWP is already OOS.
	US	(Step 6.4.2) IF power reduction was greater than 50%, THEN RAISE letdown flow to 60 gpm PER S-3.2P, Swapping CVCS Letdown Orifice Valves, OTHERWISE, MARK the substep N/A.	NOTE: Chemistry has reported that Normal Letdown can remain at 40 gpm throughout the load reduction.
	CO	(Step 6.4.3) WHEN power is being lowered to less than 40% (225 psig first stage pressure), THEN CHECK AMSAC AUTO BLOCK status light ILLUMINATED.	
At the discretion of the Lead Examiner move to Event #3.			

Op Test No.: N17-1 Scenario # 5 Event # 3 Page 22 of 66Event Description: **PORV Leak/Block Valve Failure**

Subsequently, Pressurizer PORV-431C will fail partially open. The operator will respond in accordance with AR-F-19, "PRZR PORV OUTLET HI TEMP 145°F," and enter AP-PRZR.1, "Abnormal Pressurizer Pressure." When the operator attempts to isolate the PORV, the Block Valve will fail to shut fully resulting in a 2-5 gpm leak into the PRT. The crew may implement AP-RCS.1, "Reactor Coolant Leak," and prepare to make a Containment entry. Ultimately, the crew will be directed to take the unit off-line. The operator will address Technical Specification LCO 3.4.11, "Pressurizer Power Operated Relief Valves," LCO 3.4.13, "RCS Operational Leakage," LCO 3.4.1 "RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits," as well as Technical Requirements Manual TR 3.4.3, "Anticipated Transients Without Scram (ATWS) Mitigation."

SIM DRIVER Instructions: Operate Trigger #2 (PZR05B 5%, No Ramp (Throttled back to 2% after the operator attempts to close the PORV Block Valve))

Indications Available:

- MCB Annunciator F-19, PRZR PORV OUTLET HI TEMP 145°F
- Pressurizer Pressure decreases slowly
- PRT Pressure (PI-440A) increases
- PCV-431C has dual indication

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The crew may go to HOLD on the Turbine, and stop the boration.
AR-F-19, PRZR PORV OUTLET HI TEMP 145°F			
	US	(Step 1) IF Pressurizer pressure is lowering, THEN GO TO AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE.	NOTE: The HCO will recognize that PZR Pressure is lowering because of the Open PORV.
	HCO	(Step 2) Check PRZR PORV outlet temperature, TI-438.	NOTE: The HCO may attempt to close PCV-431C, in accordance with A-503.1. Upon recognizing that PCV-431C did NOT close, the HCO will attempt to close MOV-515.
	HCO	(Step 3) Check PRT parameters.	

Op Test No.: N17-1 Scenario # 5 Event # 3 Page 23 of 66Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 4) Check Containment temperature.	
	US	(Step 5) Start OR swap Containment Recirc Fans per Shift Manager directions.	
	US	(Step 6) Refer to ITS LCO 3.4.11 and 3.4.13.	
			NOTE: The US will go to AP-PRZR.1.
SIM DRIVER Note: When the operator attempts to close the PORV Block Valve, Trigger #29 will activate, failing the valve at mid-position.			
Indications Available: <ul style="list-style-type: none"> • PORV Block Valve Red status light LIT • PORV Block Valve Green status light LIT • Pressurizer Pressure continues to decrease slowly 			
			Examiner NOTE: If the crew enters AP-RCS.1 at any time, proceed to the actions on Page 27.
AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE			
	HCO	(Step 1) Check PRZR Pressure:	
		<ul style="list-style-type: none"> • All 4 narrow range channels – APPROXIMATELY EQUAL 	
		<ul style="list-style-type: none"> • All 4 narrow range channels – TRENDING TOGETHER 	
	HCO	(Step 2) Check Reactor Power – STABLE	
	HCO	(Step 3) Check PRZR Pressure:	
		<ul style="list-style-type: none"> • Pressure – LESS THAN 2235 PSIG 	
		<ul style="list-style-type: none"> • Pressure – GREATER THAN 2000 PSIG 	
	HCO	(Step 4) Check PRZR heater Status:	

Op Test No.: N17-1 Scenario # 5 Event # 3 Page 24 of 66Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> PRZR proportional heater breaker – CLOSED 	
		<ul style="list-style-type: none"> PRZR heater backup group - ON 	NOTE: All PZR Heaters will be energized.
	HCO	(Step 5) Verify Normal PRZR Spray Valves - CLOSED	
		<ul style="list-style-type: none"> AOV-431A 	
		<ul style="list-style-type: none"> AOV-431B 	
	HCO	(Step 6) Check PRZR Pressure Controller, 431K, Demand – LESS THAN 50%	
	HCO	(Step 7) Check PRZR PORVs:	
		<ul style="list-style-type: none"> PORVs – CLOSED 	NOTE: PCV-431C will be in mid-position.
	HCO	<ul style="list-style-type: none"> (Step 7a RNO) Manually close PORVs 	NOTE: PORV will not close.
		IF any valve can NOT be closed, THEN manually close the associated block valve.	
		<ul style="list-style-type: none"> MOV-515 for PCV-431C 	NOTE: The HCO will attempt to close the Block Valve unsuccessfully (if not attempted earlier).
	HCO	<ul style="list-style-type: none"> (Step 7 Continued) Annunciator F-19, PRZR PORV OUTLET HI TEMP 145°F – EXTINGUISHED 	NOTE: F-19 is LIT.
	HCO	<ul style="list-style-type: none"> (Step 7b RNO) IF PORV leakage is indicated, THEN perform the following: 	
		<ul style="list-style-type: none"> Close PORV block valves one at a time AND check if pressure stabilizes. 	

Op Test No.: N17-1 Scenario # 5 Event # 3 Page 25 of 66Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> MOV-515 	NOTE: The HCO will attempt to close the Block Valve unsuccessfully (if not attempted earlier), and it will be recognized that the leaking PORV cannot be isolated.
	US	<ul style="list-style-type: none"> IF a leaking PRZR PORV is identified, THEN open any nonleaking PORV block valve AND go to Step 8. 	
	HCO	(Step 8) Attempt To Reseat Any Leaking PORV:	
		<ul style="list-style-type: none"> Verify affected PORV block valve – CLOSED 	NOTE: The PCV-431C Block Valve is stuck OPEN.
		<ul style="list-style-type: none"> MOV-515 for PCV-431C 	
	HCO	(Step 8.a RNO) Close the affected PORV block - CLOSED valve.	NOTE: The PCV-431C Block Valve is stuck OPEN.
	HCO	<ul style="list-style-type: none"> (Step 8 Continued) Cycle the leaking PORV open then closed 	NOTE: The US may or may not take these actions knowing that the Block Valve is not, and cannot be closed.
		<ul style="list-style-type: none"> Open affected PORV block valve 	
		<ul style="list-style-type: none"> Verify leakage has stopped 	
		(Step 8.d RNO) IF leakage continues, THEN perform the following:	
		<ul style="list-style-type: none"> Reclose leaking PORV block valve. 	NOTE: The PCV-431C Block Valve is stuck OPEN.
		<ul style="list-style-type: none"> Refer to ITS section 3.4.11 and TR 3.4.3 for required actions. 	
	US	<ul style="list-style-type: none"> (Step 8 Continued) Go to Step 11 	
	HCO	(Step 11) Check PRZR Pressure Control Restored:	

Op Test No.: N17-1 Scenario # 5 Event # 3 Page 26 of 66Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Pressure – TRENDING TO 2235 PSIG 	NOTE: The Pressurizer Pressure is expected to be rising by this time.
	US	<ul style="list-style-type: none"> Go to Step 16. 	
	HCO	(Step 16) Check PRT Indications:	
		<ul style="list-style-type: none"> Level - BETWEEN 61% AND 84% 	
		<ul style="list-style-type: none"> Pressure – APPROXIMATELY 1.5 PSIG AND STABLE 	NOTE: The PRT pressure will be rising.
	HCO	(Step 16.b RNO) Open PRT vent, AOV-527 until PRT 1.5 PSIG AND STABLE pressure is approximately 1.5 psig. IF PRT pressure will NOT lower, THEN open PRT drain valve, AOV-526, to reduce pressure until PRT pressure is approximately 1.5 psig.	NOTE: The HCO will attempt to control PRT pressure by venting.
	HCO	(Step 16.c) Temperature - AT CNMT AMBIENT TEMPERATURE AND STABLE	NOTE: The HCO may attempt to bleed and feed the PRT using the RNO.
	HCO	(Step 17) Establish PRZR Pressure Control In Auto:	
		<ul style="list-style-type: none"> Verify 431K in AUTO 	
		<ul style="list-style-type: none"> Verify PRZR spray valves in AUTO 	
		<ul style="list-style-type: none"> Verify PRZR heaters restored: 	
		<ul style="list-style-type: none"> PRZR proportional heaters breaker - CLOSED 	
		<ul style="list-style-type: none"> PRZR backup heaters breaker - RESET, IN AUTO 	
	US/ HCO/ CO	(Step 18) Evaluate MCB Annunciator Status (Refer to AR Procedures)	

Op Test No.: N17-1 Scenario # 5 Event # 3 Page 27 of 66Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	US	(Step 19) Notify Higher Supervision	NOTE: The US may call WCC/Supervision to address the failed PORV and Block Valve. If so, SIM DRIVER acknowledge as WCC.
	US	(Step 20) Notify Reactor Engineer for Transient Monitoring Program	NOTE: The US will call RE. SIM DRIVER: as RE, acknowledge.
			SIM DRIVER: IF crew does not enter AP-RCS.1, then PROMPT (as Ops Management) that plant should be S/D per AP-TURB.5 at 1%/minute.
			Examiner NOTE: The following assumes that the US enters AP-RCS.1. IF AP-TURB.5 is entered instead, Move forward to Event 4 on Page 36, and check the Technical Specifications after the Scenario.
AP-RCS.1, REACTOR COOLANT LEAK			
	HCO	(*Step 1) Monitor PRZR Level – STABLE AT PROGRAM LEVEL	NOTE: This is a Continuous Action. The US will make one or more board operators aware. NOTE: The HCO may raise Charging Pump Speed (i.e. perform RNO).
	HCO	(Step 2) Check VCT Makeup System:	
		• Verify VCT level – GREATER THAN 5%	
		• Ensure the following:	
		• RMW mode selector switch in AUTO	NOTE: The HCO may still be borating for the load reduction.

Op Test No.: N17-1 Scenario # 5 Event # 3 Page 28 of 66Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> • RMW control armed – RED LIGHT LIT 	
		<ul style="list-style-type: none"> • Check VCT level: 	
		<ul style="list-style-type: none"> • Level GREATER THAN 20% 	
		OR	
		<ul style="list-style-type: none"> • Level - STABLE OR RISING 	
	HCO	(Step 3) Check If RCS Leakage In CNMT:	NOTE: The leakage is into the PRT.
		<ul style="list-style-type: none"> • Check CNMT radiation monitors - NORMAL 	NOTE: The CNMT Monitors may be slowly rising due to the PRT venting operations.
		<ul style="list-style-type: none"> • R-2 	
		<ul style="list-style-type: none"> • R-7 	
		<ul style="list-style-type: none"> • R-10A 	
		<ul style="list-style-type: none"> • R-11 	
		<ul style="list-style-type: none"> • R-12 	
		<ul style="list-style-type: none"> • CNMT sump A pump run frequency – NORMAL (Refer to RCS Daily Leakage Log) 	
	US	(Step 4) Dispatch EO to AUX BLDG To Investigate For CVCS Leak (locked area keys required)	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge.
	HCO	(Step 5) Check For Leak To CCW System:	NOTE: The leakage is into the PRT.
		<ul style="list-style-type: none"> • CCW surge tank level – APPROXIMATELY 50% AND STABLE 	
		<ul style="list-style-type: none"> • CCW radiation monitor, R-17 - NORMAL 	
	HCO	(Step 6) Check CVCS Conditions:	NOTE: The leakage is into the PRT.
		<ul style="list-style-type: none"> • Normal letdown – IN SERVICE 	

Op Test No.: N17-1 Scenario # 5 Event # 3 Page 29 of 66Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Letdown indication: 	
		<ul style="list-style-type: none"> Letdown flow – APPROXIMATELY 40 GPM (60 GPM IF AOV-202 OPEN) 	
		<ul style="list-style-type: none"> Low pressure LTDN pressure – APPROXIMATELY 250 PSIG 	
		<ul style="list-style-type: none"> Letdown pressure control valve, PCV-135, demand APPROXIMATELY 35% OPEN (40% OPEN IF AOV-202 OPEN) 	
	HCO	<ul style="list-style-type: none"> Charging indication: 	
		<ul style="list-style-type: none"> Seal injection flows – GREATER THAN 6 GPM AND STABLE 	
		<ul style="list-style-type: none"> RCP Labyrinth seal D/Ps – GREATER THAN 15 INCHES AND APPROXIMATELY EQUAL 	
		<ul style="list-style-type: none"> Charging pump discharge pressure – GREATER THAN RCS PRESSURE 	
		<ul style="list-style-type: none"> AUX BLDG radiation levels - NORMAL 	
		<ul style="list-style-type: none"> R-4 	
		<ul style="list-style-type: none"> R-9 	
		<ul style="list-style-type: none"> R-10B 	
		<ul style="list-style-type: none"> R-13 	
		<ul style="list-style-type: none"> R-14 	
	HCO	(Step 7) Check PRT Indications:	NOTE: The leakage is into the PRT.
		<ul style="list-style-type: none"> Level – BETWEEN 61% AND 84% 	
		<ul style="list-style-type: none"> Pressure – APPROXIMATELY 1.5 PSIG AND STABLE 	NOTE: PRT pressure is increasing.
		<ul style="list-style-type: none"> Temperature - AT CNMT AMBIENT TEMPERATURE AND STABLE 	

Op Test No.: N17-1 Scenario # 5 Event # 3 Page 30 of 66Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 7 RNO) Check tailpipe and valve leakoff temperatures for the PRZR safety valves and PORVs for indication of leakage.	NOTE: Tailpipe temperatures are high.
		IF no PORV or safety valve leakage is indicated, THEN.....	NOTE: There is PORV leakage indicated into the PRT.
	HCO	(Step 8) Check S/Gs for Leakage:	
		• Air ejector radiation monitors - NORMAL	
		• R-15	
		• R-47	
		• R-48	
		• S/G blowdown radiation monitor (R-19) – NORMAL	
		• Steamline radiation monitors - NORMAL	
		• R-31	
		• R-32	
		• S/G sample activity – NORMAL (Check with Chemistry Department for normal)	NOTE: The US may call WCC/Chemistry to address the samples. If so, SIM DRIVER acknowledge as WCC/Chemistry.
	HCO	(Step 9) Check SI Accumulator Levels – STABLE	NOTE: The leakage is into the PRT.
	HCO	(Step 10) Check RCP Seal Leakoff Flows:	
		• Leakoff flows – WITHIN THE NORMAL OPERATING RANGE OF FIG-4.0, FIGURE RCP SEAL LEAKOFF	
		• Leakoff flows - STABLE	
	HCO	(Step 11) check RCDT Leak Rate – NORMAL (Refer to RCS Daily Leakage Log and PPCS point ID L1003)	NOTE: The leakage is into the PRT.

Op Test No.: N17-1 Scenario # 5 Event # 3 Page 31 of 66Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 12) Check Valve Leakoff Temperatures – NORMAL (Refer to Pressurizer Valve Leak-Off Temperature Record Log)	NOTE: The US may dispatch an EO. SIM DRIVER: as EO, acknowledge and use OVR-IND-PZR11. After 3 Minutes report indications of PORVs ($\approx 220^{\circ}\text{F}$) and Safety Valves ($\approx 140^{\circ}\text{F}$).
	HCO	(Step 13) Check Normal or Excess Letdown – IN SERVICE	NOTE: Normal Letdown is in service.
	HCO	(Step 14) Establish Stable Plant Conditions:	
		<ul style="list-style-type: none"> PRZR level – TRENDING TO PROGRAM IN AUTO CONTROL 	NOTE: Charging may still be in Manual; and if so, the HCO may return to AUTO.
		<ul style="list-style-type: none"> Check PRZR pressure – TRENDING TO 2235 PSIG IN AUTO 	
	HCO	(Step 15) Establish Control Systems In Auto	
		<ul style="list-style-type: none"> Verify 431K in AUTO 	
		<ul style="list-style-type: none"> Verify PRZR spray valves in AUTO 	
		<ul style="list-style-type: none"> Verify PRZR heaters restored: 	
		<ul style="list-style-type: none"> PRZR proportional heaters breaker – CLOSED 	
		<ul style="list-style-type: none"> PRZR backup heaters breaker – RESET, IN AUTO 	
		<ul style="list-style-type: none"> Verify one charging pump in AUTO 	
	HCO/CO	(Step 16) Evaluate MCB Annunciator Status (Refer to AR Procedures)	
	US	(Step 17) Evaluate RCS Leakage:	

Op Test No.: N17-1 Scenario # 5 Event # 3 Page 32 of 66Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior			Comments
		<ul style="list-style-type: none">Leakage within limits (Refer to leakage surveillance sheet and ITS section 3.4.13)			
		<ul style="list-style-type: none">(Step 17a RNO) IF leak NOT isolable, but PRZR level and seal injection can be maintained, THEN shut the plant down (Refer to 0-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN or AP-TURB.5, RAPID LOAD REDUCTION).			SIM DRIVER: As the Shift Manager, direct the US to shutdown the plant using AP-TURB.5 at 1%/minute.
					Examiner NOTE: The US may NOT check TS during the plant transient. If NOT, US Examiner check TS <u>after</u> the scenario is complete.
TECHNICAL SPECIFICATION 3.4.1, RCS PRESSURE, TEMPERATURE, AND FLOW DEPARTURE FROM NUCLEATE BOILING (DNB) LIMITS					
	US	RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits			
	US	LCO 3.4.1 RCS DNB parameters for pressurizer pressure, RCS average temperature, and RCS total flow rate shall be within the limits specified in the COLR.			NOTE: According to Section 2.10.1 of the COLR, the Przr Pressure shall be ≥2175 psig.
		APPLICABILITY: MODE 1			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	NOTE: The US will identify that this TS was entered and exited if and when RCS pressure lowers to (and then rises above) 2175 psig.
		A. One or more RCS DNB parameters not within limits.	A.1 Restore RCS DNB parameter(s) to within limit.	2 hours	
TECHNICAL SPECIFICATION 3.4.11, PRESSURIZER POWER OPERATED RELIEF VALVES (PORVs)					

Op Test No.: N17-1 Scenario # 5 Event # 3 Page 33 of 66Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior			Comments
	US	LCO 3.4.11 Each PORV and associated block valve shall be OPERABLE.			
	US	APPLICABILITY MODES 1, 2, and 3.			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	NOTE: The US will determine that both Conditions B and C apply.
		B. One PORV inoperable.	B.1 Close associated block valve.	1 hour	
			AND B.2 Remove power from associated block valve.	1 hour	
			AND B.3 Restore PORV to OPERABLE status.	72 hours	
		C. One block valve inoperable.	C.1 Place associated PORV in manual control.	1 hour	
			AND C.2 Restore block valve to OPERABLE status.	7 days	
		E. Required Action and associated Completion Time of Condition A, B, C, or D not met.	E.1 Be in MODE 3.	6 hours	Because ACTION B.1 cannot be completed, the US will identify that Condition E must be entered.
			AND E.2 Be in MODE 4.	12 hours	
TECHNICAL SPECIFICATION 3.4.13, RCS OPERATIONAL LEAKAGE					
	US	LCO 3.4.13 RCS operational LEAKAGE shall be limited:			
		• No pressure boundary LEAKAGE;			
		• 1 gpm unidentified LEAKAGE;			
		• 10 gpm identified LEAKAGE; and			

Op Test No.: N17-1 Scenario # 5 Event # 3 Page 34 of 66Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior			Comments
		<ul style="list-style-type: none">150 gallons per day primary to secondary LEAKAGE through any one steam generator (SG).			
		APPLICABILITY MODES 1, 2, 3, and 4.			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	NOTE: The US will evaluate this Tech Spec and conclude that the TS is met or not met by using the rough estimate obtained in assessing the leakage through the PORV. <u>If</u> the crew determines that the leakage from the PORV is greater than 10 gpm, then Condition A will be entered.
		A. RCS operational LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE or primary to secondary LEAKAGE.	A.1 Reduce LEAKAGE to within limits.	4 hours	
TECHNICAL REQUIREMENT 3.4.3, ANTICIPATED TRANSIENTS WITHOUT SCRAM (ATWS) MITIGATION					
	US	TR 3.4.3 ATWS Mitigation shall be OPERABLE as follows:			
		<ul style="list-style-type: none">Each PORV shall be capable of automatic actuation and each block valve shall be open;			
		<ul style="list-style-type: none">Manual rod insertion shall be OPERABLE; and			
		<ul style="list-style-type: none">ATWS Mitigation System Actuation Circuitry (AMSAC) shall be OPERABLE.			
		APPLICABILITY MODE 1 > 45% RTP.			

Op Test No.: N17-1 Scenario # 5 Event # 3 Page 35 of 66Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior			Comments
		CONDITION	REQUIRED ACTION	COMPLETION TIME	NOTE: The US will determine that the failed PORV Block Valve is NOT open, and that Condition A applies.
		A. One or more PORV automatic flow path inoperable.	A.1 Declare ATWS mitigating capability inoperable.	Immediately	
At the discretion of the Lead Examiner move to Event #4.					

Op Test No.: N17-1 Scenario # 5 Event # 4 Page 36 of 66Event Description: **Downpower/Failure of Turbine Control/EHC**

Then, the operator will take the unit off line in accordance with AP-TURB.5, "Rapid Load Reduction." The Main Turbine will fail in automatic control. The operator will diagnose the failure and use manual control of the turbine to conduct the downpower.

SIM DRIVER Instructions: **NA**Indications Available: **NA**

Time	Pos.	Expected Actions/Behavior	Comments
AP-TURB.5, RAPID LOAD REDUCTION			
			Examiner NOTE: The crew may perform ATT-23.0 based on the Note prior to Step 1 of AP-TURB-5. If so, Examiner following CO continue, while other Examiners continue with Step 1 of AP-TURB.5 on Page 37 .
ATT-23.0, ATTACHMENT TRANSFER 4160V LOADS			
	CO	(Step 1) Place Bus 12A – Bus 11A TIE SYNCHROSCOPE to ON.	
	CO	(Step 2) Close BUS 12A – BUS 11A TIE 4160V.	
	CO	(Step 3) Place BUS 12A – BUS 11A TIE SYNCHROSCOPE to OFF.	
	CO	(Step 4) Open BUS 11A NORMAL FEED 4160V.	
	CO	(Step 5) Place BUS 11B – BUS 12B TIE SYNCHROSCOPE to ON.	
	CO	(Step 6) Close BUS 11B – BUS 12B TIE 4160V.	

Op Test No.: N17-1 Scenario # 5 Event # 4 Page 37 of 66Event Description: **Downpower/Failure of Turbine Control/EHC**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 7) Place BUS 11B – BUS 12B TIE SYNCHROSCOPE to OFF.	
	CO	(Step 8) Open BUS 11B NORMAL FEED 4160V.	
	CO	(Step 9) Reset alarms L-20 AND L-28, locally in the Relay Room Addition.	NOTE: The CO will contact the EO to perform this action. SIM DRIVER: as EO, acknowledge and will need to insert: REM-EDS49=RESET REM-EDS50=RESET
AP-TURB.5, RAPID LOAD REDUCTION			
			Examiners NOTE: Examiners following HCO and US, continue HERE.
			NOTE: The US will conduct a load reduction brief.
	HCO	(Step 1) Initiate Load Reduction	
		<ul style="list-style-type: none"> Verify rods in AUTO 	
	HCO	<ul style="list-style-type: none"> Initiate boration at the rate determined in OPG-REACTIVITY-CALC. 	NOTE: The HCO may initiate a boration; or it may already be initiated and the rate will need to be adjusted.
		<ul style="list-style-type: none"> Reduce turbine load in Auto as follows: 	
	CO	<ul style="list-style-type: none"> Place Turbine EH Control in OPER PAN., IMP PRESS IN, if desired. 	
		<ul style="list-style-type: none"> Select desired rate on thumbwheel 	NOTE: The CO will select 1%/Minute.
		<ul style="list-style-type: none"> Reduce the setter to the desired load 	
		<ul style="list-style-type: none"> Depress the GO button 	NOTE: The CO will start the load decrease.

Op Test No.: N17-1 Scenario # 5 Event # 4 Page 38 of 66Event Description: **Downpower/Failure of Turbine Control/EHC**

Time	Pos.	Expected Actions/Behavior	Comments
SIM DRIVER Instructions: WHEN the CO depress GO on the Turbine Operate Trigger #3 (TUR09D, OVR-TUR050 = OFF, OVR-TUR05P = OFF)			
Indications Available: <ul style="list-style-type: none"> Turbine Load does NOT decrease as expected EH valve control status lights: <ul style="list-style-type: none"> OPER PAN – DARK IMP PRESS OUT – DARK TURB MANUAL – LIT MANUAL CONTROL VALVE LOWER – LIT MANUAL CONTROL VALVE FAST – LIT MANUAL CONTROL VALVE RAISE – LIT Reference and Setter Control Valve Position are equalized 			
	CO	(Step 1.c RNO) IF Auto control is inoperable, THEN reduce turbine load in manual at the desired rate.	NOTE: The CO will lower Turbine Load in MANUAL.
			Examiner NOTE: Once the CO has diagnosed the EHC Failure, and is lowering Turbine Load in Manual, MOVE to Events 5-7.
	HCO	<ul style="list-style-type: none"> (Step 1 Continued) Place PRZR backup heaters switch to ON 	
	HCO	(*Step 2) Monitor RCS Tavg	NOTE: This is a Continuous Action. The US will make both board operators aware.
		<ul style="list-style-type: none"> Tavg – GREATER THAN 545°F 	
		<ul style="list-style-type: none"> Tavg – LESS THAN 579°F 	
	HCO	(Step 3) Adjust Boric Acid Addition Rate As Necessary To (refer to OPG-REACTIVITY-CALC):	
		<ul style="list-style-type: none"> Maintain rods above the insertion limit 	
		<ul style="list-style-type: none"> Match Tavg and Tref 	
		<ul style="list-style-type: none"> Compensate for Xenon 	

Op Test No.: N17-1 Scenario # 5 Event # 4 Page 39 of 66Event Description: **Downpower/Failure of Turbine Control/EHC**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(*Step 4) Monitor PRZR Pressure – TRENDING TO 2235 PSIG IN AUTO	NOTE: This is a Continuous Action. The US will make both board operators aware.
	HCO	(Step 4 RNO) Control PRZR pressure by one of the following:	NOTE: Pressurizer Pressure may be trending down. If so, the RNO will be performed.
		• 431K in MANUAL	
		• Manual control of PRZR heaters and sprays	
		If PRZR pressure can NOT be controlled manually, THEN refer to AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE.	NOTE: This procedure has already been completed.
	CO	(*Step 5) Monitor MFW Regulating Valves – RESTORING S/G LEVEL TO 52% IN AUTO	NOTE: This is a Continuous Action. The US will make both board operators aware.
	HCO	(*Step 6) Monitor PRZR Level – TRENDING TO PROGRAM IN AUTO CONTROL	NOTE: This is a Continuous Action. The US will make both board operators aware.
	CO	(Step 7) Check IA Available to CNMT	
		• IA pressure – GREATER THAN 60 PSIG	
		• Instr Air to CNMT Isol Valve, AOV-5392 - OPEN	
	CO	(*Step 8) Check Steam Dump Status:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		• Annunciator G-15, STEAM DUMP ARMED - LIT	
		• Steam dump operating properly in AUTO	

Op Test No.: N17-1 Scenario # 5 Event # 4 Page 40 of 66Event Description: **Downpower/Failure of Turbine Control/EHC**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 9) Check Hotwell Level:	
		<ul style="list-style-type: none"> Hotwell level controller in AUTO 	
		<ul style="list-style-type: none"> Controller demand LESS THAN 60% 	
		<ul style="list-style-type: none"> Hotwell level at setpoint 	
	CO	(*Step 10) Check If Condensate Booster Pumps Should Be Secured	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		Condensate booster pumps – 2 PUMPS RUNNING	NOTE: There are no Condensate Booster Pumps running.
	US	(Step 10.a RNO) IF no pumps running THEN go to step 11.	
	CO	(Step 11) Check If One MFW Pump Should Be Secured	
		<ul style="list-style-type: none"> Power LESS THAN 50% 	
	US	(Step 11a RNO) GO TO Step 18.	
	US	(Step 18) Evaluate Plant Status	
		<ul style="list-style-type: none"> IF load was reduced more than 15% RTP in one hour, THEN notify RP to obtain primary samples required by ITS LCO 3.4.16 	NOTE: The US will contact RP. SIM DRIVER: as RP, acknowledge
		<ul style="list-style-type: none"> Power stable at desired level 	
		(Step 18b RNO) IF power greater than 20% and further reduction is required, THEN continue load reduction and return to Step 2.	
At the discretion of the Lead Examiner move to Events #5-7.			

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 41 of 66

Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

After this, an inadvertent Main Steam Line Isolation Signal will occur and both MSIVs will close. The reactor will fail to automatically trip and the operator will attempt to trip the reactor manually. The crew will enter E-0, "Reactor Trip or Safety Injection." The reactor will fail to trip manually from the control room, and the crew will enter FR-S.1, "Response to Reactor Restart/ATWS." On the trip one S/G Safety Valve on each S/G lifted and stuck partially OPEN. The crew will successfully de-energize the Rod Drive MG set(s) causing to control rods to drop into the core. Upon completion of FR-S.1, the crew will transition back to E-0, and then to E-1, "Loss of Reactor or Secondary Coolant," based on the failed Pressurizer PORV and Block Valve. Shortly after entry into E-1, the crew will transition to E-2, "Faulted Steam Generator Isolation." While implementing E-2, the crew will recognize that both S/Gs are faulted and transition to ECA-2.1, "Uncontrolled Depressurization of Both Steam Generators." The crew may take a pre-emptive action of throttling AFW flow to both S/Gs per A-503.1, "Emergency and Abnormal Operating Procedures Users Guide." The scenario will terminate at Step 7 of ECA-2.1, after the crew has stopped the RHR Pumps.

SIM DRIVER Instructions:

Operate Trigger #4 (STM05A (0%, No Ramp) and STM05B (0%, No Ramp))

Indications Available:

- Both MSIVs Closed (green status lights are LIT, Red status lights are DARK)
- All Steam Dump Valves are full Open (Red status lights are LIT)
- RCS Pressure is increased to greater than 2335 psig.
- Both Pzr Spray valves full Open.
- Pzr PORV PCV-430 full Open (PCV-431C Dual Indication from previous failure).
- RTBs are CLOSED.

Time	Pos.	Expected Actions/Behavior	Comments
E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO	(Step 1) Verify Reactor Trip:	Immediate Action
		<ul style="list-style-type: none"> • At least one train of reactor trip breakers – OPEN 	
		<ul style="list-style-type: none"> • Neutron flux – LOWERING 	
		<ul style="list-style-type: none"> • MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM with no instrument fluctuations concurrent with fire. 	

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 42 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 1 RNO) Manually trip reactor.	Immediate Action
		<ul style="list-style-type: none"> IF reactor trip breakers NOT open, or there is a fire in the power block, THEN perform the following: 	
		<ul style="list-style-type: none"> Open Bus 13 and Bus15 normal feed breakers. 	
		<ul style="list-style-type: none"> IF Bus 13 or Bus 15 indicating lights are extinguished or flickering, THEN 	
		<ul style="list-style-type: none"> Verify rod drive MG sets tripped. 	
		<ul style="list-style-type: none"> Close Bus 13 and Bus15 normal feed breakers. 	NOTE: The CO may re-close breakers for Bus 13.
		<ul style="list-style-type: none"> Reset lighting breakers. 	
		<ul style="list-style-type: none"> IF the reactor will NOT trip OR IF power range NIS indicates greater than 5%, THEN go to FR-S.1, RESPONSE TO REACTOR RESTART/ATWS, Step1. 	NOTE: The US will transition to FR-S.1.
			NOTE: The US may direct the EO to open BOTH Control Rod Drive MG Set Breakers locally. If so, SIM DRIVER acknowledge as EO, WAIT three Minutes and Insert MALF-ROD06B . THEN report that the RTBs have been opened locally .
FR-S.1, RESPONSE TO REACTOR RESTART/ATWS			
	HCO	(Step 1) Verify Reactor Trip:	Immediate Action
		<ul style="list-style-type: none"> At least one train of reactor trip breakers – OPEN 	
		<ul style="list-style-type: none"> Neutron flux – LOWERING 	
		<ul style="list-style-type: none"> MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM with no instrument fluctuations concurrent with fire. 	

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 43 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 1 RNO) Manually trip reactor.	Immediate Action
		<ul style="list-style-type: none"> IF reactor trip breakers NOT open, THEN manually insert control rods. 	NOTE: The US may direct the EO to open BOTH Control Rod Drive MG Set Breakers locally. If so, SIM DRIVER acknowledge as EO, WAIT three Minutes and Insert MALF-ROD06B . THEN report that the RTBs have been opened locally.
<u>CRITICAL TASK:</u> Upon diagnosing an ATWS, manually insert the control rods within 1 minute, and continue insertion until the reactor is tripped or the rods are on the bottom (EOP-Based) Safety Significance: failure to insert negative reactivity, under the postulated plant conditions, results in an unnecessary situation in which the reactor power remains higher than it otherwise would if the action is taken. Performance of the critical task would move the reactor power lower to prevent a subsequent unnecessary challenge to reactor core operational limits. A failure to insert negative reactivity constitutes a mis-operation or incorrect crew performance which leads to incorrect reactivity control.			
	CO	(Step 2) Verify Turbine Stop Valves - CLOSED	Immediate Action
	CO	(Step 2 RNO) Manually trip turbine.	Immediate Action
		<ul style="list-style-type: none"> IF turbine trip can NOT be verified... 	
	CO	(Step 3) Check AFW Pumps Running:	Immediate Action NOTE: Since the Rx did not trip, the A MFW Pump is still running, and the MDAFW Pumps are still OFF.
	CO	(Step 3a) MDAFW pumps - RUNNING	Immediate Action

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 44 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 3a RNO) Manually start MDAFW pumps.	Immediate Action
	CO	(Step 3b) TDAFW pump – RUNNING IF NECESSARY	Immediate Action NOTE: With S/G levels high the TDAFW Pump is not necessary.
	HCO/ CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of FR-S.1.
		LOSS OF SW CRITERIA	
	HCO/ CO	(Step 4) Initiate Emergency Boration of RCS:	NOTE: With the HCO driving Rods the CO may need to complete the Emergency Boration.
		<ul style="list-style-type: none"> Check SI status: 	
		<ul style="list-style-type: none"> All SI annunciators - EXTINGUISHED 	Examiner NOTE: It is likely that SI will be actuated. If NOT, the crew will NOT perform the RNO requiring E-0 Actions. If this is the case, MOVE forward to FR-S.1 Step 5 actions on Page 49 .
	HCO/ CO	(Step 4.a RNO) Perform the following:	
		<ul style="list-style-type: none"> Complete steps 3 through 7 of E-0, REACTOR TRIP OR SAFETY INJECTION, while continuing with this procedure. 	
		<ul style="list-style-type: none"> IF SI flow indicated, THEN go to Step 5. IF NOT, THEN go to Step 4b. 	

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 45 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
			<p>Examiner NOTE: The US may hand off the E-0 Steps to either the HCO or the CO, and continue with the other operator in FR-S.1.</p> <p>Examiner following operator performing the E-0 steps continue below.</p> <p>Examiner following operator NOT performing the E-0 Steps continue at Page 49.</p>
E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO/ CO	(Step 3) Verify sufficient AC Emergency buses Energized To At Least 440 VOLTS:	
		<ul style="list-style-type: none"> Bus 14 OR Bus 16 	
		AND	
		<ul style="list-style-type: none"> Bus 17 OR Bus 18 	
	HCO/ CO	(Step 4) Check if SI is Actuated:	
		<ul style="list-style-type: none"> Any SI Annunciator – LIT 	
		<ul style="list-style-type: none"> SI sequencing – BOTH TRAINS STARTED. 	
	HCO/ CO	(*Step 5) Verify CNMT Spray Not Required:	
		<ul style="list-style-type: none"> Annunciator A-27, CNMT SPRAY – EXTINGUISHED 	
		<ul style="list-style-type: none"> CNMT pressure – LESS THAN 28 PSIG 	
	HCO/ CO	(Step 6) Direct Operator to Perform ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION	

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 46 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
E-0, REACTOR TRIP OR SAFETY INJECTION			
ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO/ CO	(Step 1) Verify SI and RHR Pumps Running:	
		• All SI pumps – RUNNING	
		• Both RHR pumps – RUNNING	
	HCO/ CO	(Step 2) Verify CNMT RECIRC Fans Running:	
		• All fans – RUNNING	
		• Charcoal filter dampers green status lights – EXTINGUISHED	
	HCO/ CO	(Step 3) Check If Main Steamlines Should Be Isolated:	
		• Any MSIV – OPEN	NOTE: Both MSIVs are Closed.
	HCO/ CO	(Step 3a RNO) Go to Step 4.	
	HCO/ CO	(Step 4) Verify MFW Isolation:	
		• MFW pumps – TRIPPED	
		• MFW Isolation valves – CLOSED	
		• S/G A, AOV-3995	
		• S/G B, AOV-3994	
		• S/G Blowdown and sample valves - CLOSED	
	HCO/ CO	(Step 5) Verify At Least Two SW Pumps - RUNNING	

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 47 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 6) Verify CI and CVI:	
		<ul style="list-style-type: none"> CI and CVI annunciators - LIT 	
		<ul style="list-style-type: none"> Annunciator A-26, CNMT ISOLATION 	
		<ul style="list-style-type: none"> Annunciator A-25, CNMT VENTILATION ISOLATION 	
		<ul style="list-style-type: none"> Verify CI and CVI valve status lights – BRIGHT 	
		<ul style="list-style-type: none"> CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT 	
		<ul style="list-style-type: none"> FCV-4561 	
		<ul style="list-style-type: none"> FCV-4562 	
		<ul style="list-style-type: none"> Letdown orifice valves - CLOSED 	
		<ul style="list-style-type: none"> AOV-200A 	
		<ul style="list-style-type: none"> AOV-200B 	
		<ul style="list-style-type: none"> AOV-202 	
	HCO/ CO	(Step 7) Check CCW System Status:	
		<ul style="list-style-type: none"> Verify CCW pump – AT LEAST ONE RUNNING 	
	HCO/ CO	(Step 8) Verify SI and RHR Pump Flow:	
		<ul style="list-style-type: none"> SI flow indicators – CHECK FOR FLOW 	NOTE: There is expected to be some SI flow, but no RHR flow.
		<ul style="list-style-type: none"> RHR flow indicator – CHECK FOR FLOW 	
	HCO/ CO	(Step 8b RNO) IF RCS pressure less than 150 psig manually ...	NOTE: RCS Pressure will remain > 150 psig.

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 48 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 9) Verify SI Pump and RHR Pump Emergency Alignment:	
		<ul style="list-style-type: none"> RHR pump discharge to Rx vessel deluge - OPEN 	
		<ul style="list-style-type: none"> MOV-852A 	
		<ul style="list-style-type: none"> MOV-852B 	
		<ul style="list-style-type: none"> Verify SI pump C – RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump A - RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump B - RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump C discharge valves - OPEN 	
		<ul style="list-style-type: none"> MOV-871A 	
		<ul style="list-style-type: none"> MOV-871B 	
	HCO/ CO	(Step 10) Verify CREATS Actuation:	
		<ul style="list-style-type: none"> At least one damper in each flowpath - CLOSED 	
		<ul style="list-style-type: none"> Normal Supply Air 	
		<ul style="list-style-type: none"> Normal Return Air 	
		<ul style="list-style-type: none"> Lavatory Exhaust Air 	
		<ul style="list-style-type: none"> CREATS fans – BOTH RUNNING 	
	HCO/ CO	(Step 11) Verify CI and CVI During a Fire Event	
		<ul style="list-style-type: none"> A confirmed fire has occurred in the control complex or cable tunnel (fire systems S05, S06, S08, Z05, Z18, or Z19). 	
	HCO/ CO	(Step 11 RNO) Go to END	

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 49 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO/ CO	(Step 7) Verify Both MDAFW Pumps Running	NOTE: Both MDAFW Pumps should have already been manually started.
FR-S.1, RESPONSE TO REACTOR RESTART/ATWS			
			Examiners following operator NOT performing E-0 Steps 3-7 continue HERE .
	CO/ HCO	(Step 5) Check PRZR PORV Status:	
		<ul style="list-style-type: none"> RCS pressure – LESS THAN 2335 PSIG 	
		<ul style="list-style-type: none"> Check PORVs – BOTH CLOSED 	
	CO/ HCO	(Step 5.b RNO) IF PRZR pressure less than 2335 psig, THEN manually close PORVs.	NOTE: PCV-431C has previously failed OPEN, and its block valve cannot be closed.
		<ul style="list-style-type: none"> IF any PORV can NOT be closed, THEN manually close its block valve. IF block valve can NOT be closed, THEN dispatch EO to locally check breaker. 	NOTE: The US may dispatch an EO. IF so, SIM DRIVER: as EO, acknowledge.
		<ul style="list-style-type: none"> MOV-515, MCC D position 6C 	
		<ul style="list-style-type: none"> MOV-516, MCC C position 6C 	
	CO/ HCO	(Step 6) Verify CNMT Ventilation Isolation	
		<ul style="list-style-type: none"> CVI Annunciator - LIT 	
		<ul style="list-style-type: none"> Annunciator A-25, CNMT VENTILATION ISOLATION 	
		<ul style="list-style-type: none"> Verify CVI valve status lights - BRIGHT 	

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 50 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	CO/ HCO	(Step 7) Check If the Following Trips Have Occurred:	
		<ul style="list-style-type: none"> Reactor trip 	
	CO/ HCO	(Step 7a RNO) Dispatch EO to locally DEPRESS trip button for BOTH Control Rod Drive Motor Generator Set breakers at CRDM Control Panel:	NOTE: The US may direct the EO to open BOTH Control Rod Drive MG Set Breakers locally. If so, SIM DRIVER acknowledge as EO, WAIT three Minutes and Insert MALF-ROD06B . THEN report that the RTBs have been opened locally .
		<ul style="list-style-type: none"> 52-1/MG1A, CRD MG SET A BKR 	
		<ul style="list-style-type: none"> 52-2/MG1B, CRD MG SET B BKR 	
	CO/ HCO	(Step 7 Continued) Turbine trip	
	CO/ HCO	(*Step 8) Check If Reactor IS Subcritical:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Energize MCC A AND B 	
		<ul style="list-style-type: none"> Check power range channels – LESS THAN 5% 	
		<ul style="list-style-type: none"> Check Intermediate range channels 	
		<ul style="list-style-type: none"> Startup rate - NEGATIVE 	
		OR	
		<ul style="list-style-type: none"> Intermediate range channels - LOWERING 	
	US	<ul style="list-style-type: none"> Go to Step 18. 	
	US	(Step 18) Return to Procedure and Step in Effect	

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 51 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US will transition back to E-0 and start at any step between Step 1 and 8 that is considered the step-in-effect. It may be that one board operator is still completing E-0 steps.
E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO	(Step 1) Verify Reactor Trip:	Immediate Action
		<ul style="list-style-type: none"> At least one train of reactor trip breakers – OPEN 	
		<ul style="list-style-type: none"> Neutron flux - LOWERING 	
		<ul style="list-style-type: none"> MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM with no instrument fluctuations concurrent with fire. 	
			NOTE: The Step 1 may be performed again because the RTBs are still closed. However, the control rods are inserted and Nuclear Power is < 5%.
	HCO	(Step 1 RNO) Manually trip reactor.	Immediate Action
		<ul style="list-style-type: none"> IF reactor trip breakers NOT open, or there is a fire in the power block, THEN perform the following: 	
		<ul style="list-style-type: none"> Open Bus 13 and Bus15 normal feed breakers. 	
		<ul style="list-style-type: none"> IF Bus 13 or Bus 15 indicating lights are extinguished or flickering, THEN 	
		<ul style="list-style-type: none"> Verify rod drive MG sets tripped. 	
		<ul style="list-style-type: none"> Close Bus 13 and Bus15 normal feed breakers. 	
		<ul style="list-style-type: none"> Reset lighting breakers. 	

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 52 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> IF the reactor will NOT trip OR IF power range NIS indicates greater than 5%, THEN 	
	CO	(Step 2) Verify Turbine Stop Valves – CLOSED	Immediate Action
	CO	(Step 3) Verify sufficient AC Emergency buses Energized To At Least 440 VOLTS:	Immediate Action
		<ul style="list-style-type: none"> Bus 14 OR Bus 16 	
		AND	
		<ul style="list-style-type: none"> Bus 17 OR Bus 18 	
	HCO	(Step 4) Check if SI is Actuated:	Immediate Action
		<ul style="list-style-type: none"> Any SI Annunciator – LIT 	
		<ul style="list-style-type: none"> SI sequencing – BOTH TRAINS STARTED. 	
	HCO/CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of E-0.
		<ul style="list-style-type: none"> RCP TRIP CRITERIA 	
		<ul style="list-style-type: none"> LOSS OF SW CRITERIA 	
		<ul style="list-style-type: none"> AFW SUPPLY SWITCHOVER CRITERION 	
		<ul style="list-style-type: none"> SFP COOLING CRITERIA 	
	HCO	(*Step 5) Verify CNMT Spray Not Required:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Annunciator A-27, CNMT SPRAY – EXTINGUISHED 	
		<ul style="list-style-type: none"> CNMT pressure – LESS THAN 28 PSIG 	

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 53 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	US	(Step 6) Direct Operator to Perform ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION	
			<p>NOTE: The US will hand off ATT-27.0 to either the HCO or the CO, and continue with the other operator in E-0.</p> <p>Examiner following operator performing ATT-27.0 continue below.</p> <p>Examiner following operator NOT performing ATT-27.0 continue at Page 56.</p>
E-0, REACTOR TRIP OR SAFETY INJECTION ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO/ CO	(Step 1) Verify SI and RHR Pumps Running:	
		<ul style="list-style-type: none"> All SI pumps – RUNNING 	
		<ul style="list-style-type: none"> Both RHR pumps – RUNNING 	
	HCO/ CO	(Step 2) Verify CNMT RECIRC Fans Running:	
		<ul style="list-style-type: none"> All fans – RUNNING 	
		<ul style="list-style-type: none"> Charcoal filter dampers green status lights – EXTINGUISHED 	
	HCO/ CO	(Step 3) Check If Main Steamlines Should Be Isolated:	
		<ul style="list-style-type: none"> Any MSIV – OPEN 	NOTE: Both MSIVs are Closed.
	HCO/ CO	(Step 3a RNO) Go to Step 4.	

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 54 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 4) Verify MFW Isolation:	
		<ul style="list-style-type: none"> MFW pumps – TRIPPED 	
		<ul style="list-style-type: none"> MFW Isolation valves – CLOSED 	
		<ul style="list-style-type: none"> S/G A, AOV-3995 	
		<ul style="list-style-type: none"> S/G B, AOV-3994 	
		<ul style="list-style-type: none"> S/G Blowdown and sample valves - CLOSED 	
	HCO/ CO	(Step 5) Verify At Least Two SW Pumps - RUNNING	
	HCO/ CO	(Step 6) Verify CI and CVI:	
		<ul style="list-style-type: none"> CI and CVI annunciators - LIT 	
		<ul style="list-style-type: none"> Annunciator A-26, CNMT ISOLATION 	
		<ul style="list-style-type: none"> Annunciator A-25, CNMT VENTILATION ISOLATION 	
		<ul style="list-style-type: none"> Verify CI and CVI valve status lights – BRIGHT 	
		<ul style="list-style-type: none"> CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT 	
		<ul style="list-style-type: none"> FCV-4561 	
		<ul style="list-style-type: none"> FCV-4562 	
		<ul style="list-style-type: none"> Letdown orifice valves - CLOSED 	
		<ul style="list-style-type: none"> AOV-200A 	
		<ul style="list-style-type: none"> AOV-200B 	
		<ul style="list-style-type: none"> AOV-202 	
	HCO/ CO	(Step 7) Check CCW System Status:	

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 55 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Verify CCW pump – AT LEAST ONE RUNNING 	
	HCO/CO	(Step 8) Verify SI and RHR Pump Flow:	
		<ul style="list-style-type: none"> SI flow indicators – CHECK FOR FLOW 	
		<ul style="list-style-type: none"> RHR flow indicator – CHECK FOR FLOW 	
	HCO/CO	(Step 7b RNO) IF RCS pressure less than 150 psig manually ...	NOTE: RCS Pressure will remain > 150 psig.
	HCO/CO	(Step 9) Verify SI Pump and RHR Pump Emergency Alignment:	
		<ul style="list-style-type: none"> RHR pump discharge to Rx vessel deluge - OPEN 	
		<ul style="list-style-type: none"> MOV-852A 	
		<ul style="list-style-type: none"> MOV-852B 	
		<ul style="list-style-type: none"> Verify SI pump C – RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump A - RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump B - RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump C discharge valves - OPEN 	
		<ul style="list-style-type: none"> MOV-871A 	
		<ul style="list-style-type: none"> MOV-871B 	
	HCO/CO	(Step 10) Verify CREATS Actuation:	
		<ul style="list-style-type: none"> At least one damper in each flowpath - CLOSED 	
		<ul style="list-style-type: none"> Normal Supply Air 	
		<ul style="list-style-type: none"> Normal Return Air 	
		<ul style="list-style-type: none"> Lavatory Exhaust Air 	

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 56 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> CREATS fans – BOTH RUNNING 	
	HCO/ CO	(Step 11) Verify CI and CVI During a Fire Event	
		<ul style="list-style-type: none"> A confirmed fire has occurred in the control complex or cable tunnel (fire systems S05, S06, S08, Z05, Z18, or Z19). 	
	HCO/ CO	(Step 11 RNO) Go to END	
E-0, REACTOR TRIP OR SAFETY INJECTION			
			Examiner following operator NOT performing ATT-27.0 continue HERE .
	CO/ HCO	(Step 7) Verify Both MDAFW Pumps Running	NOTE: Both MDAFW Pumps should have already been manually started.
	CO/ HCO	(Step 8) Verify AFW Valve Alignment:	
		<ul style="list-style-type: none"> AFW flow – INDICATED TO BOTH S/G(s) 	
		<ul style="list-style-type: none"> AFW flow from each MDAFW pump – LESS THAN 230 GPM 	
	CO/ HCO	(*Step 9) Monitor Heat Sink:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Check S/G narrow range level – GREATER THAN 7% [25% ADVERSE CNMT] in any S/G 	

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 57 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	CO/ HCO	(Step 9 RNO) Perform the following:	NOTE: Since both S/Gs are faulted, the CO may use A-503.1 criteria and limit AFW flow to each S/G to 100 gpm.
		<ul style="list-style-type: none"> Verify total AFW flow – GREATER THAN 200 GPM 	
	US	<ul style="list-style-type: none"> Go to Step 10 	
	CO	(Step 10) Check If TDAFW Pump Can Be Stopped:	
		<ul style="list-style-type: none"> Both MDAFW pumps – RUNNING 	NOTE: The TDAFW Pump is the ONLY source of AFW flow.
		<ul style="list-style-type: none"> PULL STOP TDAFW pump steam supply valves 	
		<ul style="list-style-type: none"> MOV-3504A 	
		<ul style="list-style-type: none"> MOV-3505A 	
	CO/ HCO	(Step 11) Check CCW Flow to RCP Thermal Barriers:	
		<ul style="list-style-type: none"> Annunciator A-7, RCP 1A CCW RETURN HI TEMP OR LO FLOW EXTINGUISHED 	
		<ul style="list-style-type: none"> Annunciator A-15, RCP 1B CCW RETURN HI TEMP OR LOW FLOW - EXTINGUISHED 	
	CO/ HCO	(*Step 12) Monitor RCS Tavg – STABLE AT OR TRENDING TO 547°F	NOTE: Because of the failed open SG Safety Valves, the RCS will be cooling down rapidly. NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	CO/ HCO	(Step 12 RNO) If temperature less than 547°F and lowering, THEN perform the following:	

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 58 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Stop dumping steam. 	
		<ul style="list-style-type: none"> Ensure reheater steam supply valves are closed. 	
		<ul style="list-style-type: none"> IF cooldown continues, THEN control total feed flow between 200 gpm to 230 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G. 	
		<ul style="list-style-type: none"> WHEN S/G level greater than 7% in one S/G, THEN limit feed flow to that required to maintain level in at least one S/G. 	NOTE: Since both S/Gs are faulted, the CO may use A-503.1 criteria and limit AFW flow to each S/G to 100 gpm.
		<ul style="list-style-type: none"> IF cooldown continues, THEN close both MSIVs. 	NOTE: Both MSIVs are Closed.
	CO/ HCO	(Step 13) Check PRZR PORVs and Spray Valves:	
		<ul style="list-style-type: none"> PORVs – CLOSED 	
	CO/ HCO	(Step 13 RNO) IF PRZR pressure less than 2335 psig, THEN manually close PORVs.	NOTE: PRZR PORV PCV-431C and its Block Valve are Stuck OPEN.
		<ul style="list-style-type: none"> IF any valve can NOT be closed, THEN manually close its block valve. 	
		<ul style="list-style-type: none"> MOV-515 for PCV-431C 	
		<ul style="list-style-type: none"> IF a fire has occurred within the power block, THEN..... 	
		<ul style="list-style-type: none"> IF block valve can NOT be closed, THEN go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1. 	
			NOTE: The US will go to E-1.
E-1, LOSS OF REACTOR OR SECONDARY COOLANT			
	HCO/ CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of E-1.

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 59 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> RCP TRIP CRITERIA 	
		<ul style="list-style-type: none"> LOSS OF SW CRITERIA 	
		<ul style="list-style-type: none"> SI REINITIATION CRITERIA 	
		<ul style="list-style-type: none"> SI TERMINATION CRITERIA 	
		<ul style="list-style-type: none"> SECONDARY INTEGRITY CRITERIA 	
		IF any S/G pressure is lowering in an uncontrolled manner or is completely depressurized AND has not been isolated, THEN go to E-2, FAULTED S/G ISOLATION, Step 1.	NOTE: The US may use this criteria to go to E-2.
		<ul style="list-style-type: none"> E-3 TRANSITION CRITERIA 	
		<ul style="list-style-type: none"> COLD LEG RECIRCULATION SWITCHOVER CRITERION 	
		<ul style="list-style-type: none"> AFW SUPPLY SWITCHOVER CRITERION 	
	HCO	(Step 1) Monitor RCP Trip Criteria:	
		<ul style="list-style-type: none"> RCP status – ANY RCP RUNNING 	
		<ul style="list-style-type: none"> SI pumps – AT LEAST TWO RUNNING 	
		<ul style="list-style-type: none"> RCS pressure minus maximum S/G pressure – LESS THAN 210 psi [240 psi adverse CNMT] 	
	US	(Step 1.c RNO) Go to Step 2.	
	HCO/ CO	(Step 2) Check If S/G Secondary Side Is Intact:	
		<ul style="list-style-type: none"> Pressure in both S/Gs – STABLE OR RISING 	
		<ul style="list-style-type: none"> Pressure in both S/Gs – GREATER THAN 110 PSIG 	NOTE: Both S/Gs are depressurizing uncontrollably.

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 60 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 2 RNO) IF any S/G pressure lowering in an uncontrolled manner OR completely depressurized, THEN verify faulted S/G isolated unless needed for RCS cooldown:	
		<ul style="list-style-type: none"> Steamlines 	
		<ul style="list-style-type: none"> Feedlines 	
		IF NOT, THEN go to E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.	
			NOTE: The US will go to E-2.
E-2, FAULTED STEAM GENERATOR ISOLATION			
	HCO/ CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of E-2.
		<ul style="list-style-type: none"> LOSS OF SW CRITERIA 	
	CO	(Step 1) Check MSIV of Faulted S/G(s) - CLOSED	NOTE: Both MSIVs are Closed.
	CO	(Step 2) Check If Any S/G Secondary Side Is Intact:	
		<ul style="list-style-type: none"> Check pressure in S/G A- STABLE OR RISING 	NOTE: Both SG Pressures are decreasing uncontrollably.
		OR	
		<ul style="list-style-type: none"> Check pressure in S/G B – STABLE OR RISING 	
	US	(Step 2 RNO) IF both S/G pressures lowering in an uncontrolled manner, THEN go to ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS, Step 1	
			NOTE: The US will go to ECA-2.1.
ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS			

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 61 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of ECA-2.1.
		• LOSS OF SW CRITERIA	
		• SI REINITIATION CRITERIA	
		• E-2 TRANSITION CRITERIA	
		• COLD LEG RECIRCULATION SWITCHOVER CRITERION	
		• AFW SUPPLY SWITCHOVER CRITERION	
		• E-3 TRANSITION CRITERIA	
	CO	(Step 1) Check Secondary Pressure Boundary:	
		• Verify all of the following:	
		• MSIVs - CLOSED	NOTE: Both MSIVs are Closed.
		• MFW flow control valves - CLOSED	
		• MFW regulating valves	
		• MFW bypass valves	
		• MFW pump discharge valves - CLOSED	
		• S/G blowdown and sample valves - CLOSED	
		• TDAFW pump steam supply valves – PULL STOP	
		• TDAFW pump flow control valves - CLOSED	
		• S/G ARVs - CLOSED	

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 62 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		Dispatch AO to locally isolate S/Gs (Refer to ATT-10.0, ATTACHMENT FAULTED S/G)	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge, and perform Schedule ATT-10 for BOTH SGs.
	CO	(Step 2) Control Feed Flow to Minimize RCS Cooldown:	
		(Step 2a) Check cooldown rate in RCS cold legs – LESS THAN 100°F/HR	NOTE: The cooldown rate is likely to be higher than 100°F/HR.
	CO	(Step 2a RNO) Lower feed flow to 50 gpm to each S/G and go to Step 2c.	NOTE: The CO will lower the AFW flow rate to each SG to 50 gpm in an effort to control the cooldown rate.
			NOTE: A Red Path will likely occur on the Heat Sink Critical Safety Function Status Tree, and the US will address this procedure. The procedure will NOT be implemented however, since operator action has caused the Red Path.

CRITICAL TASK:

Control the AFW flowrate to 50 gpm per SG in order to minimize the RCS Cooldown rate before an extreme challenge (Red Path) develops to the integrity CSF (EOP-Based)

Safety Significance: Failure to control the AFW flow rate to the SGs leads to an unnecessary and avoidable extreme challenge to the integrity CSF. Also, failure to perform the Critical Task increases challenges to the SUBCRITICALITY Critical Safety Function which otherwise would not occur.

	HCO	(Step 2c) Check RCS hot leg temperature – STABLE OR LOWERING.	
--	-----	---	--

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 63 of 66Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(*Step 3) Monitor RCP Trip Criteria:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> RCP status – ANY RCP RUNNING 	
		<ul style="list-style-type: none"> SI pumps – AT LEAST TWO RUNNING 	
		<ul style="list-style-type: none"> RCS pressure minus maximum S/G pressure – LESS THAN 210 psi [240 psi adverse CNMT] 	
	US	(Step 3c RNO) Go to Step 4	
	HCO	(*Step 4) Monitor PRZR PORVs and Block Valves:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Power to PORV block valves - AVAILABLE 	
		<ul style="list-style-type: none"> PORVs - CLOSED 	NOTE: PRZR PORV PCV-431C and its Block Valve is stuck OPEN from a previous failure.
		<ul style="list-style-type: none"> Block valves – AT LEAST ONE OPEN 	
	HCO/ CO	(Step 5) Check Secondary Radiation Levels - NORMAL	
		<ul style="list-style-type: none"> Steamline radiation monitor (R-31 and R-32) 	
		<ul style="list-style-type: none"> Dispatch AO to locally check steamline radiation 	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge.
		<ul style="list-style-type: none"> Request Chem Tech sample S/Gs for activity. 	NOTE: The US may call WCC/Chemistry to address the samples. If so, SIM DRIVER acknowledge as WCC/Chemistry.

Op Test No.: N17-1 Scenario # 5 Event # 5, 6 & 7 Page 64 of 66

Event Description: **Inadvertent Main Steam Line Isolation Signal/ Failure of the Reactor to trip from the Control Room/ATWS/One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 6) Reset SI	
	HCO	(Step 7) Monitor If RHR Pumps Should Be Stopped:	
		<ul style="list-style-type: none"> RHR pumps –ANY RUNNING IN INJECTION MODE 	
		<ul style="list-style-type: none"> Check RCS Pressure: 	
		<ul style="list-style-type: none"> Pressure – GREATER THAN 300 psig [350 psig adverse CNMT] 	
		<ul style="list-style-type: none"> Pressure – STABLE OR RISING 	
		<ul style="list-style-type: none"> Stop RHR pumps and place in AUTO 	NOTE: The HCO will STOP the RHR Pumps.
At the discretion of the Lead Examiner terminate the exam.			

TURNOVER SHEET for NRC Exam Scenario #5

<p><u>Core Age: MOL</u></p> <p>48% Power, Equilibrium Xe</p> <p>Outside Air Temp = 45°F</p> <p>Water Temp = 45°F</p>	<p><u>Procedure in Use:</u></p>	<p><u>ACTIONS/NOTES:</u></p> <ul style="list-style-type: none"> • The plant is at 48% power (MOL). • The plant was taken to 50% due to a failure of the B MFW Pump. Station Management has decided to shutdown the plant and repair the pump, and conduct other maintenance activities. • The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. • The crew is expected to lower power and proceed to Mode 3 on this shift. • Chemistry has indicated that CRUD cleanup is complete and that letdown can remain at 40 gpm during the downpower. • The B MFW is OOS for bearing replacement. • The Condensate Booster Pump A is OOS for thrust bearing replacement. • The following Alarms are in: <ul style="list-style-type: none"> • H-2, FEED WATER PUMP LIGHT LOAD • H-4, MAIN FEED PUMP OIL SYSTEM • Protected equipment IAW OPG Protected Equipment.
<p>Boron: 1145 ppm</p> <p>BAST: 17,400 ppm</p> <p>RCS Activity: Normal</p>	<p><u>RCS LEAKAGE:</u> (gpm)</p> <p>Total: .021</p> <p>Identified: .003</p> <p>Unidentified: .018</p>	

TURNOVER SHEET for NRC Exam Scenario #5

<u>Equipment Problems/OOS:</u> See NOTES	<u>Planned Activities for Shift:</u> <ul style="list-style-type: none"> Proceed to Mode 3 	<u>Electrical System Operator Declarations</u> None in effect
---	---	--

A-52.4					
EQUIPMENT	DATE/TIME OOS	LCO	TITLE	EXP DATE	ECD
A-52.12					
EQUIPMENT	DATE/TIME OOS	TRM /ODCM	TITLE	EXP DATE	ECD
A Condensate Booster Pump	Yesterday				Indefinitely
B MFW Pump	2 hours ago				Indefinitely

Facility:	Ginna	Scenario No.:	6	Op Test No.:	N17-1
Examiners:	_____	Operators:	_____ (SRO)		
	_____		_____ (RO)		
	_____		_____ (BOP)		
Initial Conditions:		The plant is at 0.5% power (BOL). The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. The crew will raise and stabilize plant power between 2-3%; until maintenance on the A SI Pump is complete.			
Turnover:		The following equipment is Out-Of-Service: The A SI Pump is OOS for breaker swap and is expected to be back in 90 minutes, and the Condensate Booster Pump A is OOS for thrust bearing replacement.			
Event No.	Malf. No.	Event Type*	Event Description		
1	NA	R-RO N-BOP N-SRO	Raise power and Start second AFW Pump		
2	1	C-BOP C(TS)-SRO	Loss of Compensating Voltage to Intermediate Range N35		
3	2	C-RO C(TS)-SRO	480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO		
4	3	C-RO C-SRO	B RCP Thermal Barrier leak		
5	4	C-BOP C(TS)-SRO	Fault on 480V Bus 17/SW Pump C fails to start		
6	5	M-RO M-BOP M-SRO	PRZR Steam Space Break		
7	6	C-RO C-SRO	CI fails to automatically/manually actuate		
8	7	C-RO C-BOP C-SRO	Loss of Off-site Power after SI is Reset		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Ginna 2017 NRC Scenario #6

The plant is at 0.5% power (BOL). The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. The crew will raise and stabilize plant power between 2-3%; until maintenance on the A SI Pump is complete.

The following equipment is Out-Of-Service: The A SI Pump is OOS for breaker swap and is expected to be back in 90 minutes, and the Condensate Booster Pump A is OOS for thrust bearing replacement.

Shortly after taking the watch, the crew will start the 2nd AFW Pump and raise and stabilize power at 2-3% per Section 6.5 of O-1.2, "Plant Startup From Hot Shutdown To Full Load."

Subsequently, the compensating voltage power supply for the Intermediate Range Nuclear Instrument N35 will fail Low. The operator will respond in accordance with AR-E-9, "IR N-35 LOSS OF COMPENSATING VOLTAGE," and enter ER-NIS.2, "IR MALFUNCTION." The operator will address Technical Specification LCO 3.3.1, "Reactor Trip Instrumentation."

Then, a 480VAC ground will occur on Bus 14 and the A CCW Pump will trip, and the B CCW Pump will fail to automatically start. The operator will either start the B CCW pump manually per A-503.1, "Emergency and Abnormal Operating Procedures Users Guide," or respond in accordance with AR-A-22, "CCW PUMP DISCHARGE LO PRESS 60 PSI," and enter AP-CCW.2, "Loss of CCW During Power Operation." The operator will evaluate Technical Specification LCO 3.7.7, "Component Cooling Water System."

After this, a thermal barrier leak will occur on the B RCP. The crew may enter AP-RCP.1, "RCP Seal Malfunction," but will ultimately respond per AP-CCW.1, "Leakage Into the Component Cooling Loop," and isolate the leak.

Next, a fault on 480V Bus 17 will occur, resulting in Bus 17 de-energizing. The operator will enter AP-ELEC.17/18, "Loss of Safeguards Bus 17/18." The C Service Water Pump will fail to start when manual start is attempted, leaving only the A SW Pump running. The operator may leave the B EDG running or trip it within AP-ELEC.17/18, but in either case align Alternate Cooling to the EDG. The operator will enter AP-SW.2, "Loss of Service Water," and take actions to isolate non-essential SW loads. The operator will address Technical Specification LCO 3.8.1, "AC Sources – Modes 1, 2, 3, and 4," and LCO 3.8.9, "Distribution Systems – Modes 1, 2, 3, and 4."

Afterwards, a Pressurizer vapor space Small Break LOCA occurs over ten minutes. The operator will enter AP-RCS.1, "Reactor Coolant Leak," however, ultimately the reactor will be tripped, Safety Injection will be actuated, and the operator will enter E-0, "Reactor Trip or Safety Injection." On the plant trip, Containment Isolation will fail to automatically and manually actuate, and the operator will need to manually close the Containment Isolation Valves. Additionally, when the SI occurs, instrument air to containment will be isolated and the B RCP Thermal Barrier Return Isolation Valve will fail open. The CCW leak will need to be re-isolated.

The operator will transition from E-0 to E-1, "Loss of Reactor or Secondary Coolant." At Step 7 of E-1, and after SI is reset, a Loss of Off-Site Power will occur and all Safeguards Equipment will need to be re-started.

The scenario will terminate at Step 9 (or beyond) of E-1 after all ECCS equipment is re-started and Instrument Air has been restored to the Containment.

Critical Tasks:

Trip all RCPs within 2 minutes of loss of CCW to the RCPs or if RCP motor bearing temperature exceeds 200°F; or within 5 minutes of reaching Small Break LOCA trip criteria, whichever is reached first (EOP-Based)

Safety Significance: During an undervoltage condition on an ESF Bus coupled with an SI, the CCW Pump(s) will trip causing a loss of CCW flow to the RCPs. A Caution is provided in AP-CCW.2 and 3 which states "If CCW flow to a RCP is interrupted for greater than 2 minutes or if either RCP motor bearing temperature exceeds 200°F, then trip the affected RCP." This caution applies at all times, and is necessary to protect the long-term operations of the RCPs. It is a management expectation that the RCPs be tripped within 2 minutes of a loss of CCW to pump motor bearings. Additionally, failure to trip all RCPs when required during a Small Break LOCA can lead to core uncover and to fuel temperatures in excess of 2200°F. Analyses have shown that if the RCPs are tripped within 5 minutes of the trip criteria being met, PCT will remain below 2200°F, and if this action is delayed beyond 5 minutes, this PCT will be exceeded. It is a management expectation that the RCPs be tripped as quickly as possible, but within 5 minutes when the trip criteria are met. Failure to take this action represents mis-operation by the operator which leads to degradation of the fuel cladding fission produce barrier, and a violation of a license condition.

Close Containment Isolation Valves, or their Alternate Valves using ATT-3.0, before indicating to the US that ATT-27.0 is complete (EOP-Based)

Safety Significance: Failure to close at least one Containment Isolation Valve on each critical penetration under the postulated conditions when it is possible to do so, constitutes mis-operation leading to degradation of the Containment Barrier. Failure to take this action leads to an unnecessary release of fission products to the auxiliary building, increasing the potential for release to the environment, and reducing accessibility to vital equipment within the Auxiliary Building. Higher radiation levels within the Auxiliary Building will result in a degradation of ALARA principles.

Establish High-Head Injection with at least two SI Pumps after SI has been Reset and following a Loss of Off-Site Power (EOP-Based)

Safety Significance: Failure to manually start at least two 50% capacity SI pumps under the postulated conditions constitutes mis-operation or incorrect crew performance in which the crew does not prevent degraded emergency core cooling system (ECCS) capacity." In this case, at least two SI pumps can be manually started from the control room. Therefore, failure to manually start both SI pumps, which are 50% capacity pumps, also represents a failure by the crew to "demonstrate the ability to effectively direct or manipulate engineered safety feature (ESF) controls that would prevent a significant reduction of safety margin beyond that irreparably introduced by the scenario, and recognize a failure or an incorrect automatic actuation of an ESF system or component. Additionally, under the postulated plant conditions, failure to manually start the SI 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.

PROGRAM: Ginna Operations Training

MODULE: Initial License Operator Training Class 15-1

TOPIC: NRC Simulator Exam

Scenario N17-1-6

REFERENCES:

1. Technical Specification LCO 3.5.2, "ECCS-Modes 1, 2 and 3" (Amendment 118)
2. O-1.2, "Plant Startup From Hot Shutdown To Full Load" (Rev 204)
3. AR-E-9, "IR N-35 LOSS OF COMPENSATION VOLTAGE" (Rev 4)
4. ER-NIS.2, "IR Malfuntion" (Rev 00501)
5. Technical Specification LCO 3.3.1, "Reactor Trip Instrumentation" (Amendment 112)
6. A-503.1, "Emergency and Abnormal Operating Procedures Users Guide" (Rev 04600)
7. AR-A-22, "CCW PUMP DISCHARGE LO PRESS 60 PSI" (Rev 12)
8. AP-CCW.2, "Loss of CCW During Power Operation" (Rev 02300)
9. Technical Specification LCO 3.7.7, "Component Cooling Water System" (Amendment 80)
10. AP-RCP.1, "RCP Seal Malfunction" (Rev 01800)
11. AP-CCW.1, "Leakage Into the Component Cooling Loop" (Rev 01901)
12. AP-ELECT.17/18, "Loss of Safeguards Bus 17/18" (Rev 00802)
13. Technical Specification LCO 3.8.1, "AC Sources – Modes 1, 2, 3, and 4" (Amendment 109)
14. Technical Specification LCO 3.8.9, "Distribution Systems – Modes 1, 2, 3, and 4" (Amendment 80)
15. AP-RCS.1, "Reactor Coolant Leak" (Rev 02100)
16. E-0, "Reactor Trip or Safety Injection" (Rev 048)
17. ATT-3.0, "Attachment CI/CVI" (Rev 01200)
18. ATT-27.0, "Attachment Automatic Action Verification" (Rev 00400)
19. E-1, "Loss of Reactor or Secondary Coolant" (Rev 04100)
20. ATT-8.5, "Attachment Loss of Offsite Power" (Rev 1)

Validation Time: 94 minutes

Author: David Lazarony, Essential Training & Consulting, LLC

Facility Review: _____

Rev. 022317

Scenario Event Description
NRC Scenario 6

Facility:	Ginna	Scenario No.:	6	Op Test No.:	N17-1
Examiners:	_____	Operators:	_____	(SRO)	
	_____		_____	(RO)	
	_____		_____	(BOP)	

Initial Conditions:	The plant is at 0.5% power (BOL). The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. The crew will raise and stabilize plant power between 2-3%; until maintenance on the A SI Pump is complete.
Turnover:	The following equipment is Out-Of-Service: The A SI Pump is OOS for breaker swap and is expected to be back in 90 minutes, and the Condensate Booster Pump A is OOS for thrust bearing replacement.

Event No.	Malf. No.	Event Type*	Event Description
1	NA	R-RO N-BOP N-SRO	Raise power and Start second AFW Pump
2	1	C-BOP C(TS)-SRO	Loss of Compensating Voltage to Intermediate Range N35
3	2	C-RO C(TS)-SRO	480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO
4	3	C-RO C-SRO	B RCP Thermal Barrier leak
5	4	C-BOP C(TS)-SRO	Fault on 480V Bus 17/SW Pump C fails to start
6	5	M-RO M-BOP M-SRO	PRZR Steam Space Break
7	6	C-RO C-SRO	CI fails to automatically/manually actuate
8	7	C-RO C-BOP C-SRO	Loss of Off-site Power after SI is Reset

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Scenario Event Description
NRC Scenario 6

Ginna 2017 NRC Scenario #6

The plant is at 0.5% power (BOL). The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. The crew will raise and stabilize plant power between 2-3%; until maintenance on the A SI Pump is complete.

The following equipment is Out-Of-Service: The A SI Pump is OOS for breaker swap and is expected to be back in 90 minutes, and the Condensate Booster Pump A is OOS for thrust bearing replacement.

Shortly after taking the watch, the crew will start the 2nd AFW Pump and raise and stabilize power at 2-3% per Section 6.5 of O-1.2, "Plant Startup From Hot Shutdown To Full Load."

Subsequently, the compensating voltage power supply for the Intermediate Range Nuclear Instrument N35 will fail Low. The operator will respond in accordance with AR-E-9, "IR N-35 LOSS OF COMPENSATING VOLTAGE," and enter ER-NIS.2, "IR MALFUNCTION." The operator will address Technical Specification LCO 3.3.1, "Reactor Trip Instrumentation."

Then, a 480VAC ground will occur on Bus 14 and the A CCW Pump will trip, and the B CCW Pump will fail to automatically start. The operator will either start the B CCW pump manually per, A-503.1, "Emergency and Abnormal Operating Procedures Users Guide," or respond in accordance with AR-A-22, "CCW PUMP DISCHARGE LO PRESS 60 PSI," and enter AP-CCW.2, "Loss of CCW During Power Operation." The operator will evaluate Technical Specification LCO 3.7.7, "Component Cooling Water System."

After this, a thermal barrier leak will occur on the B RCP. The crew may enter AP-RCP.1, "RCP Seal Malfunction," but will ultimately respond per AP-CCW.1, "Leakage Into the Component Cooling Loop," and isolate the leak.

Next, a fault on 480V Bus 17 will occur, resulting in Bus 17 de-energizing. The operator will enter AP-ELEC.17/18, "Loss of Safeguards Bus 17/18." The C Service Water Pump will fail to start when manual start is attempted, leaving only the A SW Pump running. The operator may leave the B EDG running or trip it within AP-ELEC.17/18, but in either case align Alternate Cooling to the EDG. The operator will enter AP-SW.2, "Loss of Service Water," and take actions to isolate non-essential SW loads. The operator will address Technical Specification LCO 3.8.1, "AC Sources – Modes 1, 2, 3, and 4," and LCO 3.8.9, "Distribution Systems – Modes 1, 2, 3, and 4."

Afterwards, a Pressurizer vapor space Small Break LOCA occurs over ten minutes. The operator will enter AP-RCS.1, "Reactor Coolant Leak," however, ultimately the reactor will be tripped, Safety Injection will be actuated, and the operator will enter E-0, "Reactor Trip or Safety Injection." On the plant trip, Containment Isolation will fail to automatically and manually actuate, and the operator will need to manually close the Containment Isolation Valves. Additionally, when the SI occurs, instrument air to containment will be isolated and the B RCP Thermal Barrier Return Isolation Valve will fail open. The CCW leak will need to be re-isolated.

The operator will transition from E-0 to E-1, "Loss of Reactor or Secondary Coolant." At Step 7 of E-1, and after SI is reset, a Loss of Off-Site Power will occur and all Safeguards Equipment will need to be re-started.

Scenario Event Description
NRC Scenario 6

The scenario will terminate at Step 9 (or beyond) of E-1 after all ECCS equipment is re-started and Instrument Air has been restored to the Containment.

Critical Tasks:

Trip all RCPs within 2 minutes of loss of CCW to the RCPs or if RCP motor bearing temperature exceeds 200°F; or within 5 minutes of reaching Small Break LOCA trip criteria, whichever is reached first (EOP-Based)

Safety Significance: During an undervoltage condition on an ESF Bus coupled with an SI, the CCW Pump(s) will trip causing a loss of CCW flow to the RCPs. A Caution is provided in AP-CCW.2 and 3 which states "If CCW flow to a RCP is interrupted for greater than 2 minutes or if either RCP motor bearing temperature exceeds 200°F, then trip the affected RCP." This caution applies at all times, and is necessary to protect the long-term operations of the RCPs. It is a management expectation that the RCPs be tripped within 2 minutes of a loss of CCW to pump motor bearings. Additionally, failure to trip all RCPs when required during a Small Break LOCA can lead to core uncover and to fuel temperatures in excess of 2200°F. Analyses have shown that if the RCPs are tripped within 5 minutes of the trip criteria being met, PCT will remain below 2200°F, and if this action is delayed beyond 5 minutes, this PCT will be exceeded. It is a management expectation that the RCPs be tripped as quickly as possible, but within 5 minutes when the trip criteria are met. Failure to take this action represents mis-operation by the operator which leads to degradation of the fuel cladding fission produce barrier, and a violation of a license condition.

Close Containment Isolation Valves, or their Alternate Valves using ATT-3.0, before indicating to the US that ATT-27.0 is complete (EOP-Based)

Safety Significance: Failure to close at least one Containment Isolation Valve on each critical penetration under the postulated conditions when it is possible to do so, constitutes mis-operation leading to degradation of the Containment Barrier. Failure to take this action leads to an unnecessary release of fission products to the auxiliary building, increasing the potential for release to the environment, and reducing accessibility to vital equipment within the Auxiliary Building. Higher radiation levels within the Auxiliary Building will result in a degradation of ALARA principles.

Establish High-Head Injection with at least two SI Pumps after SI has been Reset and following a Loss of Off-Site Power (EOP-Based)

Safety Significance: Failure to manually start at least two 50% capacity SI pumps under the postulated conditions constitutes mis-operation or incorrect crew performance in which the crew does not prevent degraded emergency core cooling system (ECCS) capacity." In this case, at least two SI pumps can be manually started from the control room. Therefore, failure to manually start both SI pumps, which are 50% capacity pumps, also represents a failure by the crew to "demonstrate the ability to effectively direct or manipulate engineered safety feature (ESF) controls that would prevent a significant reduction of safety margin beyond that irreparably introduced by the scenario, and recognize a failure or an incorrect automatic actuation of an ESF system or component. Additionally, under the postulated plant conditions, failure to manually start the SI 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.

Scenario Event Description
NRC Scenario 6

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>		Reset to Temp IC 160 (Originally IC-18).	<p>T = 0 (From IC-18):</p> <p>Lower power and stabilize at 0.5%; and STOP the B MDAFW Pump. Secure SG Blowdown flow by inserting REM-SGN10=CLOSED and SGN11=CLOSED ENSURE that the A CCW Pump is ON and the B CCW Pump is in STANDBY.</p> <p>MALF SIS03A to prevent start of A SI pump (OOS contingency) Take A SI Pump Control Switch to PULL STOP Take A CB Pump Control Switch to TRIP Insert OVR-CND04A=OFF Hang LOTO Tags as necessary</p> <p>Insert MALF CLG10 (Auto start failure of standby CCW pump on low pressure) Insert MALF CLG01C (SWP C Trip) Insert MALF RPS06 (CI fails to automatically/manually actuate)</p> <p>Insert MALF NIS05A (1E-8 amps, 0 Ramp) on T-1 Insert MALF CLG02A on T-2 Set ANN-A-EDS33 = ON (Simulates simultaneous 480V ground, Alarm will clear 20 seconds after alarm), on T-2 Insert MALF RCS01B (11 gpm, 120 Second Ramp) on T-3 Insert MALF EDS04C on T-4 Insert MALF PZR07 (89000, 600 second Ramp) on T-5 Insert MALF EDS01A and EDS01B on T-6</p>
<input type="checkbox"/>	Prior to Crew Briefing		<ul style="list-style-type: none"> Hang Protective Tags per OPG-Protective Equipment. Place Black Dot on all required MCB Annunciators (J-25)
<input type="checkbox"/>	<p style="text-align: center;">Crew Briefing</p> <ul style="list-style-type: none"> Assign Crew Positions based on evaluation requirements Review the Shift Turnover Information with the crew. Provide the crew with a copy of S-3.1 and O-1.2 complete through Step 6.4. Handout current Reactivity Plan. 		

Scenario Event Description
NRC Scenario 6

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	T-0	Begin Familiarization Period	
<input type="checkbox"/>	At direction of examiner	Event 1	Raise power and Start second AFW Pump
<input type="checkbox"/>	Stabilized at 2-3% power	Event 2 Trigger #1 NIS05A (1E-8 amps, 0 Ramp)	Loss of Compensating Voltage to Intermediate Range N35
<input type="checkbox"/>	At direction of examiner	Event 3 Trigger #2 A-EDS33= ON CLG02A CLG10 (T=0)	480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO ON, (Simulates simultaneous 480V ground). Alarm will clear 20 seconds after alarm. NOTE: This Malfunction is inserted at T = 0.
<input type="checkbox"/>	At direction of examiner	Event 4 Trigger #3 RCS01B (11 gpm, 120 second Ramp)	B RCP Thermal Barrier leak
<input type="checkbox"/>	At direction of examiner	Event 5 Trigger #4 EDS04C CLG01C (T=0)	Fault on 480V Bus 17/SW Pump C fails to start NOTE: This Malfunction is inserted at T = 0.
<input type="checkbox"/>	At direction of examiner	Event 6 Trigger #5 PZR07 (89000, 600 second Ramp)	PRZR Steam Space Break
<input type="checkbox"/>	Post-Rx Trip	Event 7 RPS06	CI fails to automatically/manually actuate Note: This malfunction is inserted at T=0.

Scenario Event Description
NRC Scenario 6

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	Post-Rx Trip	Event 8 Trigger #6 EDS01A EDS01B	Loss of Off-site Power after SI is Reset Note: This malfunction is inserted after SI is reset in E-1.
<input type="checkbox"/>	Terminate the scenario upon direction of Lead Examiner		

Op Test No.: N17-1 Scenario # 6 Event # 1 Page 8 of 54Event Description: **Raise power and Start second AFW Pump**

Shortly after taking the watch, the crew will start the 2nd AFW Pump and raise and stabilize power at 2-3% per Section 6.5 of O-1.2, "Plant Startup From Hot Shutdown To Full Load."

SIM DRIVER Instructions: **NA**Indications Available: **NA**

Time	Pos.	Expected Actions/Behavior	Comments
O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD			
	US	(Step 6.5) Steam Header Warmup and Power Ascension to Between 2% and 3%	
	CO	(Step 6.5.1) PERFORM the following to start the second AFW pump:	
		• CLOSE BOTH AFW Crossover VLVs.	
		• AFW CROSSOVER VLV, MOV 4000A	
		• AFW CROSSOVER VLV, MOV 4000B	
		• CLOSE AFW Bypass Valve for the pump to be started AND MARK valve NOT closed N/A.	
		• AFW BYPASS VLV A, AOV 4480	
		• AFW BYPASS VLV B, AOV 4481	NOTE: The CO will CLOSE AOV-4481.
		• MAKE a Plant announcement for starting an AFW Pump.	
		• START AFW Pump A OR B AND MARK the pump NOT started N/A.	
		• AUXILIARY FEEDWATER PUMP A	
		• AUXILIARY FEEDWATER PUMP B	NOTE: The CO will START the B AFW Pump.

Op Test No.: N17-1 Scenario # 6 Event # 1 Page 9 of 54Event Description: **Raise power and Start second AFW Pump**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> • VERIFY BOTH AFW PUMP AC OIL Pumps are running. 	
		<ul style="list-style-type: none"> • MD AFW PUMP 1A AC OIL PUMP 	
		<ul style="list-style-type: none"> • MD AFW PUMP 1B AC OIL PUMP 	
	CO	<ul style="list-style-type: none"> • THROTTLE the following AFW Bypass or Discharge Valves to control S/G Levels. 	
		<ul style="list-style-type: none"> • AFW BYPASS VLV A, AOV-4480 	
		<ul style="list-style-type: none"> • AFW BYPASS VLV B, AOV-4481 	
		<ul style="list-style-type: none"> • MD AFW PUMP 1A DISCHARGE VLV, MOV-4007 	
		<ul style="list-style-type: none"> • MD AFW PUMP 1B DISCHARGE VLV, MOV-4008 	
	HCO	(Step 6.5.2) CONTINUE power ascension, raising power and Tavg while warming the Steam Header.	NOTE: The HCO will raise power and stabilize between 2-3%.
	US	(Step 6.5.3) ENSURE a pre-job brief is performed PER HU-AA-1211, PRE-JOB BRIEFINGS, for Blowdown initiation. [G0092]	
	US	(Step 6.5.4) WHEN load is raised above 2%, but less than 3%, Reactor Power, THEN PERFORM the following:	
		<ul style="list-style-type: none"> • ENSURE Blowdown Heat Recovery System in service PER T-14F.1, S/G Blowdown System Operation. 	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge.
		<ul style="list-style-type: none"> • ENSURE maximum blowdown flow within limits of AFW flow AND heat capacity. 	
			Examiner NOTE: The US may continue on in O-1.2 as the HCO raises and stabilizes power at 2%, however no substantial actions will be taken.

Op Test No.: N17-1 Scenario # 6 Event # 1 Page 10 of 54Event Description: **Raise power and Start second AFW Pump**

Time	Pos.	Expected Actions/Behavior	Comments
When power is stabilized at 2-3% Lead Examiner move to Event #2.			

Op Test No.: N17-1 Scenario # 6 Event # 2 Page 11 of 54Event Description: **Loss of Compensating Voltage to Intermediate Range N36**

Subsequently, the compensating voltage power supply for the Intermediate Range Nuclear Instrument N35 will fail Low. The operator will respond in accordance with AR-E-9, "IR N-35 LOSS OF COMPENSATING VOLTAGE," and enter ER-NIS.2, "IR Malfuntion." The operator will address Technical Specification LCO 3.3.1, "Reactor Trip Instrumentation."

SIM DRIVER Instructions: Operate Trigger #1 (NIS05A (1E-8%))

Indications Available:

- MCB Annunciator E-9, IR N-35 LOSS OF COMPENSATION VOLTAGE
- The N35 indication is slightly higher than N36 indication

Time	Pos.	Expected Actions/Behavior	Comments
AR-E-9, IR N-35 LOSS OF COMPENSATION VOLTAGE			
	US	(Step 1) Refer to ER-NIS.2	
			NOTE: The US will go to ER-NIS.2.
ER-NIS.2, IR Malfuntion			
	CO	(Step 6.1) DEFEAT the reactor trip and rod stop function for the affected channel by placing the level trip switch in the BYPASS position.	NOTE: E-7 alarm, NIS TRIP BYPASS, will light
	US	(Step 6.2) NOTIFY I&C to repair the faulty channel.	NOTE: The US may notify the WCC/I&C. SIM DRIVER: as WCCS/I&C, acknowledge.
	US	(Step 6.3) REFER to ITS Section 3.3.1, Table 3.3.1-1, function 3 and Function 16a for NIS intermediate range channel operability requirements.	
			NOTE: The US will evaluate Technical Specifications.
TECHNICAL SPECIFICATION 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION			

Op Test No.: N17-1 Scenario # 6 Event # 2 Page 12 of 54Event Description: **Loss of Compensating Voltage to Intermediate Range N36**

Time	Pos.	Expected Actions/Behavior			Comments
	US	LCO 3.3.1 The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.			
	US	APPLICABILITY: According to Table 3.3.1-1.			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	NOTE: The US will recognize that Function 3 is applicable and requires ACTION E.1. NOTE: The US may call WCC/Maintenance to address the status of the A SI Pump.,, If so, SIM DRIVER acknowledge as WCC, report that the paperwork is being completed now and the pump is expected to be OPERABLE in about 1 hour. If asked for plant management direction, after the US identifies the Tech Spec options, indicate that management will call back with direction.
		A. One or more Functions with one channel inoperable. OR Two source range channels inoperable.	A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s).	Immediately	
		E. As required by Required Action A.1 and referenced by Table 3.3.1-1.	E.1 Reduce THERMAL POWER to < 5E-11 amps. OR	2 hours	
			E.2 Increase THERMAL POWER to ≥ 8% RTP.	2 hours	
At the discretion of the Lead Examiner move to Event #3.					

Op Test No.: N17-1 Scenario # 6 Event # 3 Page 13 of 54Event Description: **480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO**

Then, a 480VAC ground will occur on Bus 14 and the A CCW Pump will trip, and the B CCW Pump will fail to automatically start. The operator will either start the B CCW pump manually per A-503.1, "Emergency and Abnormal Operating Procedures Users Guide," or respond in accordance with AR-A-22, "CCW PUMP DISCHARGE LO PRESS 60 PSI," and enter AP-CCW.2, "Loss of CCW During Power Operation." The operator will evaluate Technical Specification LCO 3.7.7, "Component Cooling Water System."

SIM DRIVER Instructions: Operate Trigger #2 (CLG02A, A-EDS33 (ON))

Indications Available:

- MCB Annunciator A-17, MOTOR OFF RCP CCWP
- MCB Annunciator A-22, CCW PUMP DISCHARGE LO PRESS 60 PSIG
- A CCW Pump Green Breaker Status Light LIT
- A CCW Pump White Breaker Status Light LIT
- B CCW Pump Green Breaker Status Light LIT

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The HCO may start the B CCW directly, and/or the crew may enter AP-CCW.2 directly.
AR-A-17, MOTOR OFF RCP CCWP			
	HCO	(Step 1) Verify which motor tripped.	
	US	(Step 2) IF a RCP has tripped, THEN....	
	US	(Step 3) IF a CCW pump has tripped, THEN go to the applicable AP-CCW procedure:	
		<ul style="list-style-type: none"> • AP-CCW .2 (LOSS OF CCW DURING POWER OPERATION) 	NOTE: The US will transition to AP-CCW.2.
		<ul style="list-style-type: none"> • AP-CCW .3 (LOSS OF CCW - PLANT SHUTDOWN) 	

Op Test No.: N17-1 Scenario # 6 Event # 3 Page 14 of 54Event Description: **480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
AR-A-22, CCW PUMP DISCHARGE LO PRESS 60 PSI			
	US	(Step 1) GO TO the applicable AP-CCW procedure:	
		<ul style="list-style-type: none"> AP-CCW.2, LOSS OF CCW DURING POWER OPERATION 	
	HCO	(Step 2) Notify AO to check CCW pumps.	NOTE: The US may direct the EO to check the CCW Pumps. If so, SIM DRIVER acknowledge as EO, and report A CCW Pump Motor Hot to Touch.
	HCO	(Step 3) IF CCW pump cavitation is evident with normal CCW surge tank level as indicated on LI-618,....	NOTE: The US may direct the EO to check the CCW Pumps. If so, SIM DRIVER acknowledge as EO, and report no evidence of cavitation exists on any CCW Pump.
	US	(Step 4) Refer to ITS LCO 3.4.6, 3.4.7, 3.4.8, 3.7.7, 3.9.4 and 3.9.5.	
			NOTE: The HCO may start the B CCW directly per the guidance of A-503.1, and/or the US may go to AP-CCW.2.
A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE			
	HCO	(Step 1) Manual backup is the insertion of a manual trip, actuation, or control signal after a given parameter has reached or exceeded the setpoint for the corresponding automatic signal, based on the observed failure of the automatic function to occur. Manual backup is in an attempt to restore or maintain the design function.	

Op Test No.: N17-1 Scenario # 6 Event # 3 Page 15 of 54Event Description: **480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
			Examiner NOTE: The US may NOT enter AP-CCW.2. If NOT, proceed to Technical Specification evaluation on Page 17.
AP-CCW.2, LOSS OF CCW DURING POWER OPERATION			
			Examiner NOTE: If the B CCW Pump is started already upon entry into this procedure, move on to Event 4 and the discretion of the Lead Examiner, and address TS Evaluation upon completion of the scenario.
	HCO	(Step 1) Check CCW Pump Status:	
		<ul style="list-style-type: none"> Both CCW pump breaker white lights - EXTINGUISHED 	NOTE: The A CCW Pump white Breaker Status light will be LIT.
	HCO	(Step 1 RNO) Perform the following:	
		<ul style="list-style-type: none"> Ensure standby CCW pump running. 	NOTE: The HCO will start the B CCW Pump here, if NOT previously started.
		IF no CCW pump can be operated,....	NOTE: The B CCW Pump can be started.
		<ul style="list-style-type: none"> IF annunciator A-22, CCW PUMP DISCHARGE LO PRESS 60 PSI, lit,..... 	NOTE: Once the B CCW Pump is started, this annunciator will NOT be LIT.
	HCO	(*Step 2) Monitor CCW Surge Tank Level – APPROXIMATELY 50% AND STABLE (PPCS Point L0618)	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	HCO	(*Step 3) Monitor CCW Hx Outlet Temperature (MCB rear or PPCS point ID T0621)	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> CCW Hx Outlet temperature – LESS THAN 120°F 	

Op Test No.: N17-1 Scenario # 6 Event # 3 Page 16 of 54Event Description: **480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(*Step 4) Monitor RCP Indications:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Annunciator A-7 (A-15), RCP 1A (1B) CCW return Hi temp or low flow 165 gpm 125°F alarm – EXTINGUISHED 	
		<ul style="list-style-type: none"> RCP motor bearings temperature (PPCS Group Display – RCPS OR RCP temperature monitor RK-20A recorder) - ≤ 200°F. 	
	HCO	(*Step 5) Monitor If Letdown Should Be Isolated:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Check annunciator A-12, Non-Regen Hx Letdown Out Hi Temp 145°F – EXTINGUISHED 	
		<ul style="list-style-type: none"> Check Excess letdown temperature – LESS THAN 195°F 	NOTE: Excess Letdown is NOT in service.
	HCO/ CO/ EO	(Step 6) Check CCW Valve Alignment - NORMAL	
		<ul style="list-style-type: none"> Check MCB CCW valves (Refer to ATT-1.0, ATTACHMENT AT POWER CCW ALIGNMENT) 	NOTE: The US will hand off ATT-1.0 to the HCO or CO.
		<ul style="list-style-type: none"> Direct AO to check local flow indications per ATT-1.1, ATTACHMENT NORMAL CCW FLOW 	NOTE: The US may dispatch an EO. SIM DRIVER: as EO, acknowledge, and after 5 Minutes , report that ATT-1.1 is complete .
	HCO/ EO	(Step 7) Locally Check Seal Water Hx CCW Outlet Flow – NORMAL	NOTE: The US may dispatch an EO. SIM DRIVER: as EO, acknowledge, and report after 2 Minutes that flow is 16 gpm.

Op Test No.: N17-1 Scenario # 6 Event # 3 Page 17 of 54Event Description: **480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 8) check For CCW Leakage In CNMT:	
		<ul style="list-style-type: none"> Check CNMT sump A level: 	
		<ul style="list-style-type: none"> Level – STABLE 	
		<ul style="list-style-type: none"> Sump A pumps – OFF 	
		<ul style="list-style-type: none"> RCP oil levels - STABLE 	
	CO	(Step 9) Check for CCW Leakage In AUX BLDG:	
		<ul style="list-style-type: none"> Start frequency of AUX BLDG sump pump(s) – NORMAL (Refer to RCS daily leakage log) 	
		<ul style="list-style-type: none"> Waste holdup tank level – STABLE OR RISING AS EXPECTED 	NOTE: The US may contact an EO. SIM DRIVER: as EO, acknowledge, and report that the WHUT Level is stable at 15%.
	CO	(Step 10) Verify CCW System Leak – IDENTIFIED	
		<ul style="list-style-type: none"> Leak identified 	NOTE: The US will answer this “YES” being aware that there is NO leak, and continue.
		<ul style="list-style-type: none"> Isolate leak if possible 	
		<ul style="list-style-type: none"> Refer to IP-ENV-3, RESPONSE TO A SPILL OF HAZARDOUS MATERIAL/WASTE 	NOTE: The US may NOT take this action, knowing that there is no leak.
	HCO	(Step 11) Check Normal or Excess Letdown – IN SERVICE	NOTE: Normal letdown is in service.
	HCO	(Step 12) Check CCW System Leak Isolated	
		<ul style="list-style-type: none"> Surge tank level – APPROXIMATELY 50% 	
		<ul style="list-style-type: none"> Surge tank level - STABLE 	

Op Test No.: N17-1 Scenario # 6 Event # 3 Page 18 of 54Event Description: **480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 13) Direct RP To Sample CCW System For Chromates	NOTE: The US may NOT take this action, knowing that there is no leak.
	HCO/ CO	(Step 14) Evaluate MCB Annunciator Status (Refer to AR Procedures)	
	US	(Step 15) Evaluate Plant Conditions:	
		<ul style="list-style-type: none"> CCW system malfunction – IDENTIFIED AND CORRECTED 	
		<ul style="list-style-type: none"> CCW system status adequate for power operation (Refer to ITS Section 3.7.7). 	
	US	(Step 16) Notify Higher supervision	NOTE: The US may notify the WCC/Plant Supervision. SIM DRIVER: as WCCS, acknowledge.
	US	(Step 17) Return to Procedure Or Guidance In Effect	
			Examiner NOTE: If the US does NOT enter AP-CCW.2, continue HERE .
TECHNICAL SPECIFICATION 3.7.7, COMPONENT COOLING WATER (CCW) SYSTEM			
	US	LCO 3.7.7 Two CCW trains, two CCW heat exchangers, and the CCW loop header shall be OPERABLE.	
		AAPPLICABILITY: MODES 1, 2, 3, and 4.	

Op Test No.: N17-1 Scenario # 6 Event # 3 Page 19 of 54Event Description: **480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO**

Time	Pos.	Expected Actions/Behavior			Comments
	US	CONDITION	REQUIRED ACTION	COMPLETION TIME	NOTE: The US will identify that Condition A is applicable.
		A. One CCW train inoperable.	A.1 Restore CCW train to OPERABLE status.	72 hours	NOTE: The US should recognize escalating MODE change to >5% power cannot occur with LCO not met.
					NOTE: The US will likely conduct a Plant Status Brief, indicating that the only option for the plant is to shutdown to comply with the LCO 3.3.1 Action.
At the discretion of the Lead Examiner move to Event #4.					

Op Test No.: N17-1 Scenario # 6 Event # 4 Page 20 of 54Event Description: **B RCP Thermal Barrier leak**

After this, a thermal barrier leak will occur on the B RCP. The crew may enter AP-RCP.1, "RCP Seal Malfunction," but will ultimately respond per AP-CCW.1, "Leakage Into the Component Cooling Loop," and isolate the leak.

SIM DRIVER Instructions: Operate Trigger #3 (RCS01B (11 gpm, 120 Second Ramp))

Indications Available:

- MCB Annunciator B-10, RCP 1B LABYR SEAL LO DIFF PRESS 15" H2O
- 1B RCP Labyrinth Seal ΔP is lowering
- CCW Surge Tank Level is rising
- RMS-17, R-17 Component Cooling, indication is rising

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The crew may enter AP-RCS.1 first, but will ultimately shift to AP-RCP.1.
AR-B-10, RCP 1B LABYR SEAL LO DIFF PRESS 15" H2O			
	HCO	(Step 1) Check AOV-142 position correct for plant conditions.	
	HCO	(Step 2) GO TO applicable procedure: <ul style="list-style-type: none"> • AP-RCP.1, RCP SEAL MALFUNCTION • AP-CVCS.1, CVCS LEAK • AP-CVCS.3, LOSS OF ALL CHARGING FLOW 	NOTE: If the US enters AP-RCP.1 when CCW surge level rising, Step 7 will direct the US to AP-CCW.1.
AP-RCP.1, RCP SEAL MALFUNCTION			
	HCO	(Step 1) Check Total #1 Seal Flow - LESS THAN 8.0 GPM FOR EACH RCP	
	HCO	(Step 2) Check RCP Seal Return Valve Alignment:	
		<ul style="list-style-type: none"> • RCP seal return isolation valve, MOV-313 - OPEN 	
		<ul style="list-style-type: none"> • Verify RCP seal disch valves - OPEN 	
		<ul style="list-style-type: none"> • RCP A, AOV-270A 	
		<ul style="list-style-type: none"> • RCP B, AOV-270B 	

Op Test No.: N17-1 Scenario # 6 Event # 4 Page 21 of 54Event Description: **B RCP Thermal Barrier leak**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 3) Check RCP Seal Return Flow:	
		<ul style="list-style-type: none"> Total #1 Seal Flow – BETWEEN 0.8 GPM AND 6.0 GPM FOR EACH RCP 	
	US	<ul style="list-style-type: none"> Go to Step 5. 	
	HCO	(Step 5) Check RCP Cooling:	
		<ul style="list-style-type: none"> Annunciator A-7, RCP A CCW RETURN HIGH TEMP OR LOW FLOW - EXTINGUISHED 	
		<ul style="list-style-type: none"> Annunciator A-15, RCP B CCW RETURN HIGH TEMP OR LOW FLOW - EXTINGUISHED 	
	HCO	(Step 6) Check RCP #2 Seal Indications:	
		<ul style="list-style-type: none"> Annunciator B-3, RCP A STANDPIPE HI LEVEL +1 FT - EXTINGUISHED 	
		<ul style="list-style-type: none"> Annunciator B-4, RCP B STANDPIPE HI LEVEL +1 FT - EXTINGUISHED 	
	HCO	(Step 7) Check RCP Labyrinth Seal D/Ps - GREATER THAN 15 INCHES OF WATER	
	HCO	(Step 7 RNO) Perform the following:	
		<ul style="list-style-type: none"> Ensure open CCW outlet valves from RCP thermal barriers. 	
		<ul style="list-style-type: none"> RCP A, AOV-754A 	
		<ul style="list-style-type: none"> RCP B, AOV-754B 	
		<ul style="list-style-type: none"> Verify seal injection flow greater than 5 GPM for affected RCP. 	
		<ul style="list-style-type: none"> Adjust HCV-142 to obtain at least 15 inches labyrinth seal ΔP. 	
		<ul style="list-style-type: none"> Dispatch AO to check seal injection filter D/P. 	<p>NOTE: The US will dispatch an EO.</p> <p>SIM DRIVER: as EO, acknowledge and report ΔP is normal.</p>

Op Test No.: N17-1 Scenario # 6 Event # 4 Page 22 of 54Event Description: **B RCP Thermal Barrier leak**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Check CCW surge tank level stable. IF level rising, THEN go to AP-CCW.1, LEAKAGE INTO THE COMPONENT COOLING LOOP. 	
			NOTE: US enters AP-CCW.1 when CCW surge level rising.
AP-CCW.1, LEAKAGE INTO THE COMPONENT COOLING LOOP			
	HCO	(Step 1) Check CCW Indications	
		<ul style="list-style-type: none"> Check CCW surge tank level – RISING (PPCS Point L0618) 	
		<ul style="list-style-type: none"> Direct RP tech to perform CH-PRI-CCW-LEAK, DETERMINATION OF CCW SYSTEM LEAKAGE 	NOTE: The US/CO will contact RP. SIM DRIVER: as RP, acknowledge.
		<ul style="list-style-type: none"> CCW radiation monitor, R-17, RISING 	NOTE: May declare a Local Radiation Emergency per EPIP 1-13
	HCO	(Step 2) Check RCP Thermal Barrier Indications:	NOTE: the B RCP Thermal Barrier ΔP is low.
		<ul style="list-style-type: none"> Labyrinth seal D/Ps – GREATER THAN 15 INCHES OF WATER AND APPROXIMATELY EQUAL 	
	HCO	(Step 2 RNO) IF either pump has indication of a thermal barrier leak, THEN perform the following:	
		<ul style="list-style-type: none"> Verify seal injection flow to affected RCP. 	
		<ul style="list-style-type: none"> Close CCW return from affected RCP thermal barrier (labyrinth seal D/P should rise) <ul style="list-style-type: none"> RCP A, AOV-754A RCP B, AOV-754B 	NOTE: HCO closes AOV-754B
	US	<ul style="list-style-type: none"> Evaluate CCW surge tank level trend. If leakage has stopped, THEN go to step 17. (PPCS Point L0618) 	

Op Test No.: N17-1 Scenario # 6 Event # 4 Page 23 of 54Event Description: **B RCP Thermal Barrier leak**

Time	Pos.	Expected Actions/Behavior	Comments
	US	(Step 17) Evaluate Plant Conditions:	
		<ul style="list-style-type: none"> CCW inleakage – IDENTIFIED AND ISOLATED 	NOTE: The leakage into the CCW System has been isolated.
		<ul style="list-style-type: none"> Determine if operation can continue (Consult Plant staff if necessary) – OPERATION CAN CONTINUE 	SIM DRIVER: If asked, OPS management has determined that a plant shutdown should be commenced.
	HCO	(Step 18) Check CCW Surge Tank Level – APPROXIMATELY 50%	
	HCO	(Step 19) Establish Control Systems In Auto	
		<ul style="list-style-type: none"> Verify rods in AUTO 	NOTE: The control rods are in MANUAL due to plant startup conditions.
		<ul style="list-style-type: none"> Verify 431K in AUTO 	
		<ul style="list-style-type: none"> Verify PRZR spray valves in AUTO 	
		<ul style="list-style-type: none"> Verify PRZR heaters restored: 	
		<ul style="list-style-type: none"> PRZR proportional heaters breaker – CLOSED 	
		<ul style="list-style-type: none"> PRZR backup heaters breaker – RESET, IN AUTO 	
		<ul style="list-style-type: none"> Verify one charging pump in AUTO 	
	HCO/ CO	(Step 20) Evaluate MCB Annunciator Status (Refer to AR Procedures)	
At the discretion of the Lead Examiner move to Event #5.			

Op Test No.: N17-1 Scenario # 6 Event # 5 Page 24 of 54Event Description: **Fault on 480V Bus 17/SW Pump C fails to start**

Next, a fault on 480V Bus 17 will occur, resulting in Bus 17 de-energizing. The operator will enter AP-ELECT.17/18, "Loss of Safeguards Bus 17/18." The C Service Water Pump will fail to start when manual start is attempted, leaving only the A SW Pump running. The operator may leave the B EDG running or trip it within AP-ELECT.17/18, but in either case align Alternate Cooling to the EDG. The operator will enter AP-SW.2, "Loss of Service Water," and take actions to isolate non-essential SW loads. The operator will address Technical Specification LCO 3.8.1, "AC Sources – Modes 1, 2, 3, and 4," and LCO 3.8.9, "Distribution Systems – Modes 1, 2, 3, and 4."

SIM DRIVER Instructions: Operate Trigger #4 (EDS04C)

Indications Available:

- MCB Annunciator L-15, BUS 17 UNDER VOLTAGE SAFEGUARDS
- MCB Annunciator L-5, SAFEGUARD BUS MAIN BREAKER OVERCURRENT TRIP
- Multiple MCB Annunciators
- Bus 17 Volts indicating 0
- Bus 17 amperage indicating 0
- B EDG starts, voltage at 480 VAC, but will not load on Bus 17.

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The crew will enter AP-ELECT.17/18 directly.
AP-ELECT.17/18, LOSS OF SAFEGUARDS BUS 17/18			
	CO	(Step 1) Verify Emergency D/G Associated With Affected Bus – RUNNING	NOTE: The B D/G is RUNNING, but its breaker is NOT Closed.
		<ul style="list-style-type: none"> • Bus 17 – D/G B 	
	CO	(Step 2) Verify Both trains Of AC Emergency Busses Energized To At Least 440 VOLTS:	
		<ul style="list-style-type: none"> • Bus 14 and Bus 18 	
		<ul style="list-style-type: none"> • Bus 16 and Bus 17 	NOTE: Bus 17 is de-energized.
	CO	(Step 2 RNO) IF Bus 14 AND Bus 16 are deenergized, THEN.....	NOTE: Both buses are energized.
		IF one train deenergized, THEN perform the following:	NOTE: ONLY Bus 17 is de-energized.
		<ul style="list-style-type: none"> • Ensure D/G aligned for unit operation 	

Op Test No.: N17-1 Scenario # 6 Event # 5 Page 25 of 54Event Description: **Fault on 480V Bus 17/SW Pump C fails to start**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Mode switch in UNIT 	
		<ul style="list-style-type: none"> Voltage control selector in AUTO 	
		<ul style="list-style-type: none"> Check D/G running. 	
		IF NOT, THEN.....	NOTE: The B D/G is RUNNING, but its breaker is NOT Closed.
		<ul style="list-style-type: none"> Adjust D/G voltage to approximately 480V. 	
		<ul style="list-style-type: none"> Adjust D/G frequency to approximately 60 Hz. 	
	CO	(Step 3) Verify Service Water System Operation:	
		<ul style="list-style-type: none"> SW pumps – AT LEAST ONE RUNNING IN EACH LOOP 	NOTE: ONLY the A SW Pump is RUNNING.
		<ul style="list-style-type: none"> A or B pump in Loop A 	
		<ul style="list-style-type: none"> C or D pump in Loop B 	
			NOTE: The US may address AP.SW.1, SW Leak, however this procedure will NOT address the low flow condition.
	CO	(Step 3a RNO) Perform the following:	
		<ul style="list-style-type: none"> Manually start SW pump as necessary (357 kw each). 	NOTE: The CO may attempt to START the C SW Pump, but it will fail.
		<ul style="list-style-type: none"> IF adequate cooling can NOT be supplied to a running D/G. 	NOTE: The US will have to decide whether or not 1 SW Pump is adequate cooling. IF NOT, the US will direct that the B D/G be stopped, and address ER-D/G.2 for Alternate Cooling. If SO, US will continue as scripted.
		<ul style="list-style-type: none"> IF no SW pumps can be operated, THEN.... 	NOTE: The A SW Pump is RUNNING.

Op Test No.: N17-1 Scenario # 6 Event # 5 Page 26 of 54Event Description: **Fault on 480V Bus 17/SW Pump C fails to start**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> IF only one SW pump can be operated, THEN refer to AP-SW.2, LOSS OF SERVICE WATER. 	
			NOTE: The US will go to AP-SW.2.
AP-SW.2, LOSS OF SERVICE WATER			
	CO	(Step 1) Verify 480V AC Emergency Busses 17 and 18 – ENERGIZED	NOTE: Bus 17 is de-energized.
	CO	(Step 1 RNO) Ensure associated D/G(s) running and attempt to manually load busses 17 and/or 18 onto their respective D/G(s).	
		IF neither bus 17 nor bus 18 can be energized, THEN.....	NOTE: Bus 18 is energized.
	CO	(*Step 2) verify SW Pump Alignment:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Check at least one SW pump running in each loop 	
		<ul style="list-style-type: none"> A or B pump in loop A 	NOTE: The A SW Pump is RUNNING.
		<ul style="list-style-type: none"> C or D pump in loop B 	NOTE: Both C and D SW Pumps are OFF.
	CO	<ul style="list-style-type: none"> (Step 2a RNO) Perform the following: 	
		<ul style="list-style-type: none"> Manually start SW pumps as necessary (257 kw each). 	NOTE: The CO may attempt to START the C SW Pump, but it will fail.
		<ul style="list-style-type: none"> IF adequate cooling can NOT be supplied to a running D/G, THEN..... 	NOTE: The US will direct action based on whether or NOT one SW Pump can adequately cool the D/G.
		<ul style="list-style-type: none"> IF no SW pumps can be operated, THEN..... 	NOTE: The A SW Pump is RUNNING.
	US	<ul style="list-style-type: none"> IF only one SW pump can be operated, THEN go to Step 3. 	

Op Test No.: N17-1 Scenario # 6 Event # 5 Page 27 of 54Event Description: **Fault on 480V Bus 17/SW Pump C fails to start**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 3) Align Alternate Cooling To One D/G (Refer to ER-D/G.2, ALTERNATE COOLING FOR EMERGENCY D/Gs):	
		<ul style="list-style-type: none"> IF B or D SW Pump is operating, THEN align alternate cooling to D/G A per ER-D/G.2. 	<p>NOTE: The US will dispatch an EO.</p> <p>SIM DRIVER: as EO, acknowledge, and use REM-GEN22 = OPEN.</p> <p>Report after 3 Minutes that ATT-2.2 is complete.</p>
	CO	(Step 4) Isolate SW To Non-Essential Loads	
		<ul style="list-style-type: none"> Close screenhouse SW isolation valves 	
		<ul style="list-style-type: none"> MOV-4609 	
		<ul style="list-style-type: none"> MOV-4780 	
		<ul style="list-style-type: none"> Close air conditioning SW isolation valves 	
		<ul style="list-style-type: none"> MOV-4663 	
		<ul style="list-style-type: none"> MOV-4733 	
		<ul style="list-style-type: none"> Direct AO to perform Part C of ATT-2.2, ATTACHMENT SW ISOLATION 	<p>NOTE: The US will dispatch an EO.</p> <p>SIM DRIVER: as EO, acknowledge, and report after 3 Minutes that ATT-2.2 is complete.</p>
	CO	(Step 5) Monitor Plant Equipment Cooled By SW – TEMPERATURES STABLE	
		<ul style="list-style-type: none"> Exciter 	
		<ul style="list-style-type: none"> MFP oil coolers 	
		<ul style="list-style-type: none"> Instrument air compressors 	
		<ul style="list-style-type: none"> Bus duct coolers 	
		<ul style="list-style-type: none"> Seal Oil unit 	
		<ul style="list-style-type: none"> Turbine lube oil cooler 	

Op Test No.: N17-1 Scenario # 6 Event # 5 Page 28 of 54Event Description: **Fault on 480V Bus 17/SW Pump C fails to start**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> CCW Hx 	
		<ul style="list-style-type: none"> SFP Hx 	
		<ul style="list-style-type: none"> AFPs 	
		<ul style="list-style-type: none"> Condensate Pumps 	
		<ul style="list-style-type: none"> Secondary sample coolers 	
	US	(Step 6) Notify Higher Supervision	NOTE: The US may notify the WCC/Plant Supervision. SIM DRIVER: as WCCS, acknowledge.
	CO	(Step 7) Check SW System Status:	
		<ul style="list-style-type: none"> Check SW loop header pressures: 	
		<ul style="list-style-type: none"> PPCS SW low pressure alarm status – NOT LOW 	
		<ul style="list-style-type: none"> PPCS point ID P2160 	
		<ul style="list-style-type: none"> PPCS point ID P2161 	
		<ul style="list-style-type: none"> Pressure in both loops STABLE OR RISING 	
		<ul style="list-style-type: none"> Check SW loop header pressures – GREATER THAN 40 PSIG 	NOTE: The SW System pressures are < 40 psig.
	CO/ EO	<ul style="list-style-type: none"> (Step 7a RNO) Locally isolate selected SW loads as desired (Refer to ATT 2.2, ATTACHMENT SW ISOLATION) 	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge.
	CO	<ul style="list-style-type: none"> (Step 7b) Check at least one SW pump running in each loop: 	
		<ul style="list-style-type: none"> A or B pump in loop A 	NOTE: The A SW Pump is RUNNING.
		<ul style="list-style-type: none"> C or D pump in loop B 	NOTE: Both C and D SW Pumps are OFF.

Op Test No.: N17-1 Scenario # 6 Event # 5 Page 29 of 54Event Description: **Fault on 480V Bus 17/SW Pump C fails to start**

Time	Pos.	Expected Actions/Behavior			Comments
	CO	<ul style="list-style-type: none">(Step 7b RNO) Perform the following:			
		<ul style="list-style-type: none">Continue efforts to start at least one SW pump in each loop.			
		<ul style="list-style-type: none">IF at least two SW pumps can be operated, THEN,.....			NOTE: Two SW Pumps cannot be operated.
	US	<ul style="list-style-type: none">IF NOT, THEN return to Step 3.			NOTE: The US will continue efforts to restore the SW System.
					Examiner NOTE: Because of the transitory nature of this event, the examiner may need to address the Technical Specification evaluation after the scenario.
TECHNICAL SPECIFICATION 3.8.1, AC SOURCES – MODES 1, 2, 3 AND 4					
	US	LCO 3.8.1 The following AC electrical sources shall be OPERABLE:			
		<ul style="list-style-type: none">One qualified independent offsite power circuit connected between the offsite transmission network and each of the onsite 480 V safeguards buses required by LCO 3.8.9, “Distribution Subsystems – MODES 1, 2, 3, and 4”; and			
		<ul style="list-style-type: none">Two emergency diesel generators (DGs) capable of supplying their respective onsite 480 V safeguards buses required by LCO 3.8.9.			
	US	APPLICABILITY: MODES 1, 2, 3, and 4.			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	The US will recognize that LCO

Op Test No.: N17-1 Scenario # 6 Event # 5 Page 30 of 54Event Description: **Fault on 480V Bus 17/SW Pump C fails to start**

Time	Pos.	Expected Actions/Behavior			Comments
		A. Offsite power to one or more 480 V safeguards bus(es) inoperable.	A.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable. AND A.2 Restore offsite circuit to OPERABLE status.	12 hours from discovery of Condition A concurrent with inoperability of redundant required feature(s) 72 hours	3.8.1 Conditions A, B and C are applicable.
		B. One DG inoperable.	B.1 Perform SR 3.8.1.1 for the offsite circuit.	1 hour AND Once per 8 hours thereafter	
			B.2 Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable. AND	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s).	
			B.3.1 Determine OPERABLE DG is not inoperable due to common cause failure. OR	24 hours	
			B.3.2 Perform SR 3.8.1.2 for OPERABLE DG. AND	24 hours	
			B.4 Restore DG to OPERABLE status.	7 days	

Op Test No.: N17-1 Scenario # 6 Event # 5 Page 31 of 54Event Description: **Fault on 480V Bus 17/SW Pump C fails to start**

Time	Pos.	Expected Actions/Behavior			Comments
		C. Offsite power to one or more 480 V safeguards bus(es) inoperable. AND One DG inoperable.	C.1 Restore required offsite circuit to OPERABLE status. OR C.2 Restore DG to OPERABLE status.	12 hours 12 hours	
TECHNICAL SPECIFICATION 3.8.9, DISTRIBUTION SYSTEMS – MODES 1, 2, 3 AND 4					
	US	LCO 3.8.9 Train A and Train B of the following electrical power distribution subsystems shall be OPERABLE:			
		• AC power.			
	US	APPLICABILITY: MODES 1, 2, 3, and 4.			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	The US will recognize that LCO 3.8.9 Condition A is applicable.
		A. One AC electrical power distribution train inoperable	A.1 Restore AC electrical power distribution train to OPERABLE status.	8 hours	
At the discretion of the Lead Examiner move to Events # Events #6-8.					

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 32 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Afterwards, a Pressurizer vapor space Small Break LOCA occurs over ten minutes. The operator will enter AP-RCS.1, "Reactor Coolant Leak," however, ultimately the reactor will be tripped, Safety Injection will be actuated, and the operator will enter E-0, "Reactor Trip or Safety Injection." On the plant trip, Containment Isolation will fail to automatically and manually actuate, and the operator will need to manually close the Containment Isolation Valves. Additionally, when the SI occurs, instrument air to containment will be isolated and the B RCP Thermal Barrier Return Isolation Valve will fail open. The CCW leak will need to be re-isolated. The operator will transition from E-0 to E-1, "Loss of Reactor or Secondary Coolant." At Step 7 of E-1, and after SI is reset, a Loss of Off-Site Power will occur and all Safeguards Equipment will need to be re-started. The scenario will terminate at Step 9 (or beyond) of E-1 after all ECCS equipment is re-started and Instrument Air has been restored to the Containment.

SIM DRIVER Instructions: **Operate Trigger #5 (PZR07, 89,000, 600 second Ramp)**

Indications Available:

- MCB Annunciator F-10, PRESSURIZER LO PRESS 2205 PSI
- Pressurizer Pressure decreases at a faster rate
- Pzr level initially decreases and then starts to rise
- Containment Pressure starts to rise
- MCB Annunciator E-16, RMS PROCESS MONITOR HIGH ACTIVITY
- Containment Radiation Monitors (R-2, R-7, others) start to rise

Time	Pos.	Expected Actions/Behavior	Comments
AP-RCS.1, REACTOR COOLANT LEAK			
	HCO	(Step 1) Monitor PRZR Level – STABLE AT PROGRAM LEVEL	
	HCO	(Step 1 RNO) IF PRZR level lowering, THEN start additional charging pumps and raise speed to raise PRZR level to program.	
		IF PRZR level continues to lower, THEN close letdown isolation AOV-427 AND excess letdown AOV-310.	

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 33 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
		IF available charging pumps are running at maximum speed with letdown isolated, AND PRZR level is lowering, THEN trip the reactor and go to E-0, REACTOR TRIP or SAFETY INJECTION.	Examiner NOTE: The RCS leak/LOCA is slow developing and the crew may perform additional steps in AP-RCS.1 while determining that the Rx must be tripped and SI actuated. Regardless of further actions in AP-RCS.1, ultimately the crew will need to trip the reactor and actuate SI.
E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO	(Step 1) Verify Reactor Trip:	Immediate Action
		<ul style="list-style-type: none"> At least one train of reactor trip breakers – OPEN 	
		<ul style="list-style-type: none"> Neutron flux – LOWERING 	
		<ul style="list-style-type: none"> MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM with no instrument fluctuations concurrent with fire. 	
	CO	(Step 2) Verify Turbine Stop Valves - CLOSED	Immediate Action NOTE: The Turbine is NOT latched.
	CO	(Step 3) Verify sufficient AC Emergency buses Energized To At Least 440 VOLTS:	Immediate Action
		<ul style="list-style-type: none"> Bus 14 OR Bus 16 	NOTE: Both buses are energized. The B D/G is powering Bus 16.
		AND	
		<ul style="list-style-type: none"> Bus 17 OR Bus 18 	NOTE: Bus 17 is de-energized.

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 34 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 3 RNO) Attempt to start any failed emergency D/G to restore power to all AC emergency buses.	
		<ul style="list-style-type: none"> IF Bus 17 AND Bus 18 are deenergized, THEN..... 	NOTE: Bus 18 is energized.
		<ul style="list-style-type: none"> IF Bus 14 AND Bus 16 are deenergized, THEN..... 	NOTE: Both buses are energized. The B D/G is powering Bus 16.
	HCO/ CO	(Step 4) Check if SI is Actuated:	Immediate Action
		<ul style="list-style-type: none"> Any SI Annunciator – LIT 	
		<ul style="list-style-type: none"> SI sequencing – BOTH TRAINS STARTED 	
	HCO/ CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of E-0.
		RCP TRIP CRITERIA	NOTE: This condition is expected to be met.
		<ul style="list-style-type: none"> IF BOTH conditions listed below occur, THEN trip both RCPs: 	
		<ul style="list-style-type: none"> o SI pumps - AT LEAST TWO RUNNING 	
		<ul style="list-style-type: none"> o RCS pressure minus maximum S/G pressure - LESS THAN 210 psi [240 psi adverse CNMT] 	
		LOSS OF SW CRITERIA	
		AFW SUPPLY SWITCHOVER CRITERION	
		SFP COOLING CRITERIA	

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 35 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(*Step 5) Verify CNMT Spray Not Required:	NOTE: This is a Continuous Action. The US will make one or more board operators aware. NOTE: The Containment Pressure is expected to be ≈2 psig and rising slowly.
		• Annunciator A-27, CNMT SPRAY EXTINGUISHED	
		• CNMT pressure – LESS THAN 28 PSIG	
	CO	(Step 6) Direct Operator to Perform ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION	
			NOTE: The US will hand off ATT-27.0 to either the HCO or the CO, and continue with the other operator in E-0. Examiner following operator performing ATT-27.0 continue below. Examiner following operator NOT performing ATT-27.0 continue at Page 40 .
E-0, REACTOR TRIP OR SAFETY INJECTION, ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO/ CO	(Step 1) Verify SI and RHR Pumps Running:	
		• All SI pumps – RUNNING	NOTE: The A SI Pump is OOS.
	HCO/ CO	(Step 1.a RNO) Manually start SI pumps	NOTE: The A SI Pump cannot be started.
	HCO/ CO	• (Step 1 Continued) Both RHR pumps – RUNNING	

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 36 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 2) Verify CNMT RECIRC Fans RUNNING:	
		<ul style="list-style-type: none"> All fans RUNNING 	
		<ul style="list-style-type: none"> Charcoal filter dampers green status lights – EXTINGUISHED 	
	HCO/ CO	(Step 3) Check If Main Steamlines Should Be Isolated:	
		<ul style="list-style-type: none"> Any MSIV – OPEN 	
		<ul style="list-style-type: none"> Check CNMT pressure – LESS THAN 18 PSIG 	
		<ul style="list-style-type: none"> Check if ANY main steamlines should be isolated 	
		<ul style="list-style-type: none"> Low Tavg (545°F) AND high steam flow (0.5×10^6 lb/hr) from either S/G 	
		OR	
		<ul style="list-style-type: none"> High-High steam flow (4.4×10^6 lb/hr) from either S/G 	
	HCO/ CO	<ul style="list-style-type: none"> (Step3c RNO) Go to Step 4. 	
	HCO/ CO	(Step 4) Verify MFW Isolation:	
		<ul style="list-style-type: none"> MFW pumps – TRIPPED 	NOTE: Both MFW Pumps are in PULL STOP.
		<ul style="list-style-type: none"> MFW Isolation valves - CLOSED 	
		<ul style="list-style-type: none"> S/G A, AOV-3995 	
		<ul style="list-style-type: none"> S/G B, AOV-3994 	
		<ul style="list-style-type: none"> S/G blowdown and sample valves - CLOSED 	NOTE: These valves are OPEN.

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 37 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 4.c RNO) Place S/G blowdown and sample valve isolation switch to CLOSE.	
	HCO/ CO	(Step 5) Verify At Least Two SW Pumps - RUNNING	NOTE: Only the A SW Pump is running.
	HCO/ CO	(Step 5 RNO) Perform the following:	
		<ul style="list-style-type: none"> Ensure one SW pump running on each energized screenhouse AC emergency bus: 	
		<ul style="list-style-type: none"> Bus 17 	
		<ul style="list-style-type: none"> Bus 18 	
		<ul style="list-style-type: none"> IF offsite power NOT available, THEN ensure SW isolation. 	
	HCO/ CO	(Step 6) Verify CI and CVI:	NOTE: CI has not actuated.
		<ul style="list-style-type: none"> CI and CVI annunciators - LIT 	
		<ul style="list-style-type: none"> Annunciator A-26, CNMT ISOLATION 	
		<ul style="list-style-type: none"> Annunciator A-25, CNMT VENTILATION ISOLATION 	
	HCO/ CO	(Step 6.a RNO) Depress manual CI pushbutton.	NOTE: Only the A SW Pump is running.
	HCO/ CO	<ul style="list-style-type: none"> (Step 6 Continued) Verify CI and CVI valve status lights - BRIGHT 	NOTE: CI has failed to auto/manual actuate.
	HCO/ CO	<ul style="list-style-type: none"> (Step 6b RNO) Manually close affected CI and CVI valve(s). 	
		<ul style="list-style-type: none"> AOV-1786 	
		<ul style="list-style-type: none"> AOV-1787 	
		<ul style="list-style-type: none"> AOV-1721 	

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 38 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
		• AOV-371	
		• AOV-313	
		• AOV-5392	
		• AOV-745	
		• AOV-5735	
		• AOV-5736	
		• AOV-1723	
		• AOV-1728	
		• MOV-813	
		• MOV-814	
		IF valve(s) can NOT be closed from the MCB, THEN.....	NOTE: All valves that have DIM status lights will be manually closed using ATT-27.0 or ATT-3.0.
			NOTE: The HCO/CO will dispatch an EO. SIM DRIVER: as EO, acknowledge and use REM-MIS099 to close AOV-1723; and MIS100 to close AOV-1728.

CRITICAL TASK:**Close Containment Isolation Valves, or their Alternate Valves using ATT-3.0, before indicating to the US that ATT-27.0 is complete (EOP-Based)**

Safety Significance: Failure to close at least one Containment Isolation Valve on each critical penetration under the postulated conditions when it is possible to do so, constitutes mis-operation leading to degradation of the Containment Barrier. Failure to take this action leads to an unnecessary release of fission products to the auxiliary building, increasing the potential for release to the environment, and reducing accessibility to vital equipment within the Auxiliary Building. Higher radiation levels within the Auxiliary Building will result in a degradation of ALARA principles.

--	--	--	--

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 39 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	<ul style="list-style-type: none"> (Step 6 Continued) CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT 	
		<ul style="list-style-type: none"> FCV-4561 	
		<ul style="list-style-type: none"> FCV-4562 	
		<ul style="list-style-type: none"> Letdown orifice valves - CLOSED 	
		<ul style="list-style-type: none"> AOV-200A 	
		<ul style="list-style-type: none"> AOV-200B 	
		<ul style="list-style-type: none"> AOV-202 	
	HCO/ CO	(Step 7) Check CCW System Status:	
		<ul style="list-style-type: none"> Verify CCW pump – AT LEAST ONE RUNNING 	NOTE: Neither CCW Pump is running.
	HCO/ CO	(Step 7 RNO) IF offsite power available, THEN manually start one CCW pump.	NOTE: Neither CCW Pump can be started (A previously tripped, B cannot be started with the D/G powering Bus 16). Because of this, the RCPs need to be tripped.
	HCO/ CO	(Step 8) Verify SI And RHR Pump Flow:	
		<ul style="list-style-type: none"> SI flow indicators – CHECK FOR FLOW 	
		<ul style="list-style-type: none"> RHR flow indicator – CHECK FOR FLOW 	
		<ul style="list-style-type: none"> (Step 8b RNO) IF RCS pressure less than 150 psig manually start pumps and align valves. IF NOT, THEN go to Step 9. 	
	HCO/ CO	(Step 9) Verify SI Pump And RHR Pump Emergency Alignment:	

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 40 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> RHR pump discharge to Rx vessel deluge - OPEN 	
		<ul style="list-style-type: none"> MOV-852A 	
		<ul style="list-style-type: none"> MOV-852B 	
		<ul style="list-style-type: none"> Verify SI pump C – RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump A - RUNNING 	
	HCO/ CO	(Step 9 RNO) Perform the following:	
		<ul style="list-style-type: none"> Ensure SI pumps B and C running. IF either pump NOT, running, THEN..... 	
		<ul style="list-style-type: none"> Ensure SI pump C aligned to discharge line A: 	
		<ul style="list-style-type: none"> MOV-871A open 	
		<ul style="list-style-type: none"> MOV-871B closed 	
		<ul style="list-style-type: none"> Go to Step 10. 	
	HCO/ CO	(Step 10) Verify CREATS Actuation:	
		<ul style="list-style-type: none"> At least one damper in each flowpath - CLOSED 	
		<ul style="list-style-type: none"> Normal Supply Air 	
		<ul style="list-style-type: none"> Normal Return Air 	
		<ul style="list-style-type: none"> Lavatory Exhaust Air 	
		<ul style="list-style-type: none"> CREATS fans – BOTH RUNNING 	
	HCO/ CO	(Step 11) Verify CI and CVI During a Fire Event	
		<ul style="list-style-type: none"> A confirmed fire has occurred in the control complex or cable tunnel (fire systems S05, S06, S08, Z05, Z18, or Z19). 	

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 41 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 11 RNO) Go to END	
E-0, REACTOR TRIP OR SAFETY INJECTION			
			Examiner following operator NOT performing ATT-27.0 continue HERE .
	CO/ HCO	(Step 7) Verify Both MDAFW Pumps RUNNING	
	CO/ HCO	(Step 8) Verify AFW Valve Alignment:	
		<ul style="list-style-type: none"> AFW flow – INDICATED TO BOTH S/G(s) 	
		<ul style="list-style-type: none"> AFW flow from each MDAFW pump LESS THAN 230 GPM 	
	CO/ HCO	(*Step 9) Monitor Heat Sink:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Check S/G narrow range level GREATER THAN 7% [25% adverse CNMT] in any S/G 	NOTE: Adverse Containment may exist at this time.
		<ul style="list-style-type: none"> Check S/G narrow range level BOTH S/G LESS THAN 50% 	
		<ul style="list-style-type: none"> Control feed flow to maintain S/G narrow range level between 7% [25% adverse CNMT] and 50%. 	NOTE: Adverse Containment may exist at this time.
	CO/ HCO	(Step 10) Check If TDAFW Pump Can Be Stopped:	
		<ul style="list-style-type: none"> Both MDAFW pumps – RUNNING 	
		<ul style="list-style-type: none"> PULL STOP TDAFW pump steam supply valves 	NOTE: The TDAFW Pump is already stopped.
		<ul style="list-style-type: none"> MOV-3504A 	

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 42 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> MOV-3505A 	
	CO/ HCO	(Step 11) Check CCW Flow to RCP thermal Barriers:	
		<ul style="list-style-type: none"> Annunciator A-7. RCP 1A CCW RETURN HI TEMP OR LOW FLOW - EXTINGUISHED 	
		<ul style="list-style-type: none"> Annunciator A-15, RCP 1B CCW RETURN HI TEMP OR LOW FLOW EXTINGUISHED 	NOTE: The leak in the Thermal Barrier to the B RCP will unisolate when 1A is isolated to the Containment.
	CO/ HCO	(Step 11 RNO) Perform the following:	
		<ul style="list-style-type: none"> Stop affected RCPs. 	NOTE: If not already stopped the HCO will stop them here.
		<ul style="list-style-type: none"> Reset SI. 	
		<ul style="list-style-type: none"> Check adequate power available to run one charging pump. 	
		<ul style="list-style-type: none"> IF the Bus 14/16 Normal Feed Breakers are closed THEN verify adequate Safeguard Bus capacity to run one charging pump (6 amps) 	NOTE: Bus 14 is supplied by off-site power.
		<ul style="list-style-type: none"> Station Service transformer 14 ammeter 	
		<ul style="list-style-type: none"> IF the Bus 14/16 D/G breakers are closed THEN verify adequate emergency D/G capacity to run one charging pump (75 kw) 	NOTE: Bus 16 is supplied by B D/G.
		<ul style="list-style-type: none"> IF sufficient power is NOT available to operate a charging pump THEN..... 	NOTE: Sufficient power is available to start a Charging Pump.
		<ul style="list-style-type: none"> Check seal outlet temperatures 	
		<ul style="list-style-type: none"> IF seal outlet temperatures are greater than 235°F, THEN..... 	NOTE: The RCP bearing temperatures are likely < 235°F.

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 43 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> IF seal outlet temperatures are less than 235°F, THEN start one charging pump at minimum speed for seal injection 	
		<ul style="list-style-type: none"> Adjust HCV-142 to establish either of the following: 	
		<ul style="list-style-type: none"> Labyrinth seal D/P to each RCP greater than 15 inches of water. 	NOTE: The B RCP may not be able to >15"H2O because of the Thermal Barrier leak that has unisolated.
		<ul style="list-style-type: none"> -OR 	
		<ul style="list-style-type: none"> RCP seal injection flow to each RCP greater than 6 gpm. 	
		<ul style="list-style-type: none"> IF large imbalance in seal injection flow exists, THEN..... 	

CRITICAL TASK:

Trip all RCPs within 2 minutes of loss of CCW to the RCPs or if RCP motor bearing temperature exceeds 200°F; or within 5 minutes of reaching Small Break LOCA trip criteria, whichever is reached first (EOP-Based)

Safety Significance: During an undervoltage condition on an ESF Bus coupled with an SI, the CCW Pump(s) will trip causing a loss of CCW flow to the RCPs. A Caution is provided in AP-CCW.2 and 3 which states "If CCW flow to a RCP is interrupted for greater than 2 minutes or if either RCP motor bearing temperature exceeds 200°F, then trip the affected RCP." This caution applies at all times, and is necessary to protect the long-term operations of the RCPs. It is a management expectation that the RCPs be tripped within 2 minutes of a loss of CCW to pump motor bearings. Additionally, failure to trip all RCPs when required during a Small Break LOCA can lead to core uncover and to fuel temperatures in excess of 2200°F. Analyses have shown that if the RCPs are tripped within 5 minutes of the trip criteria being met, PCT will remain below 2200°F, and if this action is delayed beyond 5 minutes, this PCT will be exceeded. It is a management expectation that the RCPs be tripped as quickly as possible, but within 5 minutes when the trip criteria are met. Failure to take this action represents mis-operation by the operator which leads to degradation of the fuel cladding fission produce barrier, and a violation of a license condition.

--	--	--	--

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 44 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
	CO/ HCO	(*Step 12) Monitor RCS Tavg – STABLE AT OR TRENDING TO 547°F	NOTE: This is a Continuous Action. The US will make one or more board operators aware. NOTE: Tavg is expected to be less than 547°F and lowering.
	CO/ HCO	(Step 12 RNO) IF temperature less than 547°F and lowering, THEN perform the following:	
		<ul style="list-style-type: none"> Stop dumping steam. 	
		<ul style="list-style-type: none"> Ensure reheater steam supply valves are closed. 	
		<ul style="list-style-type: none"> IF cooldown continues, THEN control total feed flow between 200 gpm to 230 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G. 	NOTE: Adverse Containment may exist at this time.
		<ul style="list-style-type: none"> WHEN S/G level greater than 7% [25% adverse CNMT] in one S/G, THEN limit feed flow to that required to maintain level in at least one S/G. 	
		<ul style="list-style-type: none"> IF cooldown continues, THEN close both MSIVs. 	NOTE: The CO will CLOSE both MSIVs.
	CO/ HCO	(Step 13) Check PRZR PORVS And Spray Valves:	
		<ul style="list-style-type: none"> PORVs – CLOSED 	
		<ul style="list-style-type: none"> Auxiliary spray valve (AOV-296) - CLOSED 	
		<ul style="list-style-type: none"> Check PRZR pressure - LESS THAN 2260 PSIG 	
		<ul style="list-style-type: none"> Normal PRZR spray valves - CLOSED 	
		<ul style="list-style-type: none"> PCV-431A 	
		<ul style="list-style-type: none"> PCV-431B 	

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 45 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
	CO/ HCO	(Step 14) Monitor RCP Trip Criteria:	
		<ul style="list-style-type: none"> RCP status – ANY RCP RUNNING 	NOTE: The RCPs are likely stopped by now. If not they will be stopped here.
		<ul style="list-style-type: none"> SI pumps - AT LEAST TWO RUNNING 	
		<ul style="list-style-type: none"> RCS pressure minus maximum S/G pressure - LESS THAN 210 psi [240 psi adverse CNMT] 	NOTE: Adverse Containment may exist at this time.
		<ul style="list-style-type: none"> Stop both RCPs 	NOTE: If RCP Trip Criteria is NOT met, the RNO will be performed (Go to Step 15); and RCP Trip Criteria is expected to be met later.
	CO/ HCO	(Step 15) Check If S/G Secondary Side Is Intact:	
		<ul style="list-style-type: none"> Pressure in both S/G's-STABLE OR Rising 	
		<ul style="list-style-type: none"> Pressure in both S/G's –GREATER THAN 110 PSIG 	
	CO/ HCO	(Step 16) Check if S/G Tubes are intact:	
		<ul style="list-style-type: none"> Air Ejector radiation monitors (R-15, R-47, R-48) - NORMAL 	
		<ul style="list-style-type: none"> S/G blowdown radiation monitors (R-19) - NORMAL 	
		<ul style="list-style-type: none"> Steamline radiation monitors (R-31, R-32) - NORMAL 	
	CO/ HCO	(Step 17) Check if RCS is intact:	
		<ul style="list-style-type: none"> CNMT area radiation monitors – NORMAL 	NOTE: Containment Radiation Monitors are in alarm.

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 46 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
		• R-2	
		• R-7	
		• R-29	
		• R-30	
		• CNMT pressure – LESS than 0.5 psig	
	US	(Step 17.a RNO) Go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.	
			NOTE: The US will go to E-1. The US will conduct an alignment brief.
E-1, LOSS OF REACTOR OR SECONDARY COOLANT			
	HCO/ CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of E-1.
		RCP TRIP CRITERIA	NOTE: This condition is expected to be met.
		• IF BOTH conditions listed below occur, THEN trip both RCPs:	
		○ SI pumps - AT LEAST TWO RUNNING	
		○ RCS pressure minus maximum S/G pressure - LESS THAN 210 psi [240 psi adverse CNMT]	NOTE: Adverse Containment is likely to exist at this time.
		LOSS OF SW CRITERIA	
		SI REINITIATION CRITERIA	
		SI TERMINATION CRITERIA	
		SECONDARY INTEGRITY CRITERIA	
		E-3 TRANSITION CRITERIA	
		COLD LEG RECIRCULATION SWITCHOVER CRITERION	

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 47 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
		AFW SUPPLY SWITCHOVER CRITERION	
	HCO	(Step 1) Monitor RCP Trip Criteria:	
		• RCP status – ANY RCP RUNNING	
		• SI pumps – AT LEAST TWO RUNNING	
		• RCS pressure minus maximum S/G pressure – LESS THAN 210 psi [240 psi adverse CNMT]	
		• Stop both RCPs	NOTE: If the RCPs have NOT been stopped prior to this step, they will be stopped here.
	HCO/ CO	(Step 2) Check If S/G Secondary Side Is Intact:	
		• Pressure in both S/Gs – STABLE OR RISING	
		• Pressure in both S/Gs – GREATER THAN 110 PSIG	
	CO	(*Step 3) Monitor Intact S/G Levels:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		• Narrow range level – GREATER THAN 7% [25% adverse CNMT]	
		• Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%	NOTE: Adverse Containment is likely to exist at this time.
	HCO	(Step 4) Monitor If Secondary Radiation Levels Are Normal	
		• Steamline radiation monitor (R-31 and R-32)	

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 48 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Request Chem Tech sample S/Gs for activity 	NOTE: The US may contact Chemistry. SIM DRIVER: as Chemistry, acknowledge.
	HCO	(*Step 5) Monitor PRZR PORV Status:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		<ul style="list-style-type: none"> Power to PORV block valves – AVAILABLE 	
		<ul style="list-style-type: none"> PORVs – CLOSED 	
		<ul style="list-style-type: none"> Block valves – AT LEAST ONE OPEN. 	
	HCO	(Step 6) Reset SI.	
	HCO	(Step 7) Reset CI:	
		<ul style="list-style-type: none"> Depress CI reset pushbutton 	
		<ul style="list-style-type: none"> Verify annunciator A-26, CNMT ISOLATION – EXTINGUISHED 	
SIM DRIVER Instructions: Operate Trigger #6 (EDS01A, EDS01B)			
Indications Available: <ul style="list-style-type: none"> Control Room lights dim. A D/G Breaker closes to re-power ESF Busses. 			
	US	Address ATT-8.5 to restore ECCS Equipment (Per CAUTION prior to Step 6.	
ATTACHMENT 8.5, ATTACHMENT LOSS OF OFFSITE POWER			
	HCO/CO	(Step 1) IF offsite power is lost after SI has been reset, THEN the following equipment will auto start if available:	

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 49 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Powered from D/G(s): 	
		<ul style="list-style-type: none"> One CCW pump, due to low header pressure (122 kw) 	NOTE: The B CCW may be running, or is available to start.
		<ul style="list-style-type: none"> Selected SW pumps, on 40 sec timer (257 kw each) 	NOTE: Only the A SW Pump is available to start.
		<ul style="list-style-type: none"> MDAFPs, due to both MFP breakers open (223 kw each) (discharge MOVs also open) 	NOTE: The CO must isolate AFW flow to the S/Gs which has re-initiated.
		<ul style="list-style-type: none"> CS pumps, if previously running 	NOTE: NO CS Pumps are running.
		<ul style="list-style-type: none"> TDAFW pump, if both 11A AND 11B deenergized 	NOTE: The TD AFW Pump is in PULL STOP.
	HCO	(Step 2) Manual start is required for the following equipment:	
		<ul style="list-style-type: none"> SI pumps 	NOTE: B is Running; and the C SI Pump must be re-started.
		<ul style="list-style-type: none"> RHR pumps 	NOTE: B is Running; and the A RHR Pump must be re-started.
		<ul style="list-style-type: none"> CNMT recirc fans (205 kw each) 	NOTE: The A and D Fans will be started.
		<ul style="list-style-type: none"> Charging pumps (75 kw each) 	NOTE: A Charging Pump will be started.
		<ul style="list-style-type: none"> PRZR heaters (400 kw each) 	
		<ul style="list-style-type: none"> SAFW pumps 	

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 50 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
<u>CRITICAL TASK:</u>			
Establish High-Head Injection with at least two SI Pumps after SI has been Reset and following a Loss of Off-Site Power (EOP-Based)			
<p>Safety Significance: Failure to manually start at least two 50% capacity SI pumps under the postulated conditions constitutes mis-operation or incorrect crew performance in which the crew does not prevent degraded emergency core cooling system (ECCS) ... capacity." In this case, at least two SI pumps can be manually started from the control room. Therefore, failure to manually start both SI pumps, which are 50% capacity pumps, also represents a failure by the crew to "demonstrate the ability to effectively direct or manipulate engineered safety feature (ESF) controls that would prevent a significant reduction of safety margin beyond that irreparably introduced by the scenario, and recognize a failure or an incorrect automatic actuation of an ESF system or component. Additionally, under the postulated plant conditions, failure to manually start the SI 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.</p>			
E-1, LOSS OF REACTOR OR SECONDARY COOLANT			
	CO	(Step 8) Verify Adequate SW Flow:	
		<ul style="list-style-type: none"> Check at least two SW pumps RUNNING 	NOTE: Only the A SW Pump is running.
	CO	(Step 8.a RNO) Manually start SW Pumps as power supply permits (257 KW each)	
		<ul style="list-style-type: none"> IF less than two SW pumps running, THEN perform the following: 	
		<ul style="list-style-type: none"> Ensure SW isolation. 	
	US	<ul style="list-style-type: none"> Refer to AP-SW.2, LOSS OF SERVICE WATER. 	
	CO	<ul style="list-style-type: none"> (Step 8 Continued) Dispatch AO to establish normal shutdown alignment (Refer to ATT-17.0, ATTACHMENT SD-1) 	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge.

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 51 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 9) Establish IA to CNMT:	
	CO	<ul style="list-style-type: none"> Verify non-safeguards busses energized from offsite power 	NOTE: Neither Non-Safeguard Bus is being powered from Offsite Power.
		<ul style="list-style-type: none"> Bus 13 normal feed – CLOSED 	
		OR	
		<ul style="list-style-type: none"> Bus 15 normal feed – CLOSED 	
	CO	(Step 9.a RNO) Perform the following:	
		<ul style="list-style-type: none"> Close non-safeguards bus tie breakers: 	
		<ul style="list-style-type: none"> Bus 13 to Bus 14 tie 	
		<ul style="list-style-type: none"> Bus 15 to Bus 16 tie 	
		<ul style="list-style-type: none"> Reset Control Room lighting 	
		<ul style="list-style-type: none"> (Step 9 Continued) Verify turbine building SW isolation valves - OPEN 	
		<ul style="list-style-type: none"> MOV-4613 and MOV-4670 	
		<ul style="list-style-type: none"> MOV-4614 and MOV-4664 	
		<ul style="list-style-type: none"> Verify adequate air compressors – RUNNING 	NOTE: The US may dispatch an EO to start the Diesel Air Compressor. SIM DRIVER: IF so, as EO, acknowledge and use REM-MIS042. After 2 Minutes report that DAC is running.
		<ul style="list-style-type: none"> Check IA supply: 	
		<ul style="list-style-type: none"> Pressure – GREATER THAN 60 PSIG 	
		<ul style="list-style-type: none"> Pressure – STABLE OR RISING 	
		<ul style="list-style-type: none"> Reset both trains of XY relays for IA to CNMT AOV-5392 	
		<ul style="list-style-type: none"> Verify IA to CNMT AOV-5392 – OPEN 	

Op Test No.: N17-1 Scenario # 6 Event # 6, 7 & 8 Page 52 of 54Event Description: **PRZR Steam Space Break/CI fails to automatically/Manually actuate/ Loss of Off-site Power after SI is Reset**

Time	Pos.	Expected Actions/Behavior	Comments
At the discretion of the Lead Examiner terminate the exam.			

TURNOVER SHEET for NRC Exam Scenario #6

<p><u>Core Age: BOL</u></p> <p>0.5% Power, Equilibrium Xe</p> <p>Outside Air Temp = 51°F</p> <p>Water Temp = 50°F</p>	<p><u>Procedure in Use:</u></p> <p>O-1.2</p>	<p><u>ACTIONS/NOTES:</u></p> <ul style="list-style-type: none"> • The plant is at 0.5% power (Maintained between 0.5-10%). • The area has experienced steady light rain for the past 4 hours, with light wind from the South at 5-10 mph, and this is expected to continue throughout the shift. • A plant startup is in progress. • The MSIVs have been opened. One hour of Steam Header Warm-up has been complete, and there are three more hours to go. • The crew will raise and stabilize plant power between 2-3%; until maintenance on the A SI Pump is complete. • The A SI Pump is OOS for breaker swap and is expected to be back in 90 minutes. • The Condensate Booster Pump A is OOS for thrust bearing replacement. • The 60 gpm Letdown Orifice is in service. • The following Alarms are in: <ul style="list-style-type: none"> • J-25, SAFEGUARDS EQUIPMENT LOCKED OFF (A SI Pump is OOS) • Protected equipment IAW OPG Protected Equipment.
<p>Boron: 2089ppm</p> <p>BAST: 17,400 ppm</p> <p>RCS Activity: Normal</p>	<p><u>RCS LEAKAGE:</u> (gpm)</p> <p>Total: .021</p> <p>Identified: .003</p> <p>Unidentified: .018</p>	

TURNOVER SHEET for NRC Exam Scenario #6

<u>Equipment Problems/OOS:</u> See NOTES	<u>Planned Activities for Shift:</u> <ul style="list-style-type: none"> Stabilize power at 2-3% Start a second AFW Pump 	<u>Electrical System Operator Declarations</u> None in effect
---	---	--

A-52.4					
EQUIPMENT	DATE/TIME OOS	LCO	TITLE	EXP DATE	ECD
A SI Pump	Yesterday, 24hrs ago	3.5.2	ECCS - Modes 1, 2 and 3	72 hours	2 hours
A-52.12					
EQUIPMENT	DATE/TIME OOS	TRM /ODCM	TITLE	EXP DATE	ECD
A Condensate Booster Pump	Yesterday				Indefinitely