

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: JPA-081A

2011 NRC Admin A1-a RO & SRO: OPERATIONAL
LEAK RATE TEST (STP-114.002) W/O IPCS LEAK
RATE PROGRAM AVAILABLE

APPROVAL: RJ APPROVAL DATE: 7/30/2011

REV NO: 5

CANDIDATE: _____

EXAMINER: _____

THIS JPM IS APPROVED

TASK:

002-001-02-01

PERFORM REACTOR COOLANT SYSTEM WATER INVENTORY
BALANCE**TASK STANDARD:**

Unidentified leak rate determined to be outside Technical Specification limits.

TERMINATING CUE: Unidentified leakage calculated.**PREFERRED EVALUATION LOCATION****PREFERRED EVALUATION METHOD**

CLASSROOM

PERFORM

REFERENCES:

STP-114.002

OPERATIONAL LEAK TEST

INDEX NO.	K/A NO.		RO	SRO
002000A401	A4.01	RCS leakage calculation program using the computer	3.5	3.8
002000K405	K4.05	Detection of RCS leakage	3.8	4.2
002000A301	A3.01	Reactor coolant leak detection system	3.7	3.9

TOOLS:STP-114.002
CURVE BOOK Figure V-7
CURVE BOOK Figure VI-22
T.S. 3.4.6.2
CALCULATOR**EVALUATION TIME**

20

TIME CRITICAL

No

10CFR55: 41(b)10

TIME START: _____ TIME FINISH: _____ PERFORMANCE TIME: _____

PERFORMANCE RATING:

SAT: _____ UNSAT: _____

EXAMINER: _____

SIGNATURE

DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is operating at 100%. STP-114.002, OPERATIONAL LEAKAGE CALCULATION, is due. The IPCS Leak Rate Program is unavailable; but the IPCS is available for data calculation.

INITIATING CUES: Perform the manual leak rate calculation, using STP-114.002.

INITIAL DATA, TIME START 0345:

T0499A, RCL MEDIAN TAVG = 587.4°F

L0480A, PRESSURIZER LEVEL-LT459 = 60.6%

L0112A, VOLUME CONTROL TANK LEVEL-LT-115 = 57.1%

L0485A, PRESSURIZER RELIEF TANK L-LT470 = 75.0%

L1028, REACTOR COOL DR TNK LEV = 60.0%

FINAL DATA, TIME STOP 0445:

T0499A, RCL MEDIAN TAVG = 587.1°F

L0480A, PRESSURIZER LEVEL-LT459 = 59.4%

L0112A, VOLUME CONTROL TANK LEVEL-LT-115 = 53.5%

L0485A, PRESSURIZER RELIEF TANK L-LT470 = 75.0%

L1028, REACTOR COOL DR TNK LEV = 61.0%

Current Primary-to-Secondary Leakage = 0.0 gpm

Start with step 6.4.b. Another operator will complete 6.4.c

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is operating at 100%. STP-114.002, OPERATIONAL LEAKAGE CALCULATION, is due. The IPCS Leak Rate Program is unavailable; but the IPCS is available for data calculation.

INITIATING CUES: Perform the manual leak rate calculation, using STP-114.002.

INITIAL DATA, TIME START 0345:

T0499A, RCL MEDIAN TAVG = 587.4°F

L0480A, PRESSURIZER LEVEL-LT459 = 60.6%

L0112A, VOLUME CONTROL TANK LEVEL-LT-115 = 57.1%

L0485A, PRESSURIZER RELIEF TANK L-LT470 = 75.0%

L1028, REACTOR COOL DR TNK LEV = 60.0%

FINAL DATA, TIME STOP 0445:

T0499A, RCL MEDIAN TAVG = 587.1°F

L0480A, PRESSURIZER LEVEL-LT459 = 59.4%

L0112A, VOLUME CONTROL TANK LEVEL-LT-115 = 53.5%

L0485A, PRESSURIZER RELIEF TANK L-LT470 = 75.0%

L1028, REACTOR COOL DR TNK LEV = 61.0%

Current Primary-to-Secondary Leakage = 0.0 gpm

Start with step 6.4.b. Another operator will complete 6.4.c

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

STEP: 1

CUES:

CR SEQ

No Yes Inputs data into TEST DATA SHEET

COMMENTS:

STEP STANDARD:

Student inputs data, initial and final

SAT

UNSAT _____

STEP: 2

CUES:

CR SEQ

No Yes Calculates change in test data

COMMENTS:

STEP STANDARD:

Student subtracts initial data from final to determine change in Tavg, Pressurizer level, VCT level, PRT level and RCDT level

SAT _____

UNSAT _____

STEP: 3

CUES:

CR SEQ

No Yes Inputs factor for leakage parameters

COMMENTS:

STEP STANDARD:

Student inputs data from References identified at the bottom of leakrate form.

SAT _____

UNSAT _____

STEP: 4

CUES:

CR SEQ

Yes Yes Calculates TOTAL LEAKAGE

STEP STANDARD:

Student calculates Total leakage per STP-114.002 between 1.5514 and 1.5664 gpm. Tolerance given for reading Figure V-7: 1/2 the smallest increment, which is 5 DEGF. Since TAVG~587F, tolerance allowed for reading 585-590 DEGF, which yields a range of 81.5-84 gallons/1 DEGF change. This, in turn, yields the range of calculated TOTAL Leakage of 1.5514 and 1.5664 gpm.

COMMENTS:

SAT _____

UNSAT _____

STEP: 5

CUES:

CR SEQ

No Yes Calculates IDENTIFIED LEAKAGE

STEP STANDARD:

Student calculates IDENTIFIED LEAKAGE per STP-114.002 between 0 and 0.15 gpm.. Tolerance given to allow using a range of 0 to 9 for using FIGURE VI-22. Considering the tolerance given for calculating TOTAL Leakage, this tolerance will have no bearing on the final calculated value for UNIDENTIFIED Leakage.

COMMENTS:

SAT _____

UNSAT

STEP: 6

CUES:

CR SEQ

Yes Yes Calculates UNIDENTIFIED LEAKAGE

STEP STANDARD:

Student calculates UNIDENTIFIED LEAKAGE per STP-114.002 between 1.4014 and 1.5664 gpm. Tolerance allowed as described in the Step for calculating TOTAL Leakage.

COMMENTS:

SAT _____

UNSAT _____

STEP: 7

CUES:

May prompt operator to report findings.

CR SEQ

Yes Yes Student identifies Tech Spec LCO not satisfied.

STEP STANDARD:

Student reports to CRS that UNIDENTIFIED LEAKAGE is in excess of T.S. 3.4.6.2.

COMMENTS:

SAT _____

UNSAT _____

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPA-081A

DESCRIPTION: 2011 NRC Admin A1-a RO & SRO: OPERATIONAL LEAK RATE TEST (STP-114.002) W/O IPCS LEAK RATE PROGRAM AVAILABLE

IC SET:

INSTRUCTIONS:

COMMENTS:

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: JPA-006B

2011 NRC Admin A1-b RO: CALCULATE
REACTIVITY CONTROL PARAMETERS (Base on
new core at MOL)

APPROVAL: RJ APPROVAL DATE: 7/30/2011

REV NO: 5

CANDIDATE: _____

EXAMINER: _____

THIS JPM IS APPROVED

TASK:

004-006-01-01 PERFORM BORON CHANGE CALCULATIONS

TASK STANDARD:

OAP-100.6, Attachment IA, Reactivity Control Parameters, completed.

TERMINATING CUE: Examinee provides OAP-100.06, Attachment 1A to the Examiner.**PREFERRED EVALUATION LOCATION****PREFERRED EVALUATION METHOD**

CLASSROOM

PERFORM

REFERENCES:

SAP-155

REACTIVITY MANAGEMENT

OAP-100.6

CONTROL ROOM CONDUCT AND CONTROL OF
ACTIVITIES**INDEX NO.****K/A NO.****RO****SRO**

1940012118

2.1.18

Ability to make accurate, clear and
concise logs, records, status boards,
and reports.

3.6

3.8

TOOLS:OAP-100.6 ATTACHMENT IA
CALCULATOR
VC SUMMER CURVE BOOK (sections)
OAP-100.6, Attachment IA Answer Key (Examiner Copy)**EVALUATION TIME**

15

TIME CRITICAL

NO

10CFR55: 45(a)12

TIME START: _____

TIME FINISH: _____

PERFORMANCE TIME: _____

PERFORMANCE RATING:

SAT: _____

UNSAT: _____

EXAMINER: _____

SIGNATURE

DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is operating at 100%, steady-state power. It is Sunday day shift.

INITIATING CUES: The CRS directs the NROATC to complete OAP-100.6, Attachment IA, Reactivity Control Parameters.

PARAMETER DATA:

RCS Boron Concentration = 1050 ppm
BURNUP = 10,000 MWD/MTU
BAT in Service = BAT "A"
BAT "A" Boron Concentration = 7000 ppm
BAT "B" Boron Concentration = 7581 ppm

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is operating at 100%, steady-state power. It is Sunday day shift.

INITIATING CUES: The CRS directs the NROATC to complete OAP-100.6, Attachment IA, Reactivity Control Parameters.

PARAMETER DATA:

RCS Boron Concentration = 1050 ppm

BURNUP = 10,000 MWD/MTU

BAT in Service = BAT "A"

BAT "A" Boron Concentration = 7000 ppm

BAT "B" Boron Concentration = 7581 ppm

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

STEP: 1

CUES:

NOTE: Provide Examinee with blank copy of OAP-100.6, Attachment 1A, Reactivity Control Parameter Data Sheet and Station Curve Book. NOTE: Value obtained from Initiating Cues.

CR SEQ

STEP STANDARD:

No Yes RCS Boron Concentration _____ ppm

Enters 1050 ppm.

COMMENTS:

SAT _____

UNSAT

STEP: 2

CUES:

NOTE: Value obtained from Initiating Cues.

CR SEQ

STEP STANDARD:

No Yes Burnup _____ MWD/MTU

Enters 10,000 MWD/MTU.

COMMENTS:

SAT _____

UNSAT _____

STEP: 3

CUES:

NOTE: Value obtained from Initiating Cues.

CR SEQ

STEP STANDARD:

No Yes (Check BAT in Service)

Checks BAT "A" inservice.
Enters BAT "A" Boron Concentration = 7000 ppm.
Enters BAT "B" Boron Concentration = 7581 ppm.

COMMENTS:

SAT _____

UNSAT _____

STEP: 4

CUES:

NOTE: Value obtained from Table on Fig. II-3.7 for 10,000 MWD/MTU.

CR SEQ

STEP STANDARD:

No Yes Moderator Temperature Coefficient (MTC)
(Fig. II-3.7, HFP) _____ pcm/ppm

Enters (-)16.6 - (-)17.6.

COMMENTS:

SAT _____

UNSAT _____

STEP: 5

CUES:

NOTE: Value obtained from Table on Fig. II-7.2 for 1050 ppm.

CR SEQ

STEP STANDARD:

Yes Yes Differential Boron Worth (DBW) (Fig. II-7.2,
HFP) _____ pcm/ppm

Enters - 6.83 to -6.96 pcm/ppm. (see
key for derivation)

COMMENTS:

SAT _____

UNSAT _____

STEP: 6

CUES:

CR SEQ

STEP STANDARD:

No Yes Gallons of Boric Acid or Reactor Makeup
Water required to change RCS average
temperature by one (1) degree:

Enters 2.385 to 2.577 for ppm Boron
Change/°F. (see key for derivation)

MTC/DBW = _____ / _____ = _____
ppm Boron Change/°F

COMMENTS:

SAT _____

UNSAT _____

STEP: 7

CUES:

CR SEQ

Yes Yes (Fig. III-2) _____ gal. Acid/°F

STEP STANDARD:

Enters 19.79-21.65 for gal. Acid/°F.
(see key for derivation)

COMMENTS:

SAT _____

UNSAT _____

STEP: 8

CUES:

CR SEQ

Yes Yes (Fig. III-3) _____ gal. RMW/°F

STEP STANDARD:

Enters 108.04-128.59 for gal. RMW/°F.
(see key for derivation)

COMMENTS:

SAT

UNSAT _____

STEP: 9

CUES:

NOTE: Values from Fig. II-2: 1717 PD @ 100% RTP - 1549 PD @ 90% RTP = 168

CR SEQ

Yes Yes Power Defect (PD) for 10% power change
(100% to 90%) (Fig. II-2).

STEP STANDARD:

Enters 168 Δ Power Defect, ppm.

_____ PD @ 100% RTP - _____ PD @ 90%
= _____ Δ Power Defect, ppm

COMMENTS:

SAT _____

UNSAT _____

STEP: 10

CUES:

CR SEQ

Yes Yes Gallons of Boric Acid only to reduce reactor power from 100% to 90%:

Δ Power Defect/DBW = _____ / _____ = _____ ppm Boron

STEP STANDARD:

Enters 24.1 to 24.6 ppm Boron. (see key for derivation)

COMMENTS:

SAT _____

UNSAT _____

STEP: 11

CUES:

CR SEQ

Yes Yes (Figure III-2) _____ gal. Boric Acid/10% RTP

STEP STANDARD:

Enters 200.27-207.64 for gal. Boric Acid/10% RTP. (see key for derivation)

COMMENTS:

SAT

UNSAT _____

STEP: 12

CUES:

NOTE: Examinee determines value is taken from Step 9.

CR SEQ

No Yes Final rod height using rods only to reduce reactor power from 100% to 90%:
 Δ Power Defect = Integrated Rod Worth (IRW) = _____ pcm

STEP STANDARD:

Enters 168 pcm.

COMMENTS:

SAT _____

UNSAT _____

STEP: 13

CUES:

CR SEQ

No Yes (Fig. II-10) _____ final rod height
Bank D

STEP STANDARD:

Enters 178 to 185 final rod height Bank D. (see key for derivation)

COMMENTS:

SAT _____

UNSAT _____

STEP: 14

CUES:

CR SEQ

Yes Yes For a 100% to 90% load reduction:
Use _____ gallons boric acid (1/2 the
gallons calculated above), and expect the
rods to be at approximately _____ steps on
bank D (Fig. II.10 series, 1/2 the IRW, NOT
1/2 the steps).

STEP STANDARD:

Enters 100 - 104 for gallons boric acid
and 193 - 200 for steps on bank D.

COMMENTS:

SAT _____

UNSAT _____

STEP: 15

CUES:

CR SEQ

No Yes Copies data from page 1 to page 2.

STEP STANDARD:

Right values are transposed from page 1
and placed on page 2.

COMMENTS:

SAT _____

UNSAT _____

STEP: 16

CUES:

CR SEQ

Yes No FCV 113 A&B, pot setting for current RCS
boron concentration.

STEP STANDARD:

Enters 4.50.

COMMENTS:

SAT _____

UNSAT _____

STEP: 17

CUES:

CR SEQ

No Yes Expected Boric Acid flowrate for VCT
makeup _____

STEP STANDARD:

Enters 18.

COMMENTS:

SAT

UNSAT _____

STEP: 18

CUES:

CR SEQ

No Yes Expected Boric Acid total gallons on an Auto
Makeup based on current BAT in service:

STEP STANDARD:

Enters 40-41.

COMMENTS:

SAT _____

UNSAT _____

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPA-006B

DESCRIPTION: 2011 NRC Admin A1-b RO: CALCULATE REACTIVITY CONTROL
PARAMETERS (Base on new core at MOL)

IC SET:

INSTRUCTIONS:

COMMENTS:

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: JPA-009

2011 NRC Admin A1-b SRO: DETERMINE SHIFT
MANNING REQUIREMENTS

APPROVAL: RJ APPROVAL DATE: 7/30/2011

REV NO: 5

CANDIDATE: _____

EXAMINER: _____

SRO ONLY

THIS JPM IS APPROVED

TASK:

341-050-01-03 SS RELIEF CHECKLIST REVIEW (SAP-200)

TASK STANDARD:

Determines personnel to hold over that will meet the full crew complement and completes FEP MANNING SHEET.

TERMINATING CUE: Completes FEP MANNING SHEET.**PREFERRED EVALUATION LOCATION****PREFERRED EVALUATION METHOD**

CLASSROOM

PERFORM

REFERENCES:

SAP-152

FATIGUE MANAGEMENT AND WORK HOUR LIMITS

OAP-100.2

OPERATIONS PERSONNEL EXPECTATIONS AND RESPONSIBILITIES

SAP-200

CONDUCT OF OPERATIONS

INDEX NO.**K/A NO.****RO****SRO**

1940012103

2.1.3

Knowledge of shift or short-term relief turnover practices.

3.7

3.9

TOOLS:

OAP-100.2, Operating Personnel Expectations and Responsibilities
SAP-152, Fatigue Management and Work Hour Limits
SAP-200, Conduct of Operations

EVALUATION TIME

15

TIME CRITICAL

NO

10CFR55: 41b10

TIME START: _____

TIME FINISH: _____

PERFORMANCE TIME: _____

PERFORMANCE RATING:

SAT: _____ UNSAT: _____

EXAMINER: _____

SIGNATURE

DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: Plant is at 100% power. Shift turnover is being conducted to start Thursday 08/25 Night Shift and the STS requests assistance determining what to do because B. Earle, K. Raymond, and M. O'Connell have been admitted to the hospital and will not be able to work the upcoming shift.

No extra personnel are available on either shift. The entire Admin shift is on a benchmarking trip at Diablo Canyon.

INITIATING CUES: As the oncoming Shift Supervisor review the shift manning for the next four hours. Determine what actions, if any, must be taken to meet the normal full crew complement and complete OAP-100.6, Attachment VIIA, FEP MANNING SHEET.

No extensions/deviations are to be granted. Operations management is coming in within 4 hours to assist with a long term manning plan.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

This page left blank

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: Plant is at 100% power. Shift turnover is being conducted to start Thursday 08/25 Night Shift and the STS requests assistance determining what to do because B. Earle, K. Raymond, and M. O'Connell have been admitted to the hospital and will not be able to work the upcoming shift.

No extra personnel are available on either shift. The entire Admin shift is on a benchmarking trip at Diablo Canyon.

INITIATING CUES: As the oncoming Shift Supervisor review the shift manning for the next four hours. Determine what actions, if any, must be taken to meet the normal full crew complement and complete OAP-100.6, Attachment VIIA, FEP MANNING SHEET.

No extensions/deviations are to be granted. Operations management is coming in within 4 hours to assist with a long term manning plan.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

STEP: 1

CUES:

If asked to call in another building operator ask what their qualifications must be and then respond that no operators are available for call in within the next 3 hours.

CR SEQ

Yes Yes Review the shift manning to determine actions for normal full complement and completes FEP MANNING SHEET.

STEP STANDARD:

Determine that an ABUL, ABLL, and CBAO is needed. For the first 4 hrs, the following is required. C. Haley must be kept to be the control building operator. D. Stewart must be kept to be the ABLL. Either S. Williams or E. Cary may be held over to be ABUL.

See key for how FEP MANNING SHEET must be completed.

COMMENTS:

SAT _____

UNSAT

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPA-009

DESCRIPTION: 2011 NRC Admin A1-b SRO: DETERMINE SHIFT MANNING REQUIREMENTS

IC SET:

INSTRUCTIONS:

COMMENTS:

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: JPA-025

2011 NRC A2 RO: TAGOUT "B" MDEFP

APPROVAL: RJ APPROVAL DATE: 7/30/2011

REV NO: 3

CANDIDATE: _____

EXAMINER: _____

THIS JPM IS APPROVED

TASK:

119-012-03-01 CONDUCT EQUIPMENT TAGOUTS (EQUIPMENT CLEARANCE AND SWITCHING)

TASK STANDARD:

'B' MDEFP is tagged out in accordance with SAP-201, EQUIPMENT TAGGING AND LOCKOUT-TAGOUT. The suction and discharge valves are tagged closed, pump casing drains and vents are tagged open, the motor is tagged out, and the correct sequence is identified for tagging.

One of the following two (2) valves should be tagged open to provide a vent path for draining (either one or both are acceptable).

1. XVT11006, MTR DR EF PUMP B SUCT HDR TEST ISOL VLV
2. XVT11007, MOTOR DRIVEN EF PUMP B VENT VALVE

TERMINATING CUE:***PREFERRED EVALUATION LOCATION******PREFERRED EVALUATION METHOD***

CLASSROOM

PERFORM

REFERENCES:

SAP-201

DANGER TAGGING

<i>INDEX NO.</i>	<i>K/A NO.</i>		<i>RO</i>	<i>SRO</i>
1940012213	2.2.13	Knowledge of tagging and clearance procedures.	4.1	4.3

TOOLS:

SAP-201 and OAP-100.5 (or computer access)
SAP-201, ATTACHMENT VIC (4 copies)
SAP-201, ATTACHMENT VIA (partially completed)
D-302-085, EMERGENCY FEEDWATER
ELECTRICAL FEEDER LIST FOR XSW1DB AND XMC1DB2X
SOP-211, ATTACHMENTS I - IV (or computer access)
Highlighters for each student (pink, blue, yellow, green).

EVALUATION TIME 45 ***TIME CRITICAL*** NO ***10CFR55:*** 45.13

TIME START: TIME FINISH: PERFORMANCE TIME:

PERFORMANCE RATING:

SAT: UNSAT:

EXAMINER:

SIGNATURE

DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is in MODE 1. Mechanical maintenance has requested a tagout to replace pump seals on 'B' MDEFW pump. This is emergent work, and no isolation points have been recommended at this time.

INITIATING CUES: The SS, Todd Price, directs you to prepare a tagout for the 'B' MDEFW pump. Complete SAP-201, Attachment VIC. Only tagged positions and sequence are required at this time. You do not have to fill out restoration positions, individual danger tags or Locked Valve Tracking sheets.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is in MODE 1. Mechanical maintenance has requested a tagout to replace pump seals on 'B' MDEFW pump. This is emergent work, and no isolation points have been recommended at this time.

INITIATING CUES: The SS, Todd Price, directs you to prepare a tagout for the 'B' MDEFW pump. Complete SAP-201, Attachment VIC. Only tagged positions and sequence are required at this time. You do not have to fill out restoration positions, individual danger tags or Locked Valve Tracking sheets.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

STEP: 1

CUES:

Tag number is not critical, only the sequence is.

CR SEQ

No No TAG - Enter the sequential tag number.

STEP STANDARD:

See completed Attachment VIC.

COMMENTS:

SAT

UNSAT _____

STEP: 2

CUES:

CR SEQ

No No ISSUED TO - Check blocks for which discipline each component is tagged.

STEP STANDARD:

See completed Attachment VIC.

COMMENTS:

SAT _____

UNSAT _____

STEP: 3

CUES:

CR SEQ

No No HOLD TAG INST - Enter a check mark if a Hold Tag is to be placed on a control panel component.

STEP STANDARD:

See completed Attachment VIC.

COMMENTS:

SAT _____

UNSAT

STEP: 4

CUES:

CR SEQ

Yes No COMPONENT I.D. - Enter the complete
CHAMPS identification number of the
component being tagged.

STEP STANDARD:

See completed Attachment VIC.

COMMENTS:

SAT _____

UNSAT _____

STEP: 5

CUES:

CR SEQ

No Yes PLANT LOC - Enter the specific plant
location of the component being tagged.

STEP STANDARD:

See completed Attachment VIC.

COMMENTS:

SAT _____

UNSAT _____

STEP: 6

CUES:

CR SEQ

Yes Yes REQ'D TAG POSIT - Enter the position in
which the component is to be tagged.

STEP STANDARD:

See completed Attachment VIC.

COMMENTS:

SAT _____

UNSAT _____

STEP: 7

CUES:

CR SEQ

Yes Yes INST SEQ - Enter sequence that tags are to be installed.

STEP STANDARD:

See completed Attachment VIC. Components must be sequenced as notated on attachment or in an equivalent sequence. Components of a smaller sequence number on the key must be listed before components of a larger sequence number.

COMMENTS:

SAT _____

UNSAT _____

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPA-025

DESCRIPTION: 2011 NRC A2 RO: TAGOUT "B" MDEFP

IC SET:

INSTRUCTIONS:

COMMENTS:

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: JPA-025A

2011 NRC Admin A2 SRO: REVIEW TAGOUT FOR
"B" MDEFP

APPROVAL: RJ APPROVAL DATE: 7/30/2011

REV NO: 5

CANDIDATE: _____

EXAMINER: _____

THIS JPM IS APPROVED

TASK:

342-005-03-02

AUTHORIZE HANGING OF TAGS ON PLANT EQUIPMENT

TASK STANDARD:

'B' MDEFP is tagged out in accordance with SAP-201, EQUIPMENT TAGGING AND LOCKOUT-TAGOUT. The suction and discharge valves are tagged closed, pump casing drains and vents are tagged open, the motor is tagged out, and the correct sequence is identified for tagging. Identifies that tagout cannot be authorized as written.

TERMINATING CUE:**PREFERRED EVALUATION LOCATION**

SIMULATOR

PREFERRED EVALUATION METHOD

PERFORM

REFERENCES:

SAP-201

DANGER TAGGING

INDEX NO.	K/A NO.		RO	SRO
1940012213	2.2.13	Knowledge of tagging and clearance procedures.	4.1	4.3

TOOLS:

SAP-201, OAP-100.5, OAP-102.1 (or computer access)
SAP-201, ATTACHMENT VIC (Completed with errors)
OAP-102.1 ATTACHMENT I EQUIPMENT LINEUP REQUEST (Completed)
OAP-102.1, ATTACHMENT VI SCHEDULING TAGOUT PACKAGE CHECKLIST (with signature stamp, first SRO review initialed)
D-302-085, EMERGENCY FEEDWATER (NUCLEAR), (Boundaries indicated with error)
ELECTRICAL FEEDER LIST FOR 1DB AND 1DB2X
SOP-211, ATTACHMENTS I - IV

EVALUATION TIME 30 **TIME CRITICAL** NO **10CFR55:** 45.13

TIME START: _____ TIME FINISH: _____ PERFORMANCE TIME: _____

PERFORMANCE RATING:

SAT: _____ UNSAT: _____

EXAMINER: _____

SIGNATURE

DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is in Mode 1. B1 Maintenance Work Week. Emergent work for pump seal replacement on 'B' Motor-Driven EFW Pump is to be performed. A work package has been completed. LOTO is unavailable.

INITIATING CUES: As an SRO, you are to review the work package prior to allowing the tagout to be hung and the work to begin. Positions for restoration are not required at this time. Limit your review to the Tagout Preparation Section of OAP-102.1, Attachment VI, SCHEDULING TAGOUT PACKAGE CHECKLIST. Write down all discrepancies noted, if any, and determine if tagout may be authorized as written.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is in Mode 1. B1 Maintenance Work Week. Emergent work for pump seal replacement on 'B' Motor-Driven EFW Pump is to be performed. A work package has been completed. LOTO is unavailable.

INITIATING CUES: As an SRO, you are to review the work package prior to allowing the tagout to be hung and the work to begin. Positions for restoration are not required at this time. Limit your review to the Tagout Preparation Section of OAP-102.1, Attachment VI, SCHEDULING TAGOUT PACKAGE CHECKLIST. Write down all discrepancies noted, if any, and determine if tagout may be authorized as written.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

STEP: 1

CUES:

If required during this JPM, remind examinee to limit review to the preparation section of OAP-102.1, Attachment VI.

CR SEQ

No Yes Checks correct train work week.

STEP STANDARD:

Notes that B1 train work week is indicated.

COMMENTS:

SAT

UNSAT _____

STEP: 2

CUES:

CR SEQ

Yes Yes Scope of all work requiring tags within the tagout boundary.

STEP STANDARD:

Must note the following errors in the specified isolation during this review:

- XVT01028B missing from boundary
- XVG1001A incorrectly specified, should be XVG1001B

May note the following errors in the specified isolation during this review (NOT critical):

- XVT11006 vent valve position specified as CLOSED incorrectly

COMMENTS:

SAT

UNSAT _____

STEP: 3

CUES:

CR SEQ

Yes Yes All power sources are tagged as required per job scope

STEP STANDARD:

Must note the following error:

- XMC1DB2X 03 AD (isolation of power to XVG1001B MOV) is missing.

COMMENTS:

SAT _____

UNSAT _____

STEP: 4

CUES:

CR SEQ

No Yes Install sequence logical

STEP STANDARD:

Notes that install sequence meets requirements.

COMMENTS:

SAT _____

UNSAT _____

STEP: 5

CUES:

CR SEQ

No Yes Are hold tags needed and identified for switches, MCB gages, or status lights?

STEP STANDARD:

Notes pump breaker indicates HOLD tag required.

COMMENTS:

SAT _____

UNSAT _____

STEP: 6

CUES:

CR SEQ

No Yes Restoration position in a Clear Tag Enclosure has been verified per SOP.

STEP STANDARD:

Not required

COMMENTS:

SAT _____

UNSAT _____

STEP: 7

CUES:

If required, remind examinee that this is not required for this review.

CR SEQ

STEP STANDARD:

No Yes Component worked has a "NO TAG" assigned to it and sequence in the Clear Tag Enclosure.

Not required

COMMENTS:

SAT _____

UNSAT _____

STEP: 8

CUES:

Remind student that since the package has to be done manually the conflict check provided by the computer system is not available.

CR SEQ

STEP STANDARD:

No No Conflict check performed and warning flags are evaluated and understood?

N/A

COMMENTS:

SAT _____

UNSAT _____

STEP: 9

CUES:

CR SEQ

STEP STANDARD:

No Yes Electrical Feeder list review and included, if necessary.

Determines that electrical feeder list is included in package.

COMMENTS:

SAT _____

UNSAT _____

STEP: 10

CUES:

CR SEQ

No Yes System/ Electrical drawing utilized are marked up with tagout boundaries and tagout index#

STEP STANDARD:

Notes that drawing is correctly marked.

COMMENTS:

SAT _____

UNSAT _____

STEP: 11

CUES:

CR SEQ

No Yes Vent and Drain information Sheet included if necessary?

STEP STANDARD:

Notes Vent and Drain Information sheet included.

COMMENTS:

SAT _____

UNSAT

STEP: 12

CUES:

CR SEQ

Yes Yes All errors found

STEP STANDARD:

Must note the following errors in the specified isolation during this review:

- XMC1DB2X 03 AD (isolation of power to XVG1001B MOV) is missing.
- XVT01028B missing
- XVG1001A incorrectly specified, should be XVG1001B

May note the following errors in the specified isolation during this review:(NOT critical):

- XVT11006 vent valve position CLOSED incorrectly

Determines that tagout cannot be authorized as written.

COMMENTS:

SAT _____

UNSAT _____

STEP: 13

CUES:

CR SEQ

No Yes Work Document numbers on WPO?

STEP STANDARD:

Determines that WPO is not required with only one work request for the tagout

COMMENTS:

SAT _____

UNSAT

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPA-025A

DESCRIPTION: 2011 NRC Admin A2 SRO: REVIEW TAGOUT FOR "B" MDEFP

IC SET:

INSTRUCTIONS:

COMMENTS:

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: **JPA-083A(R
1)**

2011 NRC Admin A3 RO & SRO: APPLY FACILITY
ALARA PRINCIPLES TO A SPECIFIC TASK AND
DETERMINE OVERALL DOSE

APPROVAL: RJ ***APPROVAL DATE:*** 8/11/2011

REV NO: 2

CANDIDATE: _____

EXAMINER: _____

THIS JPM IS APPROVED

TASK:

000-061-05-01 RESPOND TO AREA RADIATION MONITORING SYSTEM ALARMS

TASK STANDARD:

All critical tasks evaluated as SAT.

TERMINATING CUE: All options have been prioritized and provided to the Examiner.***PREFERRED EVALUATION LOCATION******PREFERRED EVALUATION METHOD***

CLASSROOM

PERFORM

REFERENCES:

<i>INDEX NO.</i>	<i>K/A NO.</i>		<i>RO</i>	<i>SRO</i>
1940012312	2.3.12	Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.	3.2	3.7

TOOLS: HPP-0153, HPP-0155
Calculator***EVALUATION TIME*** 15 ***TIME CRITICAL*** NO ***10CFR55:*** 45.B.10

TIME START: _____ TIME FINISH: _____ PERFORMANCE TIME: _____

PERFORMANCE RATING: SAT: _____ UNSAT: _____**EXAMINER:** __________
SIGNATURE_____
DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: A hydrogen explosion in the waste gas system has resulted in a radioactive leak of a gas decay tank. The operating crew is performing the actions of ARP-019 XCP-644 Point 2-1, GAS DECAY TK AREA RM-G10 HI RAD. Several manual valves must be manipulated to isolate the leak. The general area radiation level where the work will be performed is 1000 mR/hour. Airborne iodine activity is estimated at 30 DAC (assumed to be I-131 only)
There are two options for performing the work:
- One person without a respirator = 30 minutes or
- One person with a respirator will take 10% longer (33 min).

INITIATING CUES: You have been assigned to calculate the expected dose for the two options and prioritize them according to the VC Summer ALARA philosophy. For the purposes of the JPM, assume that no dose is received in transit.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: A hydrogen explosion in the waste gas system has resulted in a radioactive leak of a gas decay tank. The operating crew is performing the actions of ARP-019 XCP-644 Point 2-1, GAS DECAY TK AREA RM-G10 HI RAD. Several manual valves must be manipulated to isolate the leak. The general area radiation level where the work will be performed is 1000 mR/hour. Airborne iodine activity is estimated at 30 DAC (assumed to be I-131 only)
There are two options for performing the work:

- One person without a respirator = 30 minutes or
- One person with a respirator will take 10% longer (33 min).

INITIATING CUES: You have been assigned to calculate the expected dose for the two options and prioritize them according to the VC Summer ALARA philosophy. For the purposes of the JPM, assume that no dose is received in transit.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

STEP: 1

CUES:

CR SEQ

No Yes Calculate dose for each option.

STEP STANDARD:

Reviews conditions.
May refer to facility/corporate
procedures for respirator factors and
DAC conversion.

COMMENTS:

SAT _____

UNSAT

STEP: 2

CUES:

Acceptable range is 537 to 538 mR.

CR SEQ

Yes Yes Calculate dose for each option.
- One person without respirator.

STEP STANDARD:

(1000 mr/hr) (1 hr/60 minutes) (30
minutes) + (30 DAC) (30 minutes) (1
hr/60 minutes) (2.5 mr/DAC-hr) = 537.5
mR.

COMMENTS:

SAT _____

UNSAT _____

STEP: 3

CUES:

The candidate may not use the protection factor because the difference is negligible. Acceptable
range is 550 - 551 mR.

CR SEQ

Yes Yes Calculate dose for each option.
- One person with a respirator.

STEP STANDARD:

(1000 mr/hr) (1 hr/60 minutes) (30
minutes) (1.1)+ (30 DAC) (30 minutes)
(1 hr/60 minutes) (2.5 mr/DAC-hr) (1.1) /
(1000 protection factor)= 550.04125 mR

COMMENTS:

SAT _____

UNSAT _____

STEP: 4

CUES:

CR SEQ

Yes Yes Prioritize options IAW the lowest total dose.

STEP STANDARD:

1. One person without respirator.
2. One person with a respirator.

COMMENTS:

SAT _____

UNSAT _____

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPA-083A(R 1)

DESCRIPTION: 2011 NRC Admin A3 RO & SRO: APPLY FACILITY ALARA PRINCIPLES TO A SPECIFIC TASK AND DETERMINE OVERALL DOSE

IC SET: N/A

INSTRUCTIONS:

COMMENTS:

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: JPA-020

2011 NRC Admin A4 SRO: CLASSIFY EMERGENCY
PLAN EVENT

APPROVAL: RJ APPROVAL DATE: 7/30/2011

REV NO: 7

CANDIDATE: _____

EXAMINER: _____

SRO ONLY

THIS JPM IS APPROVED

TIME CRITICAL JPM

TASK:

344-019-03-02

CLASSIFY EMERGENCY EVENTS REQUIRING EMERGENCY PLAN
IMPLEMENTATION***TASK STANDARD:***

Event properly classified as a SITE AREA EMERGENCY due to FS 1.1 Loss or potential loss of any two barriers (Table F-1). This is a time critical JPM and the declaration must be made within 15 minutes after the emergency condition exists and the NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM (ENF) form must be completed within 15 minutes of the declaration.

TERMINATING CUE: Classification has been made and NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM (ENF) form has been completed.

PREFERRED EVALUATION LOCATION***PREFERRED EVALUATION METHOD***

CLASSROOM

PERFORM

REFERENCES:

EPP-001

ACTIVATION AND IMPLEMENTATION OF THE EN

INDEX NO.***K/A NO.******RO******SRO***

1940012106

2.1.6

Ability to manage the control room crew
during plant transients.

3.8

4.8

TOOLS:

EPP-001- Attachment I.
EPP-001 Full.
EPP-002 Full
Access to a computer for other potential references. Technical
Specifications, EPP-108 act.

EVALUATION TIME

30

TIME CRITICAL

YES

10CFR55:

45(a)11

TIME START: _____

TIME FINISH: _____

PERFORMANCE TIME: _____

PERFORMANCE RATING:

SAT: _____

UNSAT: _____

EXAMINER: _____

SIGNATURE

DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS:

INITIAL CONDITION:

THIS IS A DRILL.

The plant was initially at 100% power, when a plant S/D was commenced per AOP-112.2, STEAM GENERATOR TUBE LEAK NOT REQUIRING SI, for a significant S/G Tube Leak. The reactor trip breakers were opened 10 minutes ago.

The 'A' steam generator has been isolated in accordance with AOP-112.2 and the crew is performing step 22 to determine the target temperature for cooldown.

Chemistry was directed to sample the RCS and S/Gs for activity. Results are as follows:

RCS - 417 μ Ci/gm DE I-131
S/G 'A': Tube leak indicated.
S/G 'B': No indication of tube leak.
S/G 'C': No indication of tube leak.

Current steam generator pressures:
S/G 'A': 850 psig and lowering.
S/G 'B': 1090 psig and stable.
S/G 'C': 1090 psig and stable.

Current steamline power relief indicators:
PCV-2000, A SD/PWR RELIEF, green light lit red light dim.
PCV-2010, B SD/PWR RELIEF, green light lit red light dim.
PCV-2020, C SD/PWR RELIEF, green light lit red light dim.

A security officer reports that steam is issuing from the Auxiliary Building (AB) roof.

RB pressure is 0.5 psig and stable.

RCS conditions are stable and net charging indicates 70 gpm.

Meteorological data is not available.

THIS IS A DRILL.

- INITIATING CUES:***
1. Classify the plant event and write down your declaration on this sheet. Notify an examiner when this is done. You will be provided a package from the examiner at that time.
 2. Complete a NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM (ENF) for the plant event.

THIS IS A TIME CRITICAL JPM!

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

This page is left blank.

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION:

THIS IS A DRILL.

The plant was initially at 100% power, when a plant S/D was commenced per AOP-112.2, STEAM GENERATOR TUBE LEAK NOT REQUIRING SI, for a significant S/G Tube Leak. The reactor trip breakers were opened 10 minutes ago.

The 'A' steam generator has been isolated in accordance with AOP-112.2 and the crew is performing step 22 to determine the target temperature for cooldown.

Chemistry was directed to sample the RCS and S/Gs for activity. Results are as follows:

RCS - 417 $\mu\text{Ci/gm}$ DE I-131
S/G 'A': Tube leak indicated.
S/G 'B': No indication of tube leak.
S/G 'C': No indication of tube leak.

Current steam generator pressures:
S/G 'A': 850 psig and lowering.
S/G 'B': 1090 psig and stable.
S/G 'C': 1090 psig and stable.

Current steamline power relief indicators:
PCV-2000, A SD/PWR RELIEF, green light lit red light dim.
PCV-2010, B SD/PWR RELIEF, green light lit red light dim.
PCV-2020, C SD/PWR RELIEF, green light lit red light dim.

A security officer reports that steam is issuing from the Auxiliary Building (AB) roof.

RB pressure is 0.5 psig and stable.

RCS conditions are stable and net charging indicates 70 gpm.

Meteorological data is not available.

THIS IS A DRILL.

- INITIATING CUES:***
1. Classify the plant event and write down your declaration on this sheet. Notify an examiner when this is done. You will be provided a package from the examiner at that time.
 2. Complete a NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM (ENF) for the plant event.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

STEP: 1

CUES:

If student does not explain basis for the classification, the evaluator must ask him to describe the basis. If the basis is not justified, this constitutes failure, even if the classification is correct.

When student has classified the event, then provide the student with handout materials (Full EPP-001 and EPP-002).

CR SEQ

Yes Yes Evaluate plant conditions and classify event per EPP-001.

STEP STANDARD:

Classifies event, per EPP-001 as a SITE AREA EMERGENCY due to FS 1.1:
Loss or potential loss of any two barriers (Table F-1)
Detection Method:
E.4- Loss of Fuel Clad Barrier based on Dose equivalent I-131 coolant activity >300 microCi/gm.
No loss of Reactor Coolant System Barrier since using AOP-112.2 to combat accident (still on normal charging and SI not required).
D.4 Loss of Containment Barrier based on Primary-to-secondary leakrate>10 gpm AND Unisolable steam release from affected SG to the environment.

COMMENTS:

SAT _____

UNSAT _____

STEP: 2

CUES:

CR SEQ

No Yes Completes line 1 of NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM (ENF).

STEP STANDARD:

Checks "Drill" and writes message number as "1".

COMMENTS:

SAT _____

UNSAT _____

STEP: 3

CUES:

CR SEQ

Yes Yes Completes line 2 of ENF.

COMMENTS:

STEP STANDARD:

Checks "Initial".

SAT _____

UNSAT _____

STEP: 4

CUES:

CR SEQ

Yes Yes Completes line 4 of ENF.

COMMENTS:

STEP STANDARD:

Checks "Site Area Emergency" writes in "FS 1.1" and "Loss or potential loss of any two barriers" or the equivalent.

SAT _____

UNSAT _____

STEP: 5

CUES:

CR SEQ

Yes Yes Completes line 5 of ENF.

COMMENTS:

STEP STANDARD:

Checks "Is Occurring"

SAT

UNSAT _____

STEP: 6

CUES:

This step is not critical.

CR SEQ

No Yes Completes line 7.

COMMENTS:

STEP STANDARD:

Checks "Above normal operating limits"

SAT _____

UNSAT

STEP: 7

CUES:

This step is not critical.

CR SEQ

No Yes Completes line 8.

STEP STANDARD:

Checks "Stable"

COMMENTS:

SAT _____

UNSAT _____

STEP: 8

CUES:

CR SEQ

Yes Yes Completes line 10

STEP STANDARD:

Checks "Declaration" and includes declaration time.

COMMENTS:

SAT

UNSAT _____

STEP: 9

CUES:

CR SEQ

Yes Yes Completes line 12.

STEP STANDARD:

Writes % Power as 0 and indicates time of trip (10 minutes prior to start of JPM).

COMMENTS:

SAT _____

UNSAT _____

STEP: 10

CUES:

This step is not critical.

CR SEQ

No Yes Completes line 13.

STEP STANDARD:

Writes summary of occurrence at the plant. To include failed fuel, a steam generator tube leak, and an uncontrolled release of steam from the steam generator with a tube leak.

COMMENTS:

SAT _____

UNSAT _____

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPA-020

DESCRIPTION: 2011 NRC Admin A4 SRO: CLASSIFY EMERGENCY PLAN EVENT

IC SET:

INSTRUCTIONS:

COMMENTS:

Facility:	VC SUMMER	Scenario No.:1	Op Test No.: 2011 NRC
Examiners:	_____	Operators:	CRS
	_____		RO
	_____		BOP
Initial Conditions: <ul style="list-style-type: none"> • IC-10, 100% Power, MOL (IC-301 or 305 for 2011) • "B" EDG is OOS to clean the lube oil strainer • "B" RB spray pump is out of service for bearing replacement • National Weather Service has issued a severe weather alert due to a line of heavy thunderstorms moving into the area 			
Turnover:	<ul style="list-style-type: none"> • Maintain current conditions 		
Critical Task:	<ul style="list-style-type: none"> • Transfer rods to MANUAL before going below Rod Insertion Limit • Establish feed to Steam Generators or initiate feed and bleed prior to SG dryout as indicated by a loss of subcooling (alarm at 0°F) 		
Event No.	Malf. No.	Event Type*	Event Description
1.	NIS007G	I-RO, N-BOP TS- CRS	Power Range upper detector NI-44A fails high RO1, BOP1
2.	FWM009A	C- BOP, CRS	HP heater tube leak BOP2
3.	N/A	R-RO	Reduce power to isolate HP FW heater string
4.	EPS018A&B and EPS-006A IND ES071 & 073=>0	C – RO,BOP TS-CRS	115KV offsite power is lost, the "A" EDG rolls but trips: 1DA is deenergized. RO Must start "B" train CCW pump and charging pump. BOP will start restoration of 1DA. RO2
5.	N/A	N-RO, CRS	Restore letdown
6.	PCS013B	M-ALL	Inadvertent FW Isolation Signal, Train B
7.	FWM003B	C- BOP, CRS	"B" MDEFW pump fails to start
8.	VLV-MS001F	C- BOP, CRS	FCV-2030 fails as is; TDEFW Pump fails to start, no EFW available
			Terminate when Main Feedwater is restored OR Feed and Bleed has been initiated
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

VC Summer NRC Scenario #1 Summary

The crew will assume the watch having pre-briefed on the Initial Conditions (stable full power, middle of life, A1 Maintenance week). The plan for this shift is to maintain present conditions and continue work on the “B” EDG and “B” RB Spray Pump.

Power Range N44 upper detector A fails high as indicated by channel and delta I deviations. Power mismatch will result in inward rod motion. The RO will place control rods in MANUAL to avoid exceeding the Rod Insertion Limit and the CRS will enter AOP-401.10 POWER RANGE CHANNEL FAILURE to bypass the failed channel and identify Tech Spec Table 3.3-1 items 2,3,19 which requires actions 2 and 7 required monitoring of Quadrant Power Tilt Ratio. The BOP will take the channel out of service at the NIS panels.

When control room actions for the failed NI are complete, the Lead Evaluator can cue a tube leak in HP Feedwater Heater 1A. The leak is large enough to cause automatic shell-side isolation of the “A” string of HP feedwater heaters by the DCS. The crew will enter AOP-204.1, LOSS OF HIGH PRESSURE FEEDWATER HEATERS, and reduce power to 925MWe (approx. 92% RTP) at 3% per minute. The BOP will start the standby condensate pump to compensate for the FW heater dumping to the condenser (Deaerator Storage Tank level will drop, which would eventually lead to loss of all Feedwater pumps.)

When isolation of the tube side of the leaking HP heater string is directed, the Lead Evaluator can cue the booth operator to insert the loss of 115KV power. Due to the unavailability of the “A” DG, power is lost to 1DA (“A” train ESF power) and all running essential equipment. The crew will enter AOP-304.1 LOSS OF BUS 1DA WITH THE DIESEL NOT AVAILABLE. CRS will evaluate Technical Specification 3.8.1.1.a for availability of Offsite Sources. Restoration of 1DA from the Emergency Aux Transformer (230KV) will be **prevented** by an inoperable alternate incoming breaker (**this forces more observable actions in EOP-15.0/H.1**).

When the evaluation of the loss of “A” Train ESF power is complete and Component Cooling Water and Charging restored, the Lead Evaluator can cue the booth operator to insert the Inadvertent Feedwater Isolation Signal. This isolates Main Feedwater with no EFW pumps available. Crew will progress through EOP-1.0 REACTOR TRIP/SAFETY INJECTION ACTUATION and EOP-15.0 RESPONSE TO LOSS OF SECONDARY HEAT SINK . SG heat sink will then be restored **by** bypassing the FWIS and using the Feedwater Booster Pumps. The scenario can be terminated either 1) after feed is restored or 2) after PORVs are closed and SI flow reduced at Lead Evaluator discretion. Failure to restore heat removal will be indicated by an RCS heatup to saturation (alarm at zero degrees subcooled, simulator has no instrument error inserted) which is when a steam void starts to form in the Reactor Vessel, threatening eventual core uncover below 51% narrow range RVLIS.

VCS 2011 NRC Scenario 1 Simulator Setup

Initial Conditions:

- IC-10, 100% power, MOL.
- Reactivity Management Plan/Turnover sheet for IC
- “B” EDG and “B” RB Spray pump are OOS
- Prior to the scenario, crew should pre-brief on conditions and expectations for the Shift (maintain power, repairs estimated to be complete well before LCO action time expires).

VCS 2011 NRC Scenario 1 Simulator Setup (SNAP 301 or 305)

- Conduct two-minute drill
- Mark up procedures in use with “Circle and slash” as applicable (N/A for this 100% snap)

Pre-Exercise:

Ensure simulator has been checked for hardware problems (DORT, burnt out light bulbs, switch malfunctions, chart recorders, etc.)

TQP-801 Booth Operator checklist, has been completed

Hang red tags and Removal and Restoration tags on “B” RB Spray Pump and “B” EDG control switches.

Make extra copies of EOP-1.1 Att. 16

PRE-LOAD

- MAL EPS006A = Fail “A” EDG fails to autostart, will not start manually or locally
- VLV MS001F FCV-2030 fails as-is (closed)
- LOA AUX118 = RACK OUT (“B” RB Spray pump OOS)
- LOA-EPS114 = MAINTENANCE (“B” EDG OOS)
- MAL FWM003B “B” MDEFW Pp fails to start
- Override STL-ES007 (86 XTF-4) to OFF
- Override STL-ES008 (86 XTF-5) to OFF
- LOA-AUX050, SFP HX 1B DISCH ISOL VLV Set=0.9
- LOA-AUX048, CROSS-TIE ISOL VLV Set=1
- LOA-AUX073, SPENT FUEL POOL PUMP B SWITCH Set=ON
- MAL-EPS005B, Failure of 1DA alternate feeder breaker to close

EVENT 1: Power Range Detector NI-44A fails high

- Trigger 1
- Malfunction NIS007G = 5 ma, 2 minute ramp
- No local actions, circuit will not be repaired

EVENT 2: Leak on 1A High Pressure feedwater heater

- Trigger 2
- Malfunction FWM009A=3E6 (3 million pounds mass/hour) ramp over 5 minutes HP heater tube leak
- "A" heater string will auto-isolate on high level
- Damage will not be repaired

EVENT 4: 115KV offsite power is lost

- Trigger 4
- Currently Malfunctions EPS018A&B
- Parr switchyard is impacted by tornado, will not be restored during scenario
- Bus 1DA is lost due to failure of "A" Emergency Diesel Generator to start
- CCW non-essential supply valves powered by "A" train must be locally operated (Trigger 6)

EVENT 5: Inadvertent Train B Feedwater Isolation

- Trigger 5
- Malfunction PCS013B = INDAVERTANT INIT
- Signal may be bypassed per EOP-15.0 using trigger 7

TRIGGER 6: local transfer of non-essential CCW loads to "B" train

- Trigger 6
- VLV CC006P = 0% 45 sec. ramp (MVB-9524A and 9526A closed using Limitorque local handwheel)
- VLV CC009P = 100% 45 sec. ramp, 45 sec TD (MVB-9687B and 9525B opened using Limitorque local handwheel)

TRIGGER 7: local bypass of feedwater isolation

- LOAs FWM-040,041, and 042 = BYPASS

Trigger 8: Deenergize Train A Loading Sequencer

- ANN-SG012 ESFLS (A) DOOR OPEN XCP 636
- LOA-EPS136, LOAD SEQUENCER A:CONTROL POWER SWITCH Set=OPEN 30 second TD

Trigger 9: Transfer 1FC1 to 1FB

- LOA-EPS171 APN-1FC1 to Power Selector switch for DRPI when requested Set = 1FB

Trigger 10: HVAC annunciator/horn acknowledge

- LOA-AUX078 to OFF

Trigger 11: Bypass and isolate “A” HP heater string (announce time compression)

- LOA-FWM031 = 1.0, 1 minute ramp
- LOA FWM029 = 0.0, 1 minute ramp 1 minute time delay

Trigger 12; Transfer “C” Charging pump to “B” train

- LOA-CVC043 CHARGING PUMP C SUPPLY BRKR TRAIN A = RACK OUT 2 minute TD
- LOA-CVC044 CHARGING PUMP C SUPPLY BRKR TRAIN B = RACK IN 5 minute TD
- LOA-CVC045 CHARGING PUMP C DISCONNECT SWITCH = TRAIN B 8 minute TD

2011 NRC Scenario 1 after workup		Scenario Outline	Form ES-D-1
Op Test No.: <u>2011 NRC</u> Scenario # <u>1</u> Event # <u>1</u> Page <u>6</u> of <u>43</u>			
Event Description: Power Range upper detector NI-44A fails high			
Time	Position	Applicant's Actions or Behavior	

Booth Instructor: When directed, insert Trigger 1.		
Indications available: Uncontrolled Rod Motion XCP-620 1-1, PR HI SETPT FLUX HI XCP-620 2-2, PR FLUX HI RATE SINGLE CHAN ALERT XCP-621 2-4, PR FLUX HI ROD STP		
Evaluator's Note: The crew could enter the ARPs but it is more likely that they will recognize the entry condition for AOP-401.10, POWER RANGE CHANNEL FAILURE.		
	CRS	Enters AOP-401.10, POWER RANGE CHANNEL FAILURE
		Enters AOP-401.10
IOA	RO	Verify normal indication on Power Range Channel N-44. (NO)
		AOP
IOA & CRITICAL TASK	RO	If Power Range Channel N-44 has failed, THEN place the ROD CNTRL BANK SEL Switch in MAN (Prior to rods going below the RIL)
		AOP
IOA	Crew	Stabilize any plant transients in progress.
		AOP
*	Crew	Maintain stable plant conditions.
		AOP
	Crew	Verify no testing is in progress on the operable Power Range channels
		AOP

2011 NRC Scenario 1 after workup		Scenario Outline	Form ES-D-1
Op Test No.: <u>2011 NRC</u> Scenario # <u>1</u> Event # <u>1</u> Page <u>7</u> of <u>43</u>			
Event Description: Power Range upper detector NI-44A fails high			
Time	Position	Applicant's Actions or Behavior	

	RO	Place ROD STOP BYPASS Switch (on the MISCELLANEOUS CONTROL AND INDICATION PANEL) for the failed Power Range channel (N-44) in BYPASS.
		AOP
	RO	Verify the appropriate Rod Stop Bypass status light is bright: <ul style="list-style-type: none"> For N-41, A1 OP ROD STOP BYP (XCP-6111 4-1). For N-42, B1 OP ROD STOP BYP (XCP-6111 4-2). For N-43, A2 OP ROD STOP BYP(XCP-6111 4-3). For N-44, B2 OP ROD STOP BYP (XCP-6111 4-4).
		AOP
	RO	Adjust Control Rods to maintain Tavg within 1.0 °F of Tref
		AOP
	Crew	Notify the I&C Department to record detector currents and status lights on POWER RANGE A and POWER RANGE B drawers
		AOP
Booth Operator Instructions: When called as I&C to record detector currents and status lights report that the necessary data for N44 has been collected.		
Evaluator Note: The recording of data by I&C would be done in the control room so the booth operator is compressing time and the operators will not see an individual record data (it may be necessary to cue the crew as to these facts).		
CAUTION - Step 9		
The empty fuse holders should NOT be reinstalled as this will allow a small amount of current flow through the blown fuse indicator.		
		AOP

2011 NRC Scenario 1 after workup	Scenario Outline	Form ES-D-1
Op Test No.: <u>2011 NRC</u> Scenario # <u>1</u> Event # <u>1</u> Page <u>8</u> of <u>43</u>		
Event Description: Power Range upper detector NI-44A fails high		
Time	Position	Applicant's Actions or Behavior

	BOP	Deenergize the failed Power Range channel: (N-44) a. Remove the CONTROL POWER fuses from the POWER RANGE A drawer. b. Remove the INSTR POWER fuses from the POWER RANGE B drawer.
		AOP
	BOP	Align the Power Range channel comparator circuits: a. Place the following switches to the failed Power Range channel position: (N-44) 1) COMPARATOR CHANNEL DEFEAT Switch (on the COMPARATOR AND RATE drawer). 2) UPPER SECTION Switch (on the DETECTOR CURRENT COMPARATOR drawer). 3) LOWER SECTION Switch (on the DETECTOR CURRENT COMPARATOR drawer).
		AOP
	RO	Ensure NR-45 is selected to the appropriate operable channels.
		AOP
	Crew	Check if Reactor power is LESS THAN 75% (NO)
		AOP
	Crew	Initiate GTP-702, Attachment IV.F.
		AOP
Evaluator Note: GTP-702 Attachment IV.F requires that STP0108.001 be performed every 12 hours. Since the scenario will not last that long it is assumed that STP0108.001 will not be performed.		
	Crew	Check if Reactor power is LESS THAN 50% (NO)
		AOP
	Crew	Initiate GTP-702, Attachment IV.D
		AOP

2011 NRC Scenario 1 after workup		Scenario Outline	Form ES-D-1
Op Test No.: <u>2011 NRC</u> Scenario # <u>1</u> Event # <u>1</u> Page <u>9</u> of <u>43</u>			
Event Description: Power Range upper detector NI-44A fails high			
Time	Position	Applicant's Actions or Behavior	

Evaluator Note:

GTP-702 Attachment IV. D requires that STP0133.001 be performed once per hour. Since the scenario will not maintain power above 50% for the next hour it is assumed that STP0133.001 will not be performed.

	CRS	Within 72 hours, place the failed channel protection bistables in a tripped condition: (N/A)
		AOP

Evaluator Note:

The other three channels would require tripping of additional bistables. The only bistables for N-44 are in the NIS Racks and are already tripped.

	CRS	Refer to Tech Spec 3.3.1
		AOP
	CRS	From Table 3.3-1 Functional Units 2 & 3 require action 2# and Function Unit 19 requires action 7
		AOP

2011 NRC Scenario 1 after workup		Scenario Outline	Form ES-D-1
Op Test No.: <u>2011 NRC</u> Scenario # <u>1</u> Event # <u>1</u> Page <u>10</u> of <u>43</u>			
Event Description: Power Range upper detector NI-44A fails high			
Time	Position	Applicant's Actions or Behavior	

Action 2		
<p>With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:</p> <ul style="list-style-type: none"> a. The inoperable channel is placed in the tripped condition within 72 hours. DONE b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels per Specification 4.3.1.1. c. Either, THERMAL POWER is restricted to less than or equal to 75% of RATED THERMAL POWER and the Power Range Neutron Flux trip setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER within 4 hours; or, the QUADRANT POWER TILT RATIO is monitored at least once per 12 hours per Specification 4.2.4.2. <p>4.2.4.1 The QUADRANT POWER TILT RATIO shall be determined to be within the limit above 50% of RATED THERMAL POWER by:</p> <ul style="list-style-type: none"> a. Calculating the ratio at least once per 7 days when the alarm is OPERABLE. b. Calculating the ratio at least once per 12 hours during steady state operation when the alarm is inoperable. <p>4.2.4.2 The QUADRANT POWER TILT RATIO shall be determined to be within the limit when above 75 percent RATED THERMAL POWER with one Power Range Channel inoperable at least once per 12 hours by using the PDMS or movable incore detectors to confirm that the normalized symmetric power distribution is consistent with the indicated QUADRANT POWER TILT RATIO. The incore detector monitoring shall be done with 2 sets of 4 symmetric thimbles or a full incore flux map. GTP-702 Attachment IV.F</p>		
		Tech Specs
Action 7		
<p>With less than the Minimum Number of Channels OPERABLE, within one hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3. P-7, P-8, P-10, P-9</p>		
		Tech Specs
	Crew	Verify proper status of P-7, P-8, P-10, & P-9
		Tech Specs

2011 NRC Scenario 1 after workup		Scenario Outline	Form ES-D-1
Op Test No.: <u>2011 NRC</u> Scenario # <u>1</u> Event # <u>1</u> Page <u>11</u> of <u>43</u>			
Event Description: Power Range upper detector NI-44A fails high			
Time	Position	Applicant's Actions or Behavior	

4.2.1.1 The indicated AFD shall be determined to be within its limits during POWER. OPERATION above 50% of RATED THERMAL POWER by:

- a. Monitoring the indicated AFD -for each OPERABLE excore channel at least once per 7 days when the AFD Monitor Alarm is OPERABLE:
- b. Monitoring and logging the indicated AFD for each OPERABLE excore channel at least once per hour for the first 24 hours and at least once per 30 minutes thereafter, when the AFD Monitor Alarm is inoperable. The logged values of the indicated AFD shall be assumed to exist during the interval preceding each logging. **GTP-702 Attachment IV.D**

		Tech Specs
	Crew	Conducts post-event brief and notifies SS.

Once TS implications are identified, proceed to the next event.

Op Test No.: 2011 NRC Scenario # 1 Event # 2 & 3 Page 12 of 43

Event Description: HP heater tube leak, Reduce power to isolate HP FW heater string

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Operator Instructions:
When directed, insert Trigger 2

Indications available:
XCP-627 2-3, FW HTR 1,2,4 ISOLATE/LVL HI-HI

	BOP	Responds to alarm XCP-627 2-3, FW HTR 1,2,4 ISOLATE/LVL HI-HI.
	BOP	Enters ARP-001-627 2-3.
		ARP XCP-627 2-3
		PROBABLE CAUSE: 1. Failure of the heater level control system(s). 2. Any HTR 1(A or B), 2(A or B) or 4(A or B) in ISOLAT (manually or automatic).
		ARP
		AUTOMATIC ACTIONS: 1. The following will occur to the heater with the High-High level: a. The extraction steam check valve and isolation valve close. (YES) b. The emergency drain valve to the Condenser opens fully. c. For Heaters 1A(B) only, the drain from the Reheater Drain Tank closes. (YES) d. For Heaters 2A(B) only, the drain from the Moisture Sep Drain Tank closes. (NO) e. For Heaters 2A(B) only, the drain from Heater 1A(B) closes. (NO)
		ARP
NOTE		
This alarm has reflash capabilities.		
		ARP
		CORRECTIVE ACTIONS: 1. Determine which heater is ISOLATED using DCS screens 101 thru 110. 2. For Heaters 1A(B) or 2A(B) go to AOP-204.1 (YES) .
		ARP

Op Test No.: 2011 NRC Scenario # 1 Event # 2 & 3 Page 13 of 43

Event Description: HP heater tube leak, Reduce power to isolate HP FW heater string

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	CRS	Go to AOP-204.1, LOSS OF HIGH PRESSURE FEEDWATER HEATERS
		Transitions to AOP-204.1
NOTE - Step 1		
Entering CNTRL-ALT-S on the EHC keyboard is the preferred method to accomplish a rapid load reduction during FW Heater transients.		
		AOP
IOA	BOP	Verify Turbine Load is LESS THAN 950 MWe (NO)
		AOP
IOA	BOP	Using any method available, reduce Turbine Load by 40 MWe to 50 MWe
		AOP
	BOP	Verify Turbine Load is GREATER THAN 700 MWe (YES)
		AOP
*	CREW	Monitor DELTA T PWR on ZZMENU (Screens 1 and 2) on the IPCS
		AOP
Evaluator note; manual trip is required at 102% delta T.		
	BOP	Verify the following are NOT ISOLATED: <ul style="list-style-type: none"> • HEATER #2A. • HEATER #2B • MS DRN TANK A. • MS DRN TANK B. (YES)
		AOP
	BOP	Verify the following are NOT ISOLATED: <ul style="list-style-type: none"> • HEATER #1A. • HEATER #1B • RH DRN TANK A. • RH DRN TANK B. (NO)
		AOP

Op Test No.: 2011 NRC Scenario # 1 Event # 2 & 3 Page 14 of 43

Event Description: HP heater tube leak, Reduce power to isolate HP FW heater string

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Operator Instructions:

If contacted as Turbine Operator, report High level in the #2 heater sightglass, Normal and Emergency Drain valves (3763A & 3763B) are fully open.

	BOP	Reduce Turbine Load at 3%/MIN until one of the following has been met: <ul style="list-style-type: none"> If only one #1 Heater or RHDT is ISOLATED, THEN reduce load to LESS THAN 925 MWe (YES) OR If two or more #1 heaters or RHDTs are ISOLATED, THEN reduce load to LESS THAN 850 MWe (NO)
		AOP 204.1 RNO

Evaluator note; 925MWe is approximately 80% valve position.

	RO	Maintains T _{avg} within 1°F of T _{ref} ; <ul style="list-style-type: none"> Operates Control rods in MANUAL Borates through the blender or MVG-8104 (8104 expected)
		AOP 410.10
	BOP	Verify DA level is stable at or trending to normal operating band. (NO)
		AOP 204.1
	BOP	Start the remaining Condensate Pump per the following: <ol style="list-style-type: none"> Ensure XVB-614A(B)(C), A(B)(C) DISCH ISOL, is closed for the pump to be started. Start the remaining Condensate Pump. Open XVB-614A(B)(C), A(B)(C) DISCH ISOL, for the remaining Condensate Pump.
		AOP 204.1

NOTE - Step 7

Following the Turbine Power Reduction, Xenon levels may increase. T_{avg} should be maintained at T_{ref} by Control Rod movement or RCS dilution. Reactor Engineering should be contacted for a long term reactivity management plan.

		AOP 204.1
--	--	-----------

Op Test No.: 2011 NRC Scenario # 1 Event # 2 & 3 Page 15 of 43

Event Description: HP heater tube leak, Reduce power to isolate HP FW heater string

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Operator Instructions:

When called as Reactor Engineering for a long term reactivity management plan report that a reactivity management plan is being developed.

If contacted as Unit 5 (TBAO) report that FW Pump seal cooling is responding normally.

	RO	Maintain the following operating limits: <ol style="list-style-type: none"> Axial Flux Difference within the target band. Check the RAOC or BASELOAD display on the IPCS. Control Rods above RIL: <ul style="list-style-type: none"> Check the RIL display on the IPCS. Verify CRB INSERT LMT LO-LO (XCP-621 1-1), annunciator is NOT lit. ' Steady state power level. REFER TO GOP-4B, POWER OPERATION (MODE 1 - DESCENDING). Main Generator reactive load LESS THAN 325 MVAR.
		AOP 204.1
	BOP	When no longer required to maintain DA level, secure Condensate Pumps as necessary per SOP-208.
		AOP 204.1

Booth Operator Instructions: when notified of event as SS direct isolation of leaking heater per SOP-204.

Booth Operator Instructions: SOP-204 IV.A may be used to isolate the leaking heater. If contacted as Turbine Operator to open XVT01609 bypass and close XVK01626A and XVK01608 isolations, use Trigger 11 to do so.		
		SOP-204 IV.A
	Crew	Conducts post-event brief, contacts SS and may contact Mechanical Maintenance.

At the discretion of the lead examiner, proceed to the next event.

Op Test No.: 2011 NRC Scenario # 1 Event #s 4 & 5 Page 16 of 43

Event Description: 115KV offsite power is lost, 1DA is deenergized, Restoration of letdown

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Instructor:**When directed, insert Trigger 4****Indications available:****Buss potential lights on 1DA are out****Trip alarm for A charging pump****DG A AUTOSTART NOT READY alarm**

	CRS	Enters AOP-304.1(A), LOSS OF BUS 1DA WITH THE DIESEL NOT AVAILABLE
		AOP-304.1(A)

NOTE

This procedure assumes a loss of XSW1DA has occurred due to one of the following reasons:

- A loss of the offsite power source occurred.
- An XSW1DA Bus lockout has occurred.

		AOP
--	--	------------

NOTE - Steps 1 through 5

The installed spare components (C Pumps or Chillers) may be aligned and started for Train B operation if the Train B components are NOT available.

		AOP
	RO	Ensure a Train B Component Cooling Pump is running: <ul style="list-style-type: none"> • XPP-0001B, PUMP B. (STARTS) OR • XPP-0001C, PUMP C TRAIN B.
		AOP
	RO	Ensure a Train B Charging Pump is running: <ul style="list-style-type: none"> • XPP-0043B, PUMP B. (STARTS) OR • XPP-0043C, PUMP C TRAIN B.
		AOP

Op Test No.: 2011 NRC Scenario # 1 Event #s 4 & 5 Page 17 of 43

Event Description: 115KV offsite power is lost, 1DA is deenergized, Restoration of letdown

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

NOTE - Step 3

On a loss of power to MVB-9600, TO THERM BARR ISOL, from XSW1DA2X, the Component Cooling Water Booster Pumps will not start due to an open contact in the start circuit. **(This applies here)**

		AOP
	RO	Verify Component Cooling Water Loop B is the Active Loop. (NO)
		AOP
	RO	Close the following Charging and Letdown Valves: a) PVT-8149A(B)(C), LTDN ORIFICE A(B)(C) ISOL. b) LCV-459 and LCV-460, LTDN LINE ISOL. c) FCV-122, CHG FLOW. d) HCV-142, LTDN FROM RHR (low pressure letdown, N/A in this MODE).
		AOP
	RO	Establish Component Cooling Water Loop B as the Active Loop. REFER TO SOP-118, COMPONENT COOLING WATER.
		Uses SOP-118 section V.A
	RO	Ensure MVB-9503B, CC TO RHR HX B, is open
		SOP

NOTE 2.3.a

On a loss of power to MVB-9600, TO THERM BARR ISOL, from XSW1DA2X, the Component Cooling Water Booster Pumps will not start due to an open contact in the start circuit.

		SOP
	RO	Ensures MVB-9503B, CC TO RHR HX B is open
		SOP
	RO	Starts XPP-001B, PUMP B
		SOP
	RO	Closes MVB-9687A/9525A, LP A NON-ESSENTIAL LOAD ISOL

Op Test No.: <u>2011 NRC</u> Scenario # <u>1</u> Event #s <u>4 & 5</u> Page <u>18</u> of <u>43</u>		
Event Description: 115KV offsite power is lost, 1DA is deenergized, Restoration of letdown		
Time	Position	Applicant's Actions or Behavior

		SOP
	RO	Open MVB-9524B/(%26B, LP B NON-ESSEN LOAD ISOL
		SOP
Booth Operator Instructions: Use SOP-118 section V.A; When called to close MVB-9524A and 9526A, A NON-ESSEN LOAD ISOL, and open MVB-9687B and 9525B, LP B NON-ESSEN LOAD ISOL, use Trigger 6 to do so.		
		SOP
	RO	Directs locally opening XVB-9525B and 9687B, supply and return header cross-connects
		SOP
	RO	Closes MVB-9503B, CC TO RHR HX B.
		SOP
	RO	Directs locally opening XVB-9503A and closing XVB-9524A and 9526A.
	RO	Ensure the following valves have not automatically closed due to high flow: 1) MVG-9625, CC TO RB. 2) MVG-9626, CC TO RB. 3) MVG-9583, FROM XS LTDN HX. 4) MVT-9593A(B)(C), FROM RCP A(B)(C) THERM BARR.
		SOP
	RO	Locally verify greater than 1 gpm sample flow on RML0002B, LIQUID RAD MON COMPONENT COOLING (IB-412).
		SOP
Booth Operator Instructions: When called to report flow to RML-2B report > 5 gpm.		

Op Test No.: 2011 NRC Scenario # 1 Event #s 4 & 5 Page 19 of 43

Event Description: 115KV offsite power is lost, 1DA is deenergized, Restoration of letdown

Time	Position	Applicant's Actions or Behavior
	RO	Check if a Train B Service Water Pump is running: <ul style="list-style-type: none"> • XPP-0039B, PUMP B. (YES) OR • XPP-0039C, PUMP C TRAIN B.
		AOP-304.1
	Crew	Ensure HVAC Chilled Water Loop B is operating: <ul style="list-style-type: none"> • XPP-48B, PUMP B, AND XHX-1B, CHILLER 1B, are running. (STARTS) OR • XPP-48C, PUMP C TRAIN B, AND XHX-1C, CHILLER C TRAIN B, are running.
		AOP
	Crew	Check if RHR cooling is required. (NO)
		AOP
	CRS	GO TO Step 8
		AOP
	RO	Ensures Instrument Air Compressor B is running (YES)
		AOP
	RO	WHEN Component Cooling Water is available for non-essential loads, THEN verify Letdown flow on FI-150, LO PRESS LTDN FLOW GPM (NO)
		AOP
	RO	Set PCV-145, LO PRESS LTDN, to 70%.
		Start Event 5, AOP
	RO	Fully open TCV-144, CC TO LTDN HX.
		AOP
	RO	Place TCV-143, LTDN TO VCT OR DEMIN, in VCT position.
		AOP
	RO	Open PVT-8152, LTDN LINE ISOL.

Op Test No.: 2011 NRC Scenario # 1 Event #s 4 & 5 Page 20 of 43

Event Description: 115KV offsite power is lost, 1DA is deenergized, Restoration of letdown

Time	Position	Applicant's Actions or Behavior
		AOP
	RO	Open both LCV-459 and LCV-460, LTDN LINE ISOL.
		AOP
	RO	Slowly adjust FCV-122, CHG FLOW, to obtain 70 gpm Charging flow.
		AOP
	RO	Open desired Orifice Isolation Valve(s) to obtain 60 gpm to 120 gpm: <ul style="list-style-type: none"> • PVT-8149A, LTDN ORIFICE A ISOL (45 gpm). • PVT-8149B, LTDN ORIFICE B ISOL (60 gpm). • PVT-8149C, LTDN ORIFICE C ISOL (60 gpm).
		AOP
	RO	Adjust FCV-122, CHG FLOW, to maintain TI-140, REGEN HX OUT TEMP °F, between 250°F and 350 °F while maintaining PZR level.
		AOP
	RO	Adjust PCV-145, LO PRESS LTDN, to maintain PI-145, LO PRESS LTDN PRESS PSIG, between 300 psig and 400 psig.
		AOP
	RO	Place PCV-145, LO PRESS LTDN, in AUTO.
		AOP
	RO	Place TCV-144, CC TO LTDN HX, in AUTO.
		AOP
	RO	Ensure Letdown temperature is stable.
		AOP
	RO	Place TCV-143, LTDN TO VCT OR DEMIN, in DEMIN/AUTO position.
		AOP
	RO	Verify 60 gpm to 120 gpm on FI-150, LO PRESS LTDN FLOW GPM.
		AOP

Op Test No.: <u>2011 NRC</u> Scenario # <u>1</u> Event #s <u>4 & 5</u> Page <u>21</u> of <u>43</u>		
Event Description: 115KV offsite power is lost, 1DA is deenergized, Restoration of letdown		
Time	Position	Applicant's Actions or Behavior

	RO	Verify PZR level is stable at OR trending to program level.
		End Event 5, AOP
	Crew	Ensure Spent Fuel Cooling Loop B is in service. (YES) REFER TO SOP-123, SPENT FUEL COOLING SYSTEM.
		AOP
Booth Operator Instructions: If called to ensure Spent Fuel Cooling Loop B is in service report that it is.		
	Crew	Place the following Control Switches in PULL TO LK NON-A: <ul style="list-style-type: none"> Charging Pump A. Charging Pump C (Train A). Emergency Feedwater Pump A.
		AOP
	BOP	REFER TO ARP-001 XCP-633 through 641, ANNUNCIATOR RESPONSE PROCEDURE, for annunciator(s) in alarm.
		AOP
Booth Operator Instructions: If called as Intermediate Building Operator, report A EDG stopped, receiver pressure at 375 psig with compressor running, EMERG START and EMERGENCY SHUTDOWN alarms in. A large oil leak is found on the Governor, Mechanical Maintenance has been contacted.		
	Crew	Dispatch operators to the following areas to locally investigate for problems: <ul style="list-style-type: none"> XTF0004 and XTF0005, ESF Transformers. XTF0031, Emergency Aux Transformer #1. XSW1DA. XCX5201, Diesel Generator A Local Control Panel. GENERATOR & XFMR ELECTRICAL RELAY BOARD (CB-463), XCP6221A-EG and XCP6225-EG.
		AOP

Op Test No.: 2011 NRC Scenario # 1 Event #s 4 & 5 Page 22 of 43

Event Description: 115KV offsite power is lost, 1DA is deenergized, Restoration of letdown

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Operator Instructions:

When called **as units 5 and 7 (TB and IB AOs)** to investigate the electrical problem report that there is no apparent damage to 1DA, no flags, no smoke or odor. **However, Alternate Incoming breaker closing springs are discharged and electricians are investigating. Report no external damage to XTF-4 or -5, no voltage but no lockouts on switchgear 1DX,**

When called to investigate the "A" DG report that the governor has a large oil leak and no visible oil level, mechanics are preparing to replace the governor with a spare .

		AOP
	Crew	Consult with the System Controller to determine possible causes.
		AOP

Booth Operator Instructions:

When called as the System Controller report that due to storm damage it is unlikely that the 115 kv line from Parr will be available for at least a day and that the 13.8 kv line from Parr hydro is also out.

	Crew	Record all tripped relay flags. (Contacts Operators to record tripped relay flags).
		AOP

Booth Operator Instructions:

When called to record relay flags report that there are no relay flags to reset.

	Crew	Locally reset tripped relay flags and lockouts only when directed by the Shift Supervisor.
		AOP
	BOP	Verify an offsite power source is available to the ESF Bus: <ul style="list-style-type: none"> BUS 1DA NORM FEED, potential lights are energized (NO) OR BUS 1DA ALT FEED, potential lights are energized. (YES)
		AOP

Op Test No.: 2011 NRC Scenario # 1 Event #s 4 & 5 Page 23 of 43

Event Description: 115KV offsite power is lost, 1DA is deenergized, Restoration of letdown

Time	Position	Applicant's Actions or Behavior
	Crew	Verify all of the following conditions exist: <ul style="list-style-type: none"> The cause of the power loss has been determined. (YES, Storm damage in the Parr switch yard) Any damage to XSW1DA has been corrected. (No damage to 1DA) The cause of the power loss is corrected, OR it does NOT affect restoration of the bus. (ALT FEED is not available due to inoperable alternate incoming breaker)
		AOP
NOTE - Step 16 Each switch may be placed in After-Stop immediately after recording the AS FOUND position.		
		AOP
	BOP	Record the AS FOUND Main Control Board Train A switch positions, then align the switches to After-Stop. REFER TO Attachment 1A.
		AOP
	Crew	Locally remove power from the Train A ESF Loading Sequencer (XPN-6020 CB-436).
		AOP
	CRS	Enters Technical Specification 3.0.3 due to one offsite source and both EDGs INOPERABLE. Technical Specification 3.2.5 will also apply below 2206 psig RCS pressure, as neither only one of backup heaters is available.
		Tech Specs
	Crew	Conduct post-event brief and contact SS. May contact MDS for electrical and maintenance assistance.
		AOP
When the crew requests that power be removed from Train A ESF Loading Sequencer, proceed to the next event		

Op Test No.: 2011 NRC Scenario # 1 Event # Events Page 24 of 43
6,7,8

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Instructor:
When directed, insert Trigger 5

Indications available:
Reactor trip breakers open, TURB TRIP first out
Turbine stop valve closed status lights
XCP-624 pt. 1-4 FW ISOL
XCP-625 pt. 2-1 FWP A/B/C TRIP

	CRS	Direct entry into EOP-1.0, REACTOR TRIP SAFETY INJECTION ACTUATION
		Enters EOP-1.0
IOA	RO	Verify Reactor Trip: <ul style="list-style-type: none"> • Trip the Reactor using either Reactor Trip Switch. • Verify all Reactor Trip and Bypass Breakers are open. • Verify all Rod Bottom Lights are lit. • Verify Reactor Power level is decreasing. (YES)
		EOP-1.0
Booth Operator Instructions: When called to transfer DRPI to 1FB, do so by using Trigger 9		
IOA	BOP	Verify Turbine/Generator Trip: <ol style="list-style-type: none"> Verify all Turbine STM Stop VLVs are closed. Ensure Generator Trip (after 30 second delay): <ol style="list-style-type: none"> Ensure the GEN BKR is open. Ensure the GEN FIELD BKR is open. Ensure the EXC FIELD CNTRL is tripped. (YES)
		EOP-1.0
IOA	BOP	Verify both ESF buses are energized. (NO)
		EOP-1.0

Op Test No.: 2011 NRC Scenario # 1 Event # Events 25 of 43
6,7,8

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
IOA	BOP	<p>Perform the following:</p> <p>a) Verify at least one ESF bus is energized:</p> <ul style="list-style-type: none"> 7.2 KV BUS 1DA is energized. (NO) OR 7.2 KV BUS 1DB is energized. (YES) <p>IF no ESF bus is energized, THEN GO TO EOP-6.0, LOSS OF ALL ESF AC POWER, Step 1. (NO)</p> <p>b) Try to restore power to the deenergized bus while continuing with this procedure. REFER TO AOP-304.1, LOSS OF BUS 1DA(1DB) WITH THE DIESEL NOT AVAILABLE. (YES)</p>
		EOP-1.0
IOA	RO	<p>Check if SI is actuated:</p> <p>a. Check if either:</p> <ul style="list-style-type: none"> SI ACT status light is bright on XCP-6107 1-1. Or Any red first out SI annunciator is lit on XCP-626 top row. <p>b. Actuate SI using either SI ACTUATION Switch (NO)</p>
		EOP-1.0
IOA	Crew	<p>Check if SI is required:</p> <p>a. Check if any of the following conditions exist:</p> <ul style="list-style-type: none"> PZR pressure less than 1850 psig. OR RB pressure GREATER THAN 3.6 psig. OR Steamline pressure LESS THAN 675 psig. OR Steamline differential pressure GREATER THAN 97 psig. <p>b. Actuate SI using either SI ACTUATION Switch. (NO)</p>
		EOP-1.0
Booth Operator Instructions: As Control Building Operator, silence HVAC board alarms by using Trigger 10		
IOA	CRS	GO TO EOP-1.1, REACTOR TRIP RECOVERY, Step 1.
		Enters EOP-1.1

Op Test No.: 2011 NRC Scenario # 1 Event # Events 6,7,8 Page 26 of 43

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
	Crew	Determines that a Red Path Exists on Heat Sink
	CRS	Transitions to EOP-15.0, RESPONSE TO LOSS OF SECONDARY HEAT SINK
		Transitions to EOP-15.0
Booth Operator Instructions: When called as Unit 4 (CBAO) to remove power from the Train A ESF Loading Sequencer wait until the crew transitions to EOP-15.0 and then do so by using Trigger 8. Report as electrical maintenance that change-out of the alternate incoming breaker will require approximately one hour.		
<p style="text-align: center;">CAUTION</p> <ul style="list-style-type: none"> If total EFW flow is LESS THAN 450 gpm due to operator action, this procedure should NOT be performed, since these actions are NOT appropriate if 450 gpm EFW flow is available. If a NON-FAULTED SG is available, feed flow should NOT be reestablished to any FAULTED SG, to prevent thermal shock to SG tubes. 		
		EOP-15.0
<p style="text-align: center;">NOTE</p> <p>Conditions for implementing Emergency Plan Procedures should be evaluated using EPP-001, ACTIVATION AND IMPLEMENTATION OF EMERGENCY PLAN.</p>		
		EOP-15.0
	Crew	Check if a secondary heat sink is required: <ol style="list-style-type: none"> Verify RCS pressure is GREATER THAN any NON-FAULTED SG pressure. Verify RCS Thot is GREATER THAN 350 °F.
		EOP-15.0

Op Test No.: 2011 NRC Scenario # 1 Event # Events 6,7,8 Page 27 of 43

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
	RO	Verify power is available to all PZR PORV Block Valves: a. MVG-8000A, RELIEF 445 A ISOL. (YES) b. MVG-8000B, RELIEF 444 B ISOL. (NO) c. MVG-8000C, RELIEF 445 B ISOL. (YES)
		EOP-15.0
Evaluator note; 8000B is deenergized in the open position.		
		EOP-15.0
	RO	Locally close XMC1DA2X 06IM, PRESSURIZER PRESSURE RELIEF ISO VALVE XVG8000B-RC breaker on MCC (IB-463).
		EOP-15.0
Booth Operator Instructions: If called to locally close XMC1DA2X 06IM, PRESSURIZER PRESSURE RELIEF ISO VALVE XVG8000B-RC breaker wait 3 min and then report that it is already closed. (The reason power is not available to the valve is that 1DA is not powered, not that this breaker is open).		
		EOP-15.0
	RO	Open the Block Valve for any PZR PORV that has been isolated due to excessive seat leakage: • MVG-8000A, RELIEF 445 A ISOL. (NO) • MVG-8000B, RELIEF 444 B ISOL. (NO) • MVG-8000C, RELIEF 445 B ISOL. (NO)
		EOP-15.0
CAUTION - Steps 4 through 16		
If Wide Range level in any two SGs is LESS THAN 12% [20%] OR PZR pressure is GREATER THAN 2330 psig due to loss of secondary heat sink, Steps 17 through 24 should be immediately initiated for bleed and feed cooling.		
		EOP-15.0

Op Test No.: 2011 NRC Scenario # 1 Event # Events 6,7,8 Page 28 of 43

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
	BOP	Ensure the following valves are closed: ' <ul style="list-style-type: none"> • SG Blowdown, PVG-503A(B)(C). • SG Sample, SVX-9398A(B)(C).
		EOP-15.0
<p style="text-align: center;">Note – Step 5</p> <p>If EFW flow control can NOT be reestablished from the Control Room, this procedure should be continued while local operator action is in progress to restore EFW flow.</p>		
		EOP-15.0
	Crew	Check Control Room indications for the cause of EFW Failure: <ol style="list-style-type: none"> 1) Verify no EFW annunciators are lit: <ul style="list-style-type: none"> • XCP-621 3-5 (EFP SUCT HDR PRESS LO XFER TO SW). • Any alarm on XCP-622 • Any alarm on XCP-623 (YES) 2) Verify CST level is GREATER THAN 5 ft. (YES) 3) Ensure power is available to both MD EFW Pumps. (NO, MD EFW B AUTOSTART FAIL is lit on XCP-623, pt. 1-3)
		EOP-15.0
Booth Operator Instructions: When called to investigate the EFW pumps. Report as the IB operator that the instantaneous overcurrent flag for MDEFW B is dropped on A and B phases. Report that 2030 will not open (even if asked to manually bleed air off the valve)		
		EOP-15.0
	CRS	Refer to AOP-304.1 to restore power to IDA.
		EOP-15.0
	BOP	Energize XSW1DA from the normal power source: (NOT AVAILABLE)
		EOP-15.0

Op Test No.: 2011 NRC Scenario # 1 Event # Events 6,7,8 Page 29 of 43

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	BOP	IF XSW1DA normal power source is NOT available, THEN energize XSW1DA from the alternate power a) Ensure BUS 1DA XFER INIT Switch is in OFF. b) Close BUS 1DA ALT FEED Breaker. c) Verify BUS 1DA potential lights are energized.
		EOP-15.0
CAUTION - Step 5.a.4)		
<ul style="list-style-type: none"> EFW valves should NOT be opened to SGs with Wide Range level LESS THAN 12% [20%]. If Wide Range level in all SGs is LESS THAN 12% [20%], EFW valves should be open to only one SG, until RCS temperatures are decreasing, to limit any failure to one SG. 		
		EOP-15.0
	Crew	Ensure all EFW valves are open; <ul style="list-style-type: none"> FCV-3531(3541)(3551), MD EFP TO SG A(B)(C). FCV-3536(3546)(3556), TD EFP TO SG A(B)(C). (TD EFW Pump not available) MVG-2802A(B), MS LOOP B(C) TO TD EFP. PVG-2030, STM SPLY TO TD EFP TRN A(B). (Will not open)
		EOP-15.0
	Crew	Try to restore any EFW flow.
		EOP-15.0
Evaluator Note: The following steps establish Feed and Condensate flow using Steps 8-11		
		EOP-15.0
CAUTION - Step 8		
Deaerator Storage Tank level should be monitored closely and maintained between 2.5 ft and 10.5 ft on LI-3135, DEAER STOR TK WR LVL FEET, to prevent tripping Condensate and Feedwater Booster Pumps.		
		EOP-15.0

Op Test No.: 2011 NRC Scenario # 1 Event # Events 6,7,8 Page 30 of 43

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
	Crew	Ensure one Condensate Pump is running (this permits leaving more than one running- need is for "at least" one to be running.)
		EOP-15.0
	Crew	Ensure two Feedwater Booster Pumps are running.
		EOP-15.0
	Crew	Ensure Main FW Control Valves are closed: <ul style="list-style-type: none"> • FCV-478, A FCV. • FCV-488, B FCV. • FCV-498, C FCV.
		EOP-15.0
	Crew	Place all Main FW Bypass Valve Controllers in MAN and closed: <ul style="list-style-type: none"> • FCV-3321, LOOP A MAIN FW BYP. • FCV-3331, LOOP B MAIN FW BYP. • FCV-3341, LOOP C MAIN FW BYP.
		EOP-15.0
	Crew	Locally place the following key switches in BYPASS (CB-448): <ul style="list-style-type: none"> • XVG01611A,B,C (XPN 7114). • IFV03321,3331,3341 TRAIN A (XPN 7115). • IFV03321,3331,3341 TRAIN B (XPN 7121).
		EOP-15.0
Booth Operator Instructions: When called to place the key switches in BYPASS wait 3 minutes and then do so using Trigger 7.		
		EOP-15.0
	Crew	Verify XCP-612 2-1 is NOT lit (RB PRESS HI-2 STM LINE ISOL).
		EOP-15.0

Op Test No.: 2011 NRC Scenario # 1 Event # Events 6,7,8 Page 31 of 43

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

NOTE - Step 8.g

- SG B or C is preferred, so that a steam supply for the TD EFP will be restored as soon as possible.
- Before the Low Steamline Pressure SI signal is blocked, Main Steam Isolation will occur if the Low Steam Pressure rate setpoint is exceeded.

		EOP-15.0
	Crew	Align the MS Isolation Valves to depressurize only one SG: 1) Verify the MS Isolation Valve, PVM-2801A(B)(C), is open for the SG to be depressurized. 2) Ensure the remaining two MS Isolation Valves, PVM-2801A(B)(C), are closed.
		EOP-15.0
	Crew	Place the following switches in AUTO: <ul style="list-style-type: none"> • PVG-1611A(B)(C), A(B)(C) ISOL. • FCV-3321,3331,3341, FW CNTRL BYP VLVS, Train A Switch. • FCV-3321,3331,3341, MAIN FW BYPASS VLVS, Train B Switch.
		EOP-15.0
	Crew	Reset both SI RESET TRAIN A(B) Switches.
		EOP-15.0

NOTE - Step 10

Main Feed Pumps trip on SI. If an SI occurs, Steps 9 and 10 should be repeated to restart Main Feed Pumps.(feed pumps will not reset since the "B" train FWIS is still present.)

		EOP-15.0
	Crew	Verify PERMISV C-9 status lights bright on XCP-6114 1-3.
		EOP-15.0
	Crew	Open MOV-1-5A(B)(C), TURB DRN VLV.
		EOP-15.0

Op Test No.: 2011 NRC Scenario # 1 Event # Events 6,7,8 Page 32 of 43

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Evaluator note; FW pumps cannot be reset because the FW isolation signal is still present.

		EOP-15.0
	Crew	Ensure Feedwater Pump to be started is RESET (MCB or DCS (T ICON)) (cannot).
		EOP-15.0
	Crew	Throttle open FCV-3321(3331)(3341), LOOP A(B)(C) MAIN FW BYP, to the unisolated SG.
		EOP-15.0
NOTE - Step 11		
Step 11 should NOT be performed as long as the Main Feed Pump is supplying sufficient flow to increase SG level.		
		EOP-15.0
Evaluator Note: After restoring a supply of water to the SG's either through Step 5 for the MD EFW Pump or Steps 8-11 for a MFP the scenario can be terminated at the discretion of the Lead Examiner. Feed and bleed will probably be avoided by prompt EFW or MFW restoration. The following steps will be taken if wide range level falls to 15% WR.		
	CRS	Go to Step 17.
		EOP-15.0
CAUTION - Steps 17 through 24		
Steps 17 through 24 must be performed quickly to establish RCS heat removal by RCS bleed and feed, to minimize core uncover.		
		EOP-15.0
	RO	Ensure all RCPs are tripped.
		EOP-15.0

Op Test No.: 2011 NRC Scenario # 1 Event # Events 6,7,8 Page 33 of 43

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
	Crew	Actuate SI using either SI ACTUATION Switch.
		EOP-15.0
NOTE - Step 19		
Although only one train of SI flow is required to establish an effective RCS feed path, SI flow should be maximized by operating both Charging Pumps if possible.		
		EOP-15.0
	RO	Verify an RCS feed path: a. Ensure at least one Charging Pump is running. (B) b. Ensure all the following are open: <ul style="list-style-type: none"> MVG-8801A(B), HI HEAD TO COLD LEG INJ. LCV-115B(D), RWST TO CHG PP SUCT. c. Verify COLD/HOT LEG RECIRC monitor lights are dim on XCP-6104. d. Verify SI flow on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM.
		EOP-15.0
	RO	Reset both SI RESET TRAIN A(B) Switches.
		EOP-15.0
	RO	Reset Containment Isolation: <ul style="list-style-type: none"> RESET PHASE A - TRAIN A(B) CNTMT ISOL. RESET PHASE B - TRAIN A(B) CNTMT ISOL.
		EOP-15.0
	BOP	Place both ESF LOADING SEQ A(B) RESETS to: a. NON-ESF LCKOUTS. b. AUTO-START BLOCKS.
		EOP-15.0
	RO	Establish Instrument Air to the RB a. Start one Instrument Air Compressor and place the other in Standby. b. Open PVA-2659, INST AIR TO RB AIR SERV. c. Open PVT-2660, AIR SPLY TO RB.
		EOP-15.0

Op Test No.: 2011 NRC Scenario # 1 Event # Events 6,7,8 Page 34 of 43

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

NOTE - Step 24

- Establishing a continuous RCS bleed and feed as a means of providing a heat sink results in a breach of the RCS.
- Conditions should be evaluated for reclassifying the event using EPP-001, ACTIVATION AND IMPLEMENTATION OF EMERGENCY PLAN.

EOP-15.0

**CRITICAL
TASK
(backup)**

RO

- Establish an RCS bleed path:
- Open all PZR PORV Block Valves, MVG-8000A(B)(C).
 - Open all PZR PORVs:
 - PCV-445A, PWR RELIEF
 - PCV-445B, PWR RELIEF
 - PCV-444B, PWR RELIEF

EOP-15.0

CAUTION - Step 25

If RB pressure increases to GREATER THAN 12 psig, RB Spray should be verified per EOP-1.0, REACTOR TRIP/SAFETY INJECTION ACTUATION, Step 8, to prevent loss of containment integrity.

EOP-15.0

BOP

Perform Steps 1 through 8 of EOP-1.0, REACTOR TRIP/SAFETY INJECTION ACTUATION, while continuing with this procedure.

EOP-15.0

Evaluator Note:

Steps 1 through 8 of EOP-1.0, REACTOR TRIP/SAFETY INJECTION ACTUATION which includes Attachment 3 are found at the end of this scenario.

EOP-15.0

Crew

- Maintain RCS heat removal:
- Maintain SI flow.
 - Maintain at least two PZR PORVs open.

EOP-15.0

Op Test No.: 2011 NRC Scenario # 1 Event # Events 6,7,8 Page 35 of 43

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

CAUTION - Step 27

If RWST level decreases to LESS THAN 18%, the SI System should be aligned for Cold Leg Recirculation using EOP-2.2, TRANSFER TO COLD LEG RECIRCULATION, to maintain an SI flowpath.

		EOP-15.0
--	--	----------

*	Crew	Check if RB Spray should be stopped: <ul style="list-style-type: none"> a. Check if any RB Spray Pumps are running. b. Verify RB pressure is LESS THAN 11 psig. c. Depress both RESET TRAIN A(B) RB SPRAY.
---	------	---

		EOP-15.0
--	--	----------

NOTE - Step 27.d

- RB Spray must run for a minimum of two hours.
- Anytime RB Spray Pumps are stopped, MVG-3003A(B), SPRAY HDR ISOL LOOP A(B), should be closed for containment isolation.

		EOP-15.0
--	--	----------

	Crew	Consult with TSC personnel concerning RB Spray System operation.
--	------	--

		EOP-15.0
--	--	----------

Booth Operator Instructions:

When called as TSC recommend that RB spray be left running.

		EOP-15.0
--	--	----------

CAUTION - Step 28

RHR Pumps should NOT be run longer than 90 minutes without CCW flow to the RHR Heat Exchangers, to prevent RHR Pump damage.

		EOP-15.0
--	--	----------

Op Test No.: 2011 NRC Scenario # 1 Event # Events Page 36 of 43
6,7,8

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

NOTE - Step 28

- If RCS That is stable OR decreasing, feed flow should be established slowly to only one SG until Wide Range level indication increases.
- Feed flow should be established slowly to prevent excessive RCS cooldown.

EOP-15.0

Crew

Continue to try to establish a secondary heat sink in at least one SG

- REFER TO Step 5 for EFW flow.
OR
- REFER TO Steps 8 through 11 for Feed and Condensate flow.
OR
- Consult with TSC personnel to try to establish any available low pressure water source

EOP-15.0

Booth Operator Instructions:

If called as TSC as far as setting up a low pressure water source reply that you will work on a solution.

EOP-15.0

Evaluator Note:

The flowing steps return EFW to service using Step 5. Establishing Feed and Condensate flow using Steps 8-11 follow that.

EOP-15.0

Note – Step 5

If EFW flow control can NOT be reestablished from the Control Room, this procedure should be continued while local operator action is in progress to restore EFW flow.

EOP-15.0

Op Test No.: 2011 NRC Scenario # 1 Event # Events Page 37 of 43
6,7,8

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
	Crew	<p>Check Control Room indications for the cause of EFW Failure:</p> <p>4) Verify no EFW annunciators are lit:</p> <ul style="list-style-type: none"> • XCP-621 3-5 (EFP SUCT HDR PRESS LO XFER TO SW). • Any alarm on XCP-622 • Any alarm on XCP-623 (NO) <p>5) Verify CST level is GREATER THAN 5 ft. (YES)</p> <p>6) Ensure power is available to both MD EFW Pumps. (NO)</p>
		EOP-15.0
<p>Booth Operator Instructions: When called to investigate the EFW pumps. Report as the IB operator that the overcurrent for MDEFW B is indicated. Report that 2030 will not open (even if asked to manually bleed air off the valve)</p>		
		EOP-15.0
	CRS	Refer to AOP-304.1 to restore power to IDA (unsuccessful) .
		EOP-15.0
	BOP	Energize XSW1DA from the normal power source: (NOT AVAILABLE)
		EOP-15.0
	BOP	<p>IF XSW1DA normal power source is NOT available, THEN energize XSW1DA from the alternate power</p> <p>d) Ensure BUS 1DA XFER INIT Switch is in OFF.</p> <p>e) Close BUS 1DA ALT FEED Breaker.</p> <p>f) Verify BUS 1DA potential lights are energized.</p>
		EOP-15.0
<p>CAUTION - Step 5.a.4)</p> <ul style="list-style-type: none"> • EFW valves should NOT be opened to SGs with Wide Range level LESS THAN 15% [25%]. • If Wide Range level in all SGs is LESS THAN 15% [25%], EFW valves should be open to only one SG, until RCS temperatures are decreasing, to limit any failure to one SG. 		
		EOP-15.0

Op Test No.: 2011 NRC Scenario # 1 Event # Events 6,7,8 Page 38 of 43

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
	Crew	<p>Ensure all EFW valves are open: (Applies caution and only opens to one SG)</p> <ul style="list-style-type: none"> FCV-3531(3541)(3551), MD EFP TO SG A(B)(C). FCV-3536(3546)(3556), TD EFP TO SG A(B)(C). (TD EFW Pump not available) MVG-2802A(B), MS LOOP B(C) TO TD EFP. PVG-2030, STM SPLY TO TD EFP TRN A(B). (Will not open)
		EOP-15.0
	Crew	Try to restore any EFW flow.
		EOP-15.0
Evaluator Note: The flowing steps establishing Feed and Condensate flow using Steps 8-11		
		EOP-15.0
<p style="text-align: center;">CAUTION - Step 8</p> <p>Deaerator Storage Tank level should be monitored closely and maintained between 2.5 ft and 10.5 ft on LI-3135, DEAER STOR TK WR LVL FEET, to prevent tripping Condensate and Feedwater Booster Pumps.</p>		
		EOP-15.0
	Crew	Ensure (at least) one Condensate Pump is running.
		EOP-15.0
	Crew	Ensure two Feedwater Booster Pumps are running.
		EOP-15.0
	Crew	<p>Ensure Main FW Control Valves are closed:</p> <ul style="list-style-type: none"> FCV-478, A FCV. FCV-488, B FCV. FCV-498, C FCV.
		EOP-15.0

Op Test No.: 2011 NRC Scenario # 1 Event # Events 6,7,8 Page 39 of 43

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
	Crew	Place all Main FW Bypass Valve Controllers in MAN and closed: <ul style="list-style-type: none"> FCV-3321, LOOP A MAIN FW BYP. FCV-3331, LOOP B MAIN FW BYP. FCV-3341, LOOP C MAIN FW BYP.
		EOP-15.0
	Crew	Locally place the following key switches in BYPASS (CB-448): <ul style="list-style-type: none"> XVG01611A,B,C (XPN 7114). IFV03321,3331,3341 TRAIN A (XPN 7115). IFV03321,3331,3341 TRAIN B (XPN 7121).
		EOP-15.0
Booth Operator Instructions: When called to place the key switches in BYPASS wait 3 minutes and then do so using Trigger 7.		
		EOP-15.0
	Crew	Verify XCP-612 2-1 is NOT lit (RB PRESS HI-2 STM LINE ISOL).
		EOP-15.0
NOTE - Step 8.g <ul style="list-style-type: none"> SG B or C is preferred, so that a steam supply for the TD EFP will be restored as soon as possible. Before the Low Steamline Pressure SI signal is blocked, Main Steam Isolation will occur if the Low Steam Pressure rate setpoint is exceeded. 		
		EOP-15.0
	Crew	Align the MS Isolation Valves to depressurize only one SG: <ol style="list-style-type: none"> Verify the MS Isolation Valve, PVM-2801A(B)(C), is open for the SG to be depressurized. Ensure the remaining two MS Isolation Valves, PVM-2801A(B)(C), are closed.
		EOP-15.0

Op Test No.: 2011 NRC Scenario # 1 Event # Events 6,7,8 Page 40 of 43

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	Crew	Place the following switches in AUTO: <ul style="list-style-type: none"> PVG-1611A(B)(C), A(B)(C) ISOL. FCV-3321,3331,3341, FW CNTRL BYP VLVS, Train A Switch. FCV-3321,3331,3341, MAIN FW BYPASS VLVS, Train B Switch.
		EOP-15.0
	Crew	Reset both SI RESET TRAIN A(B) Switches.
		EOP-15.0
NOTE - Step 10		
Main Feed Pumps trip on SI. If an SI occurs, Steps 9 and 10 should be repeated to restart Main Feed Pumps. (MFPs cannot be reset since the "B" train FWIS is still present.)		
		EOP-15.0
	Crew	Verify PERMISV C-9 status lights bright on XCP-6114 1-3.
		EOP-15.0
	Crew	Open MOV-1-5A(B)(C), TURB DRN VLV.
		EOP-15.0
CRITICAL TASK	Crew	Adjust feed flow to restore SG level.
		EOP-15.0
NOTE - Step 11		
Step 11 should NOT be performed as long as the Main Feed Pump is supplying sufficient flow to increase SG level.		
		EOP-15.0

Op Test No.: 2011 NRC Scenario # 1 Event # Events Page 41 of 43
6,7,8

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Evaluator Note:

After restoring a supply of water to the SG's either through Step 5 for the MD EFW Pump or Steps 8-11 for a MFP the scenario can be terminated at the discretion of the Lead Examiner. The following steps are to reduce SI flow

		EOP-15.0
	Crew	Verify RCS temperatures are decreasing.
		EOP-15.0
	Crew	Verify the SG being used as a secondary heat sink is INTACT: a. Place SVX-9398A(B)(C), SG A(B)(C) SMPL ISOL, in AUTO. b. Notify Chemistry to sample all SG secondary sides, and screen samples for abnormal activity using a frisker. c. Radiation level is normal on RM-A9, CND SR EXHAUST GAS ATMOS MONITOR. d. No SG pressure is decreasing in an uncontrolled manner. e. No SG is completely depressurized.
		EOP-15.0
Booth Operator Instructions: When asked to sample the secondary sides of the SG's as Chemistry wait 30 minutes and then report that all activities are normal.		
		EOP-15.0
NOTE - Step 31 This procedure should NOT be continued prior to establishing SG Narrow Range level.		
		EOP-15.0
	Crew	Verify Narrow Range level is GREATER THAN 26% [41%] in the SG being used as a heat sink
		EOP-15.0
	Crew	Check RCS temperatures: • Verify core exit TC temperatures are decreasing • Verify RCS Thot is decreasing

Op Test No.: 2011 NRC Scenario # 1 Event # Events 6,7,8 Page 42 of 43

Event Description: Loss of Main Feedwater, no Emergency Feedwater available

Time	Position	Applicant's Actions or Behavior
		EOP-15.0
	Crew	Ensure any Reactor Vessel Head Vent Valves opened in Step 24 are closed.
		EOP-15.0
	Crew	Check if SI can be terminated: <ul style="list-style-type: none"> a. Verify RCS subcooling on TI-499A(B), A(B) TEMP °F, is GREATER THAN 52.5°F [67.5°F]. b. Verify RVLIS Narrow Range level is GREATER THAN 61% c. GO TO STEP 36
		EOP-15.0
NOTE - Step 35		
It is preferred to meet the termination criteria with at least one PORV open.		
		EOP-15.0
	Crew	Check PZR POR Status: <ul style="list-style-type: none"> a. Check if any PZR PORV and its associated Block Valve is open. b. Close one PZR PORV and place in AUTO. c. Wait for RCS subcooling to increase to GREATER THAN 80°F or to stabilize. d. RETURN TO Step 34.
		EOP-15.0
Evaluator Note: Crew will check for SI termination criteria while closing one PORV at a time in the loop created in the proceeding steps.		
		EOP-15.0
	Crew	Stop all but one Charging Pump.
		EOP-15.0
	Crew	If an PZR PORV's are open, ensure that only one is left open.
		EOP-15.0

Op Test No.:	2011 NRC	Scenario #	1	Event #	Events 6,7,8	Page	43	of	43
Event Description: Loss of Main Feedwater, no Emergency Feedwater available									
Time	Position	Applicant's Actions or Behavior							

	Crew	Establish Normal Charging: a. Close FCV-122, CHG FLOW. b. Open both MVG-8107 and MVG-8108, CHG LINE ISOL. c. Adjust FCV-122, CHG FLOW, to obtain 60 gpm Charging flow. d. Close all PZR PORVs and place ' d. IF any PZR PORV can NOT be in AUTO. e. Close both MVG-8801A(B), HI HEAD TO COLD LEG INJ.
		EOP-15.0
After restoring a supply of water to the SG's either through Step 5 for the MD EFW Pump or Steps 8-11 for a MFP the scenario can be terminated at the discretion of the Lead Examiner.		

Facility:	VC SUMMER	Scenario No.:2	Op Test No.:	2011 NRC
Examiners:	_____	Operators:	CRS	
	_____		RO	
	_____		BOP	
Initial Conditions:	<ul style="list-style-type: none"> IC-39, 2% Power, BOL GOP-4A, Step 3.5.c and SOP-214 step 2.10.a "B" EDG is OOS to clean the lube oil strainer "B" RB spray pump is out of service for bearing replacement National Weather Service has issued a severe weather alert due to a line of heavy thunderstorms moving into the area 			
Turnover:	<ul style="list-style-type: none"> Complete chest warmup of turbine using provided ramp rate Remain in MODE 2 until EDG is OPERABLE Dilute 100 gallons to adjust rod position per RX Engineering plan Condensate polishing is in service 			
Critical Tasks:	<ul style="list-style-type: none"> Isolate EFW to the faulted within 10 minutes (FSAR 15.4.2.1.4.b.1) Restore "A" RB Spray flowpath or cooling to "B" train RB Cooling Unit prior to completion of Attachment 3 			
Event No.	Malf. No.	Event Type*	Event Description	
1.		R-RO	Dilutes 100 gallons	
2.		N-BOP,CRS	Warm Main Turbine	
3.	NIS008A	TS-CRS	Intermediate range channel NI35 and Source Range NI31 fail low	
4.	ANN-TS001	C-CRS, BOP	Main Transformer high side OCB gas pressure 75 psig, crew should transfer BOP busses to Emerg Aux transformers and open the OCB BOP2	
5.	MSS012	C-BOP, CRS	Condenser steam dumps drift closed due to PT464 failure BOP1	
6.	AUX 14A&B	C-RO, CRS	Loss of Instrument Air RO1	
7.	CVC004A	C – RO, CRS TS- CRS	Progressive failure of RCP "A" #1 seal towards 100 gpm over a 15 minute ramp RO2	
8.	N/A	N-BOP,CRS	Shutdown plant to MODE 3 due to only 2 RCPs in service	
9.	MSS003C	M-ALL	DBA Main Steamline Break inside Reactor Building "C" SG	
10.	PCS006A	C– BOP, CRS	Failure of Train A Phase A signal prevents spray from "A" train	
11.	PMP-SW006F	C– RO, CRS	"B" SWBP fails to autostart	
			Terminate set after SI flow terminated, RCS temperature controlled, and RB cooling restored	
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor				

VC Summer NRC Scenario #2

The crew will assume the watch having pre-briefed on the Initial Conditions (stable in MODE 2, rods in MANUAL, on Emergency Feedwater) The plan for this shift is to warm the Main Turbine per SOP-214 and GOP-4A.

The Reactor Operator will dilute 100 gallons as recommended by Reactor Engineering.

Turbine chest Warming is conducted per SOP-214. This exercises reactor power control with MANUAL rod control as heat load varies.

When Makeup Control is Back in AUTO, the Lead Evaluator can cue Intermediate Range channel N35 failing low (this loss of high voltage also removes indication from source range GammaMetrics channel N31). The CRS will evaluate Technical Specifications 3.3.1 and 3.3.3.6.

Annunciator XCP-638, MN XFMR OCB 8902 TROUBLE will indicate dropping SF₆ pressure in the Main Transformer High Side breaker. The System Controller will direct opening the breaker, which requires transfer of the Balance of Plant busses to the Emergency Aux transformer.

After the BOP busses have been transferred to alternate power, the Lead Evaluator can cue the failure of the Main Steam header pressure transmitter drifting low, which will cause the steam dumps to drift closed in AUTO. Operators will restore temperature control by either controlling the steam dumps in MANUAL or turning the steam dumps off and controlling the SG PORVs.

The running Instrument Air compressor trips with a failure of the Standby and Supplemental compressors to autostart. The RO can manually start the supplemental IA compressor from the main control board.

Reactor Coolant Pump "A" #1 seal fails, ramp to 100 gpm. Crew will stop the "A" RCP and isolate #1 seal leakoff per AOP-101.2 REACTOR COOLANT PUMP SEAL FAILURE. This will complicate pressure control later since the "A" loop provides the most effective Pressurizer spray. The crew will shutdown the plant due to having only 2 Reactor Coolant loops in operation.

A Design Basis Main Steamline Break will occur on the "C" loop, requiring transition to EOP-3.0 FAULTED STEAM GENERATOR ISOLATION and possibly EOP-16.0 RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK. Failure of the available RB spray pump and one Service Water Booster Pump (RB Cooling Unit supply) will require operator actions to limit Reactor Building pressure increases.

VCS 2011 NRC Scenario 2 Simulator Setup (SNAP 302 or 306)**Initial Conditions:**

- IC-39, 2% power, BOL GOP-4A step 3.5
- Prior to the scenario, crew should pre-brief on conditions and expectations for the Shift (maintain power, repairs estimated to be complete well before LCO action time expires).
- Conduct two-minute drill
- Mark up procedures in use with "Circle and slash" as applicable

Pre-Exercise:

Ensure simulator has been checked for hardware problems (DORT, burnt out light bulbs, switch malfunctions, chart recorders, etc.)

TQP-801 Booth Operator checklist, has been completed

Hang red tags for equipment out of service

PRE-LOAD

- LOA AUX 118 = RACK OUT "B" RB Spray pump breaker
- Malfunction PCS006A = FAILURE TO INIT "A" train Containment Phase A
- PMP SW006F "B" SWBP fails to autostart
- LOA-EPS114 = MAINTENANCE ("B" EDG OOS)
- PMP-IA002F IA compressor B fails to auto start
- **BST-IA001 = FAIL AS IS prevents autostart of Supplemental IA compressor**

EVENT 1: Dilute the RCS

- No simulator manipulations required
- Crew will dilute 100 gallons

EVENT 2: Warm the main turbine

- No simulator manipulations required

EVENT 3: Loss of N31 and N35 Source and Intermediate range Instruments

- Trigger 3, Insert Malfunction NIS008A
- Repairs will not be made during scenario, I&C troubleshooting

EVENT 4: SF₆ leak on Main Transformer High Side Breaker 8902

- Trigger 4 Override ANN TS001 = ON
- System Controller agrees with opening breaker
- This will require the crew to transfer the Balance of Plant busses to the Emergency Auxiliary transformers

EVENT 5: Steam dumps fail closed

- Trigger 5 Malfunction MSS012 = 0 psig 2 minute ramp

EVENT 6 Loss of Instrument Air

- Trigger 6 Malfunction AUX 14 A Trip of Instrument Air Compressor
- Trigger 14, LOA AUX-110, 2 minute time delay, starts the Diesel air compressor

EVENT 7: Reactor Coolant Pump “A” #1 seal failure

- Trigger 7, Malfunction CVC004A=100 gpm, 15 minute ramp
- Crew will call for installation of fuse for leakoff isolation valve 8141A (insert and remove malfunction VLV CS052W)
- Trigger 11, LOA-CVC038, V 8369A - SEAL INJECTION THROTTLE VALVE = 0.75

EVENT 8: Shutdown plant to MODE 3

- No simulator manipulations required
- Crew must shutdown in one hour due to Technical Specifications

EVENT 9: Large steamline break inside the Reactor Building

- Trigger 9, Insert malfunction MSS003C = 12E6 over a 615 minute ramp
- Crew may attempt local opening of MVG-3003A, VLV-SP005P = 100% 1 minute ramp

Local action to replace fuse 75 for PVT-8141A

- Insert and remove malfunction VLV-CS052W or use “install Fuses PVT-8141A” button on the LOA/RESET panel

Local action to throttle seal injection

- Insert trigger 11 LOA-CVC038, adjust as requested

Local action to gag closed SW to CCW surge tank (not expected due to air bottles at valves)

- Insert trigger 12 VLV-CC018P & CC019P = 0% (9627A&B closed)

Local action to open XVG-3003A spray header isolation valve

- Insert trigger 13 VLV-SP005P = 100%, 1 minute ramp, adjust as requested

Local action to start diesel air compressor

- Insert Trigger 14 LOA AUX110 Start Diesel Air Compressor & open PVG-2670

Op Test No.:	2011 NRC	Scenario #	2	Event #	1	Page	6	of	38
Event Description: Dilute 100 gallons									
Time	Position	Applicant's Actions or Behavior							

Booth Operator Instructions:

No action required for event 1. Check turnover sheet has method 10.e.D reference position 0.3%, ramp 0.1%/second

Evaluator Note:

This event could also occur during events 2 or 3.

		SOP-106 section E.1
	RO	Verifies sufficient volume exists in the Recycle Holdup Tanks to receive Reactor Coolant displaced during planned dilution operation.
		SOP
NOTE 2.0		
1. Energizing additional Pressurizer Heaters will enhance mixing.		
2. LCV-115A, LTDN DIVERT TO HU-TK, will begin to modulate to the HU-TK position at 70% level on LI-115, VCT LEVEL %.		
		SOP
	RO	Verify at least one Reactor Coolant Pump is running.
		SOP
	RO	Place RX COOL SYS MU switch to STOP.
		SOP
	RO	Place RX COOL SYS MU MODE SELECT switch to ALT DIL. (Peer ✓)
		SOP
	RO	Adjust FCV-168, TOTAL MU FLOW SET PT, to desired flow rate.
		SOP
	RO	Set FIS-168, TOTAL MU FLOW, batch integrator to desired volume. (Peer ✓)
		SOP

Op Test No.: 2011 NRC Scenario # 2 Event # 1 Page 7 of 38

Event Description: Dilute 100 gallons

Time	Position	Applicant's Actions or Behavior
	RO	Place RX COOL SYS MU switch to START.
		SOP
	RO	Verify desired flow rate on FR-113, TOTAL MU GPM (F-168).
		SOP
	RO	Verify alternate dilution stops when preset volume is reached on FIS-168, TOTAL MU FLOW, batch integrator.
		SOP
	RO	Place RX COOL SYS MU switch to STOP.
		SOP
	RO	Place RX COOL SYS MU MODE SELECT switch to AUTO. (Peer ✓)
		SOP
	RO	Adjust FCV-168, TOTAL MU FLOW SET PT, to 7.5 turns (120 gpm).
		SOP
	RO	Place RX COOL SYS MU switch to START.
		SOP
When reactor makeup is returned to automatic control, proceed to the next event.		

Op Test No.: 2011 NRC Scenario # 2 Event # 2 Page 8 of 38

Event Description: Warm the main turbine control valve chest

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Operator Instructions:
No action required for event 2
Indications available:
None Applicable

		SOP-214 section III.2.10
	BOP	Ensure MSV2 Position indicates a negative % value.
		SOP
	BOP	Select ON on Chest Warming, (a dialog box opens).
		SOP
	BOP	Select OK. 1) Verify the following: a) MSVs 1, 3, and 4 indicate 0%. b) MSV 2 remains at the indicated negative value. c) CVs 1- 4 indicate 0% d) IVs 1 – 4 indicate 0% e) ISVs 1 – 4 go to 100%.
		SOP
	BOP	Close MVG-2897, COMB CNTRL VLV BSD
		SOP
	BOP	e. Slowly open MSV2 on the Control/Pre-warming screen, while maintaining differential temperature between CV Chest Inner and CV Chest Outer less than 150°F by one of the following methods:
		SOP
Booth operator instructions; if contacted as Shift Supervisor, direct positioning MSV2 0.3% open at a 0.1% per minute ramp		

Op Test No.: 2011 NRC Scenario # 2 Event # 2 Page 9 of 38

Event Description: Warm the main turbine control valve chest

Time	Position	Applicant's Actions or Behavior
		SOP
	BOP	1) Open MSV2 to warm the inner chest to 350°F by: a) Select Ramp Rate (a dialog box opens). b) Enter 0.1%/minute, select OK. c) Confirm setpoint change, select OK. f) Select position g) enter 0.3%. h) Select OK i) confirm setpoint j) Select OK k) Verify proper system operation .
		SOP
Lead Examiner may direct initiation of the next event at his discretion		

Op Test No.: 2011 NRC Scenario # 2 Event # 3 Page 10 of 38

Event Description: Intermediate channel N35 and source range N31 fail low

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Operator Instructions:**When directed insert malfunction for Event 3 (Trigger 3)****Indications available:****XCP-620 3-1 SR/IR DETECTOR TROUBLE I**

	Crew	Refer to alarm response procedure ARP-001-XCP-620 3-1
		ARP-001-XCP-620 3-1
		PROBABLE CAUSE: 1. Loss of Instrument power or blown Instrument power fuse. 2. Intermediate Range channel N35 S-3 test switch in test (located inside Intermediate Range drawer).
		ARP
		AUTOMATIC ACTIONS: 1. None.
		ARP
		CORRECTIVE ACTIONS:
	CRS	Refer to AOP-401.8, Intermediate Range Channel Failure, and to AOP-401.9, Source Range Channel Failure
		ARP
NOTE		
Startup is not allowed with less than 2 Source Range channels operable.		
		ARP
		SUPPLEMENTAL ACTIONS:
	CRS	Refer to Technical Specification Table 3.3-1 for instrumentation requirements.
		ARP

Op Test No.: 2011 NRC Scenario # 2 Event # 3 Page 11 of 38

Event Description: Intermediate channel N35 and source range N31 fail low

Time	Position	Applicant's Actions or Behavior
	CRS	Enters AOP-401.8, Intermediate Range Channel Failure
		AOP-401.8
	RO	Stabilize reactor power at the current level
		AOP-401.8
	RO	Bypass the failed Intermediate Range level channel <ul style="list-style-type: none"> Place LEVEL TRIP switch for affected channel in BYPASS Verify IR&SR TRIP BYP (XCP-620, 4-5) is LIT
		AOP-401.8
	RO	Check if reactor power is less than $7.5 \times 10^{-6}\%$ (NO)
		AOP-401.8
	RO	Within 1 hour, verify P-6 is BRIGHT
		AOP-401.8
	RO	Maintain reactor power less than 5%
		AOP-401.8
	RO	Monitor the operable Intermediate Range channel
		AOP-401.8
	RO	Ensure NR-45 is selected to the operable channels (NO)
		AOP-401.8
	CRS	Refer to Technical Specifications <ul style="list-style-type: none"> TS 3.3.1 action 3 for Functional Unit 5
		Tech Specs
	CRS	Enters AOP-401.9, SOURCE RANGE CHANNEL FAILURE
		AOP-401.9
IOA	CRS	Stop all core alterations (N/A).

Op Test No.: 2011 NRC Scenario # 2 Event # 3 Page 12 of 38

Event Description: Intermediate channel N35 and source range N31 fail low

Time	Position	Applicant's Actions or Behavior
		AOP-401.9
IOA	CRS/RO	Stop all positive reactivity additions.
		AOP-401.9
	RO	Verify NI-31 OR NI-32 is operable (N32 is).
		AOP-401.9
	RO	Check if the Reactor Building evacuation alarm has actuated: (NO) GO TO Step 6.
		AOP-401.9
	RO	Bypass the failed Source Range channel: a. Place LEVEL TRIP Switch for the AFFECTED channel in BYPASS. b. Verify IR&SR TRIP BYP (XCP-620 4-5), annunciator is lit.
		AOP-401.9
	RO	Block Source Range High Flux At Shutdown: a. Place HIGH FLUX AT SHUTDOWN Switch for the AFFECTED channel in BLOCK. b. Verify SR HIGH FLUX AT SHUTDN BLOCK (XCP-620 4-4),
		AOP-401.9
	RO	Monitor an operable NI channel (N32).
		AOP-401.9
	RO	Ensure NR-45 is selected to the appropriate operable channels.
		AOP-401.9

Op Test No.: 2011 NRC Scenario # 2 Event # 3 Page 13 of 38

Event Description: Intermediate channel N35 and source range N31 fail low

Time	Position	Applicant's Actions or Behavior
	CRS	Determines from TS table 3.3-1 that item 5. Requires action 3 and entry into MODE 1 is not permitted (MODE change with LCO not met).
		<p>ACTION 3 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:</p> <p>a. Below the P-6 (Intermediate Range Neutron Flux Interlock) setpoint, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.(N/A)</p> <p>b. Above the P-6 (Intermediate Range Neutron Flux Interlock) setpoint but below 10 percent of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 10 percent of RATED THERMAL POWER.(YES)</p>
		Tech Specs
	Crew	Conducts post-event brief and contacts SS. May contact I&C for assistance.
On Lead Examiners cue, proceed to the next event.		

Op Test No.: 2011 NRC Scenario # 2 Event # 4 Page 14 of 38Event Description: High side OCB losses SF₆ pressure

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Instructor:**When directed, initiate Event 4 (Trigger 4)****Indications available:****XCP-638 1-1, MN XFMR OCB 8902 TROUBLE**

		ARP XCP-638 1-1
	Crew	Refer to alarm response procedure ARP-001-XCP-638 1-1
		ARP
		PROBABLE CAUSE: 1. Spring charge pump failure. 2. SF ₆ gas leak. 3. Blown rupture disc.
		ARP
<p style="text-align: center;">NOTE</p> <ol style="list-style-type: none"> Breaker closure is disabled upon either of the following conditions: <ol style="list-style-type: none"> Spring charge is less than 32.5 mm. SF₆ gas pressure is less than 74 psig at 68°F. Breaker trip is disabled by SF₆ gas pressure less than 72 psig at 68°F. If SF₆ gas pressure is reduced to less than 74 psig, Switchyard personnel must reset the local SF₆ Lockout Relay to re-enable breaker closure. 		
		ARP
		AUTOMATIC ACTIONS: 1. None.
		ARP
		CORRECTIVE ACTIONS:
	Crew	1. Dispatch an operator to verify the following: <ol style="list-style-type: none"> SF₆ gas density is greater than 90%. Spring charge indicator is in the ENERGY STORAGE position. SF₆ gas pressure compared to SF₆ gas temperature is normal per characteristic chart.
		ARP

Op Test No.: 2011 NRC Scenario # 2 Event # 4 Page 15 of 38Event Description: High side OCB losses SF₆ pressure

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Operator Instructions:

When called to investigate OCB8902 report that gas density is 97%, the spring charge indicator is in the ENERGY STORAGE position, and that gas pressure is 75 psig dropping slowly at 68 °F outside.

		ARP
		SUPPLEMENTAL ACTIONS:
	BOP	Notify the System Controller of problem.
		ARP

Booth Operator Instructions:

When called as system controller, ask for recommendation on opening OCB 8902. Concur with recommendation: if it is to open, give switching order number as 002 and state that email will follow.

	BOP	Enters SOP-304, 115KV/7.2KV OPERATIONS, Section IV.A TRANSFERRING BOP BUSES FROM NORMAL TO ALTERNATE FEED
		SOP-304 Section IV.A
	BOP	Verifies that the AUTO-MAN XFER Switch for each Balance of Plant bus is in AUTO.
		SOP
	BOP	Verifies that XTF0031 and XTF0032, EMERGENCY AUXILIARY TRANSFORMER #1 and #2, are in service per SOP-302.
		SOP
	BOP	Determines that conditions exist which require removal of normal feed for the buses.
		SOP
	BOP	Verifies that XTF0001, MAIN TRANSFORMER, and XTF0002, UNIT AUXILIARY TRANSFORMER, are in service per SOP-302.
		SOP

Op Test No.: 2011 NRC Scenario # 2 Event # 4 Page 16 of 38Event Description: High side OCB losses SF₆ pressure

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

NOTE 2.1 through 2.3

- a. When BUS 1A, 1B, or 1C is aligned to its alternate feed, automatic transfer to its normal feed is not available.
- b. When transferring the bus, there is a delay while the bus synchronizes. Hold the switch in the closed position until the breaker closes.

		SOP
	BOP	Place BUS 1A AUTO-MAN XFER Switch in MAN.
		SOP
	BOP	Close BUS 1A ALT FEED breaker. (PEER ✓)
		SOP
	BOP	Open BUS 1A NORM FEED breaker. (PEER ✓)
		SOP
	BOP	Verify BUS 1A potential lights remain lit.
		SOP
	BOP	Place BUS 1A AUTO-MAN XFER Switch in AUTO. (PEER ✓)
		SOP
	BOP	Place BUS 1B AUTO-MAN XFER Switch in MAN.
		SOP
	BOP	Close BUS 1B ALT FEED breaker. (PEER ✓)
		SOP
	BOP	Open BUS 1B NORM FEED breaker. (PEER ✓)
		SOP
	BOP	Verify BUS 1B potential lights remain lit.
		SOP
	BOP	Place BUS 1B AUTO-MAN XFER Switch in AUTO. (PEER ✓)

Op Test No.: 2011 NRC Scenario # 2 Event # 4 Page 17 of 38Event Description: High side OCB losses SF₆ pressure

Time	Position	Applicant's Actions or Behavior
		SOP
NOTE 2.3.a and 2.3.b		
When placing XSW1C on alternate feed during time critical situations, Steps 2.3.a and 2.3.b shall be done at the end of the transfer. By skipping these steps the bus may be inoperable due to not meeting voltage requirements or Real Time Contingency Analysis.		
		SOP
	BOP	Place BUS 1C AUTO-MAN XFER Switch in MAN.
		SOP
	BOP	Close BUS 1C ALT FEED breaker. (PEER ✓)
		SOP
	BOP	Open BUS 1C NORM FEED breaker. (PEER ✓)
		SOP
	BOP	Verify BUS 1C potential lights remain lit.
		SOP
	BOP	Place BUS 1C AUTO-MAN XFER Switch in AUTO. (PEER ✓)
		SOP
	BOP	Open OCB 8902
		ARP
Booth operator instructions; if contacted again as Unit 5, report SF₆ pressure as 74 psig and still dropping slowly (do not report less than 72 psig since that would prevent breaker operation).		
	BOP	Determine bus voltage limits from Enclosure B (next page) Lower Limit = 219.0 KV Upper Limit = 239.6 KV
		SOP

Op Test No.: 2011 NRC Scenario # 2 Event # 4 Page 18 of 38

Event Description: High side OCB losses SF₆ pressure

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

SOP-304
ENCLOSURE B
REVISION 12
PAGE 1 of 1
CHANGE D

C03→

OFFSITE POWER SOURCE VOLTAGE LIMITS

Transformer(s)	Connected Buses	Allowable Range of Offsite AC KILOVOLTS (XCP-6117, ESF XFMR FEED KV)		
		Generator On Line (≤330 MVAR)	Generator On Line (>330 MVAR to ≤484 MVAR)	Generator Off Line
115 KV Source				
XTF-4 with XTF-6 (5)	1DA (1)	105.5 to 131.3	106.4 to 131.3	102.3 to 131.3
XTF-4 with XTF-6 (5)	1DA and 1DB (3)	112.8 to 131.3	113.7 to 131.3	109.5 to 131.3
XTF-4 and XTF-5	1DA (2)	113.4 to 119.8	113.4 to 119.8	109.3 to 119.8
XTF-4 and XTF-5	1DA and 1DB (2) (3)	114.8 to 119.8	115.7 to 119.8	111.6 to 119.8
XTF-4 or XTF-5	1DA (2)	114.7 to 119.8	115.6 to 119.8	111.5 to 119.8
XTF-4 or XTF-5	1DA and 1DB (2) (3)	119.5 to 119.8 (4)	119.5 to 119.8 (4)	117.5 to 119.8
230 KV Source		(XCP-6118, INCOMING 230 KV BUS)		
XTF-31	1DB (1)	225.7 to 239.6	228.4 to 239.6	218.3 to 239.6
XTF-31	1DA and 1DB (3)	233.0 to 239.6	235.8 to 239.6	225.7 to 239.6
XTF-31	1DB and 1C	226.4 to 239.6	229.1 to 239.6	219.0 to 239.6
XTF-31	1DA, 1DB, and 1C (3)	233.7 to 239.6	236.5 to 239.6	226.4 to 239.6

NOTES:

- (1) Normal operating alignment.
- (2) Used only if regulator is out of service.
- (3) Maintenance only, LCO in effect, if in Modes 1-4.
- (4) MVAR Limits in parenthesis (330 and 484 MVARs) do not apply.
Limit MVAR generation output to 170 MVARs.
- (5) XTF-6 is functionally capable of automatic (or manual) stepping to maintain 7.2 KV bus voltages.

ACTIONS:

115KV:

1. If voltage falls below the lower limit, declare the 115 KV bus inoperable and notify the System Controller.
2. If voltage exceeds the upper limit, notify the System Controller and begin logging 7.2 KV bus voltages each hour.
3. If during logging, 7.45 KV is exceeded, declare the 115 KV bus inoperable and notify the System Controller.

230KV:

1. If voltage falls below the lower limit, declare the 230 KV bus inoperable and notify the System Controller.
2. If voltage exceeds the upper limit, notify the System Controller and begin logging 7.2 KV bus voltages each hour.
3. If during logging, 7.45 KV is exceeded, declare the 230 KV bus inoperable and notify the System Controller.

BOP

Notify the System Controller of the applicable bus voltage limits from Enclosure B.

SOP

Booth Operator Instructions:

When called as System Controller acknowledge bus voltage limits.

Op Test No.: 2011 NRC Scenario # 2 Event # 4 Page 19 of 38Event Description: High side OCB losses SF₆ pressure

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	BOP	If required, adjust the 115KV and/or 230KV alarm setpoints per Attachment VA and/or Attachment VB for the current lineup.
		SOP

Evaluator Note:**Cue crew that setpoints will be changed by the control building operator.****Simulator Setpoint monitor is different than one used in the plant. Setpoint adjustment is not required during transients on the simulator.**

	Crew	Conducts post-event brief and notifies SS.

On Lead Examiner's cue, proceed to the next event

Op Test No.: 2011 NRC Scenario # 2 Event # 5 Page 20 of 38

Event Description: Condenser steam dumps drift closed due to PT464 failure

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Operator Instructions:**When directed insert malfunction for Event 5 (Trigger 5)****Indications available:****XCP-615 Pt 1-5 RCS TAVG DEV HI/LO****OPCRIT alarm for steam dump valves closed**

		XCP-615 Pt 1-5
	RO	Identifies excessive RCS heatup (temperature rises until SG PORVs lift, approx. 564°F).
	BOP/CRS	Identifies zero output (demand) from steam dump controller. Controller does not respond in AUTO.
	BOP	Opens steam dumps in MANUAL
	BOP	Verifies SG PORVs close if open
	Crew	Conducts post-event brief and notifies SS. May request I&C assistance due to failed instrument (must prioritize NIS work vs. steam dump control.)

On Lead Examiner's cue that temperature is stable, proceed to the next event

Op Test No.: 2011 NRC Scenario # 2 Event # 6 Page 21 of 38

Event Description: Trip of running IA compressor, standby doesn't start

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Operator Instructions:
When directed insert Trigger 6
Indication available:**XCP-606 2-1, INSTR AIR CMPR A TRBL****XCP-607 2-5, INSTR AIR PRESS LO FLO HI****XCP-607 2-6, SEVR AIR PRESS LO****XCP-607 2-1, INSTR AIR CMPR B TRBL**

	Crew	Refer to Alarm Response Procedure ARP-001-606 2-1
		ARP-XCP-606 pt. 2-1
		AUTOMATIC ACTIONS: <ol style="list-style-type: none"> 1. Instrument Air Compressor A will trip 2. Instrument Air Compressor B will start automatically on low receiver tank pressure at 90 psig and cycle between 105 psig and 115 psig.
		ARP
<p style="text-align: center;">NOTE</p> <p>This alarm has reflash capabilities.</p>		
		ARP
		CORRECTIVE ACTIONS:
	RO	If Instrument Air Compressor A trips, ensure the standby air compressor starts. (WON'T)
		ARP
	RO	Dispatch an operator to Instrument Air Compressor A to determine the cause of the alarm.
		ARP

Op Test No.: 2011 NRC Scenario # 2 Event # 6 Page 22 of 38

Event Description: Trip of running IA compressor, standby doesn't start

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Operator Instructions:

When sent to the A, B, and Supplemental air compressors report that A tripped on low oil pressure and has a oil leak, and B had a starter fault, and that **there is no apparent problem with the supplemental air compressor tripped on overcurrent.**

	CRS	Enters AOP-220.1, LOSS OF INSTRUMENT AIR
		Enters AOP-220.1
<p style="text-align: center;">CAUTION</p> <p>If a Reactor Trip or SI Actuation occurs during this procedure, EOP-1.0, REACTOR TRIP/SAFETY INJECTION ACTUATION, should be performed while continuing with this procedure.</p>		
		AOP
	RO	Ensure the standby Instrument Air Compressor is running. (NO)
		AOP
	RO	Check if Instrument Air header pressure is increasing. (NO)
		AOP
	RO	Start XAC-12-IA, SUPP INST AIR COMPRESSOR. (YES)
		AOP
	RO	May locally start the Diesel Driven Air Compressor. (conservative until Supplemental verified running sat and to supply Service Air.) REFER TO SOP-220,STATION AND BACKUP INSTRUMENT AIR SYSTEMS.
		AOP
Booth Operator Instructions: When called to start the diesel driven air compressor, insert trigger 14 and report that it starts. (LOA AUX-110 starts the diesel air compressor and connects it to the IA system).		
	CRS	Returns to procedure and step in effect (SOP-214 for chest warming)

Op Test No.: <u>2011 NRC</u> Scenario # <u>2</u> Event # <u>6</u> Page <u>23</u> of <u>38</u>		
Event Description: Trip of running IA compressor, standby doesn't start		
Time	Position	Applicant's Actions or Behavior

		AOP
	Crew	Performs post-event brief and contacts SS. May contact mechanical maintenance for compressor troubleshooting.
At the discretion of the lead examiner proceed to the next event		

Op Test No.: 2011 NRC Scenario # 2 Event #s 7&8 Page 24 of 38

Event Description: Progressive Failure of RCP "A" #1 seal, shutdown to MODE 3

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Instructor:**When directed, initiate Event 7 (Trigger 7)****Indications available:****XCP-603, 1-1, RCP A CCW TEMP HI****XCP-617, 2-1, RCP A #1 SL LKOFF FLO HI/LO****XCP-617, 2-4, RCP A STANDPIPE LVL HI/LO****XCP-618, 2-2, RCP B #1 SL INJ FLO LO****XCP-619, 2-2, RCP C #1 SL INJ FLO LO****Seal leakoff flow on RCP "A" rising to off-scale high**

	Crew	Refer to Alarm Response Procedures
		ARP XCP-617, 2-1
	RO	Determines RCP A #1 Seal Leakoff is rising rapidly
		ARP
	CRS	Enters AOP-101.2, Reactor Coolant Pump Seal Failure
		Enters AOP-101.2

CAUTION

PVT-8141A, A SEAL LKOFF, should be closed between three minutes and five minutes after the affected Reactor Coolant Pump is secured.

Reactor Coolant System Controlled Leakage should be limited to 33 gpm per Technical Specification 3.4.6.2 in Modes 1, 2, 3, and 4.

		AOP
	CRS	While continuing with this procedure, have an operator install the pre-staged fuses for the AFFECTED RCP's Seal Leakoff Valve in Main Control Board Panel XCP-6109 Subpanel #5: <ul style="list-style-type: none"> XVT-8141A-FU-CS75.
		AOP

Booth Operator Instructions:**Use LOA Resets page to install fuses for PVT-8141A-FU-CS75**

Op Test No.: 2011 NRC Scenario # 2 Event #s 7&8 Page 25 of 38

Event Description: Progressive Failure of RCP "A" #1 seal, shutdown to MODE 3

Time	Position	Applicant's Actions or Behavior
		AOP
	RO	Ensure seal injection flow is GREATER THAN 8 gpm for the affected Reactor Coolant Pump on FI-130A, RCP A INJ FLO GPM.
		AOP
	RO	Ensure Component Cooling Water flow to the affected Reactor Coolant Pump thermal barrier is between 35 gpm (50%) and 60 gpm (87.5%) on FM-7138, RCP THERM BAR A (MODUFLASH M2 CC POINTS 19).
		AOP
	CRS	<p>Check the following conditions for the affected Reactor Coolant Pump on the IPCS:</p> <ul style="list-style-type: none"> Bearing water temperature (LOWER SEAL WTR BRG T) on T0417A is LESS THAN 225°F and NOT significantly increasing. AND #1 seal leakoff temperature (SEAL WTR OUT TEMP) on T0181A is LESS THAN 235°F and NOT significantly increasing (NO). <p>GO TO STEP 6</p>
		AOP
NOTE - Step 6 -		
When PVT-8141A, A SEAL LKOFF, is closed, the #1 seal Δ P indication will be unreliable.		
		AOP
	Crew	Check if Reactor power is GREATER THAN 38% (Reactor Permissive P-8, REACTOR TRIP BLOCKED, is dim). (NO)
		AOP
	RO	Stop the affected Reactor Coolant Pump (A)
		AOP
<p>Note: The BOP may place A Feedwater Regulating Valve in MANUAL to control level swings caused by stopping A RCP. The NROATC may place the "A" spray valve PCV 444D, PZR SPRAY, in MANUAL and 0% per SOP-101</p>		

Op Test No.: 2011 NRC Scenario # 2 Event #s 7&8 Page 26 of 38

Event Description: Progressive Failure of RCP "A" #1 seal, shutdown to MODE 3

Time	Position	Applicant's Actions or Behavior
		AOP
	RO/CRS	Perform the following for the affected Reactor Coolant Pump: <ul style="list-style-type: none"> • Close PVT-8141A, A SEAL LKOFF, between three to five minutes. • Increase seal injection flow to 13 gpm to the affected Reactor Coolant Pump by locally unlocking and throttling one of the following: <ul style="list-style-type: none"> ○ XVN08369A-CS, RCP A SEAL SUPPLY THROTTLE VALVE (AB-412 West Pen).
		AOP
Booth Operator Instructions: When called to throttle seal supply use trigger 11 LOA-CVC038, V 8369A - SEAL INJECTION THROTTLE VALVE, to do so.		
		AOP
	CRS	Within one hour, shut down the plant to hot standby. GO TO the appropriate GOP: GOP-5, REACTOR SHUTDOWN FROM STARTUP TO HOT STANDBY (MODE 2 TO MODE 3).
		Enters GOP-5 section 3
	CRS	Complete GTP-702 Attachment II.K, Operational Mode Change Plant Shutdown - Entering Mode 3 Or Plant Trip To Mode 3 From Modes 1 Or 2.
		GOP
	CRS	Perform a Mode Change Brief per OAP-100.4 Attachment I. The SS and System Controller would notified at some point during this transient.
		GOP
	RO	Select both Intermediate Range Channels on NR-45, NIS RECORDER.
		GOP
NOTE 3.4 through 3.5		
Control Rods are inserted using Step 3.4 or Step 3.5. Step 3.4 inserts Control Rods via a Manual Reactor Trip. Step 3.5 manually inserts Control Rods.		

Op Test No.: 2011 NRC Scenario # 2 Event #s 7&8 Page 27 of 38

Event Description: Progressive Failure of RCP "A" #1 seal, shutdown to MODE 3

Time	Position	Applicant's Actions or Behavior
		GOP
NOTE 3.4		
If performing a manual boration prior to manually tripping the Reactor, consider performance of STP-130.004C, EMERGENCY BORATION VALVE OPERABILITY TESTING (MODE 4) during the boration.		
		GOP
	CRS	Perform a Pre-job brief per OAP-100.3, Human Performance Tools.
		GOP
	RO	Select one Intermediate Range and one Source Range Channel on NR-45, NIS RECORDER.
		GOP
	BOP	Ensure both Motor Driven Emergency Feedwater Pumps are running.
		GOP
	RO	(Optional) If desired, commence RCS boration prior to performing a manual Reactor trip: 1) Open MVT-8104, EMERG BORATE. 2) Ensure XPP-13A(B), BA XFER PP A(B), is running.
		GOP
NOTE 3.4.d.3)		
The expectation is to trip the Reactor following verification of greater than 30 gpm flow on FI-110, EMERG BORATE FLOW GPM. Subsequent steps, 3.4.d.4) through 6) may be performed after verification of Reactor trip.		
		GOP
	RO	Verify greater than 30 gpm flow on FI-110, EMERG BORATE FLOW GPM.
		GOP

Op Test No.: 2011 NRC Scenario # 2 Event #s 7&8 Page 28 of 38

Event Description: Progressive Failure of RCP "A" #1 seal, shutdown to MODE 3

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

NOTE 3.4.d.4)

Emergency boration to the STP-134.001, Shutdown Margin Verification, determined Required Boron concentration is not required prior to tripping the Reactor per Step 3.4.e.

		GOP
	RO	Refer to STP-134.001, Shutdown Margin Verification, to determine the required boron concentration needed for the anticipated Plant Mode and temperature:
		GOP
Booth operator instructions; if contacted as the Shift Engineer, report required C_B is 1589 ppm.		
	RO	Borate the outage Mixed Bed Demineralizer by placing in service per SOP-102, Section IV. (N/A)
		GOP
	RO	When boration is no longer desired, perform the following: a) Close MVT-8104, EMERG BORATE. b) Verify no flow on FI-110, EMERG BORATE FLOW GPM.
		GOP
	RO	Place RX TRIP Switch CS-CR01 in TRIP.
		GOP
	RO	Verify all Reactor Trip and Bypass Breakers are open.
		GOP
	RO	Verify all Rod Bottom lights are lit.
		GOP

Op Test No.: 2011 NRC Scenario # 2 Event #s 7&8 Page 29 of 38

Event Description: Progressive Failure of RCP "A" #1 seal, shutdown to MODE 3

Time	Position	Applicant's Actions or Behavior
	RO	<p>If two or more Control Rods are not fully inserted, then emergency borate as follows: (N/A)</p> <ol style="list-style-type: none"> 1) Open MVT-8104, EMERG BORATE. 2) Verify greater than 30 gpm flow on FI-110, EMERG BORATE FLOW GPM. 3) If required, refer to AOP-106.1, Emergency Boration, to establish greater than 30 gpm flow. 4) Borate 2500 gallons if two Control Rods are not fully inserted. 5) Borate 5800 gallons if greater than two Control Rods are not fully inserted.
		GOP
	RO	Verify Reactor Power level is decreasing.
		GOP
	BOP	Ensure RCS temperature is being maintained between 555°F and 559°F using the Steam Dump System or Steamline PORVs.
		GOP
	RO	Place both SOURCE RANGE HIGH FLUX AT SHUTDOWN Switches in BLOCK.
		GOP
		<p>When Reactor Power decreases below $7.5 \times 10^{-6}\%$, complete the following:</p> <ol style="list-style-type: none"> 1) Verify P6 Permissive de-energizes to dim. 2) When on scale indication is observed, select both Source Range Channels on NR-45, NIS RECORDER.
		GOP
	CRS	Proceed to Step 3.7.
		GOP
	RO	Monitor Source Range counts per SOP-404, Excore Nuclear Instrumentation System.
		GOP

Op Test No.: <u>2011 NRC</u> Scenario # <u>2</u> Event #s <u>7&8</u> Page <u>30</u> of <u>38</u>		
Event Description: Progressive Failure of RCP "A" #1 seal, shutdown to MODE 3		
Time	Position	Applicant's Actions or Behavior

CAUTION 3.8 Shutdown Margin may decrease by as much as 3000 pcm due to Xenon decay over a 24 hour period. Any deviation from the conditions used in the Shutdown Margin calculation requires reverification of adequate Shutdown Margin.		
		GOP
At the discretion of the lead examiner proceed to the next event		

Op Test No.: 2011 NRC Scenario # 2 Event #s 9,10,11 Page 31 of 38

Event Description: Main Steamline break inside the Reactor Building

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Operator Instructions:
When directed, initiate Event 9 (Trigger 9)

Indications available:
Safety Injection

		Enters EOP-1.0
	CRS	Enters EOP-1.0, Reactor Trip/Safety Injection Actuation
		EOP-1.0
IOA	RO	Verify Reactor Trip: <ul style="list-style-type: none"> • Trip the Reactor using either Reactor Trip Switch. • Verify all Reactor Trip and Bypass Breakers are open. • Verify all Rod Bottom Lights are lit. • Verify Reactor Power level is decreasing.
		EOP-1.0
IOA	BOP	Verify Turbine/Generator Trip: <ol style="list-style-type: none"> a. Verify all Turbine STM Stop VLVs are closed. b. Ensure Generator Trip (after 30 second delay): <ol style="list-style-type: none"> 1) Ensure the GEN BKR is open. 2) Ensure the GEN FIELD BKR is open. 3) Ensure the EXC FIELD CNTRL is tripped.
		EOP-1.0
IOA	BOP	Verify both ESF buses are energized.
		EOP-1.0
IOA	RO	Check if SI is actuated: <ol style="list-style-type: none"> a. Check if either: <ul style="list-style-type: none"> • SI ACT status light is bright on XCP-6107 1-1. Or • Any red first out SI annunciator is lit on XCP-626 top row. b. Actuate SI using either SI ACTUATION Switch
		EOP-1.0
	BOP	Initiate ATTACHMENT 3, SI EQUIPMENT VERIFICATION.

Op Test No.: 2011 NRC Scenario # 2 Event #s 9,10,11 Page 32 of 38

Event Description: Main Steamline break inside the Reactor Building

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

		EOP-1.0
Evaluator Note: The steps for Attachment 3, SI EQUIPMENT VERIFICATION can be found at the end of this scenario guide. (after page 38)		
		EOP-1.0
	Crew	Announce plant conditions over the page system.
		EOP-1.0
	RO	Verify RB pressure has remained LESS THAN 12 psig on PR-951, RB PSIG (P-951), red pen. (NO)
		EOP-1.0
	RO	Verify both the following annunciators are lit: <ul style="list-style-type: none"> • XCP-612 3-2 (RB SPR ACT). • XCP-612 4-2 (PHASE B ISOL).
		EOP-1.0
	RO	Verify Phase B Isolation by ensuring RB SPRAY/PHASE B ISOL monitor lights are bright on XCP-6105.
		EOP-1.0
CRITICAL TASK	RO	Ensure the following are open: <ul style="list-style-type: none"> • MVG-3001A(B), RWST TO SPRAY PUMP A(B) SUCT. • MVG-3002A(B), NAOH TO SPRAY PUMP A(B) SUCT. • MVG-3003A(B), SPRAY HDR ISOL LOOP A(B). (NO)
		EOP-1.0
	RO	Ensure both RB Spray Pumps are running.
		EOP-1.0
	RO	Stop all RCPs.
		EOP-1.0

Op Test No.: 2011 NRC Scenario # 2 Event #s 9,10,11 Page 33 of 38

Event Description: Main Steamline break inside the Reactor Building

Time	Position	Applicant's Actions or Behavior
	RO	Check RCS temperatures: With no RCP running, RCS Tcold is stable at OR trending to 557°F. (NO)
		EOP-1.0
	RO	Close IPV-2231, MS/PEGGING STM TO DEAERATOR.
		EOP-1.0
	RO	Continue to direct local throttling of EFW or if IA is restored throttle EFW.
		EOP-1.0
	BOP	Initiate ATTACHMENT 6, STEAM VALVE ISOLATION, while continuing with this procedure.
		EOP-1.0
	RO	Check if PZR PORVs are closed.
		EOP-1.0
	RO	Check if PZR Spray Valves are closed.
		EOP-1.0
	RO	Verify power is available to at least one PZR PORV Block Valve: <ul style="list-style-type: none"> • MVG-8000A, RELIEF 445 A ISOL. • MVG-8000B, RELIEF 444 B ISOL. • MVG-8000C, RELIEF 445 B ISOL
		EOP-1.0
	RO	Verify at least one PZR PORV Block Valve is open.
		EOP-1.0
NOTE - Step 11		
Seal Injection flow should be maintained to all RCPs.		
		EOP-1.0
	RO	Check if RCPs should be stopped: (RCP's already stopped)

Op Test No.: 2011 NRC Scenario # 2 Event #s 9,10,11 Page 34 of 38

Event Description: Main Steamline break inside the Reactor Building

Time	Position	Applicant's Actions or Behavior
		EOP-1.0
	RO	Verify no SG is FAULTED: <ul style="list-style-type: none"> No SG pressure is decreasing in an uncontrolled manner. No SG is completely depressurized. (NO)
		EOP-1.0
	CRS	GO TO EOP-3.0, FAULTED STEAM GENERATOR ISOLATION, Step 1.
		Exits EOP-1.0
	CRS	Transition to EOP-16.0, RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK, based on red path.
		Enters EOP-16.0
<p>Note</p> <p>Conditions for implementing Emergency Plan Procedures should be evaluated using EPP-001, ACTIVATION AND IMPLEMENTATION OF EMERGENCY PLAN.</p>		
		EOP-16.0
<p>CAUTION – Step 1</p> <p>If the TD EFW Pump is the only available source of feed flow, the steam supply to the TD EFW Pump must be maintained from at least one SG, to maintain a secondary heat sink.</p>		
		EOP-16.0
<p>NOTE – Step 1</p> <p>A FAULTED SG is any SG that is depressurizing in an uncontrolled manner OR that is completely depressurized.</p>		
		EOP-16.0
	RO	Check RCS Tcold stable or increasing (NO)
		EOP-16.0
	BOP	Ensure Steamline PORVs are closed.

Op Test No.: 2011 NRC Scenario # 2 Event #s 9,10,11 Page 35 of 38

Event Description: Main Steamline break inside the Reactor Building

Time	Position	Applicant's Actions or Behavior
		EOP-16.0
	BOP	Ensure Condenser Steam Dump Valves are closed.(YES)
		EOP-16.0
	RO	Stop any cooldown with the RHR System if it is in service. (NO)
		EOP-16.0
	BOP	Maintain total EFW flow GREATER THAN 450 gpm until Narrow Range level is GREATER THAN 26% [41%] in at least one NON-FAULTED SG
		EOP-16.0
	BOP	Reduce EFW flow to NON-FAULTED SG(s).
		EOP-16.0
	BOP	Ensure valves associated with each FAULTED SG are closed: MS Isolation, PVM-2801A(B)(C) MS Isolation Bypass, PVM-2869A(B)(C)
		EOP-16.0
	BOP	Close MVG-2802B, MS LOOP C TO TD EFP
		EOP-16.0
	BOP	Open XMC1DB2Y 05EH, EMERG FEEDWATER PUMP MAIN STEAM BLOCK XVG2802B-MS (AB-463)
		EOP-16.0
Booth Operator Instructions: When called to open XMC1DB2Y 05EH use LOA/RESETS page to do so.		
CRITICAL TASK	BOP	If any SG is NOT FAULTED, THEN isolate all feedwater to FAULTED SG(s) unless necessary for RCS temperature control.

Op Test No.: 2011 NRC Scenario # 2 Event #s 9,10,11 Page 36 of 38

Event Description: Main Steamline break inside the Reactor Building

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

EOP-16.0

Evaluator Note:

This is the first procedure step that directs isolation of EFW to the FAULTED SG (C). However, OAP-103.4, EOP/AOP USER'S GUIDE, allows the crew to isolate EFW prior to direction in the EOP's.

RO

Verify power is available to the PZR PORV Block Valves:

- 1) MVG-8000A, RELIEF 445 A ISOL
- 2) MVG-8000B, RELIEF 444 B ISOL
- 3) MVG-8000C, RELIEF 445 B ISOL

EOP-16.0

RO

Verify at least one PZR PORV Block Valve is open.

EOP-16.0

Caution – Step 3

If any PZR PORV opens because of high PZR pressure Step 3 should be repeated after pressure decreases to LESS THAN 2300 psig, to ensure the PORV recloses.

EOP-16.0

RO

Check if the following Monitor Lights are bright: **(NO)**

- Both XCP-6106 1-11 and 2-11 (RCS TO RHR IN ISOL 8701A(8702A) OPEN).
- OR
- Both XCP-6106 1-12 and 2-12 (RCS TO RHR IN ISOL 8701B(8702B) OPEN

EOP-16.0

CRS

GO TO Step 3.d.

EOP-16.0

RO

Verify PZR pressure is LESS THAN 2330 psig **(yes)**.

EOP-16.0

Op Test No.: 2011 NRC Scenario # 2 Event #s 9,10,11 Page 37 of 38

Event Description: Main Steamline break inside the Reactor Building

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	RO	Ensure all PZR PORVs are closed (yes) ..
		EOP-16.0
	RO	Verify SI flow on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM
		EOP-16.0
	RO	Check if SI can be terminated: a. RCS subcooling on TI-499A(B), A(B) TEMP °F, is GREATER THAN 105°F[120°F]. b. Check RVLIS level GREATER THAN the following: With 0 RCP's running RVLIS level 61% NR
		EOP-16.0
	RO	Reset both SI RESET TRAIN A(B) Switches.
		EOP-16.0
	RO	Reset Containment Isolation: • RESET PHASE A – TRAIN A(B) CNTMT ISOL • RESET PHASE B – TRAIN A(B) CNTMT ISOL
		EOP-16.0
	BOP	Place both ESF LOADING SEQ A(B) RESETS to: a. NON-ESF LCKOUTS b. AUTO-START BLOCKS
		EOP-16.0
	RO	Establish Instrument Air to the RB a. Start an IA compressor b. Open PVA-2659, INST AIR TO RB AIR SERV c. Open PVT-2660, AIR SPLY TO RB
		EOP-16.0

Evaluator Note:

Until IA is restored, the PZR PORVs can be cycled using accumulators. IA should be restored prior to these accumulators running out, otherwise pressure control is lost (less likely after installation of large air bottles during the last outage).

Op Test No.: 2011 NRC Scenario # 2 Event #s 9,10,11 Page 38 of 38

Event Description: Main Steamline break inside the Reactor Building

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

		EOP-16.0
	RO	Stop any RHR Pump operating in the SI mode.
		EOP-16.0
	RO	Stop all but one Charging Pump.
		EOP-16.0
	RO	Establish Normal Charging <ul style="list-style-type: none"> a. Close FCV-122, CHG FLOW b. Open both MVG-8107 and MVG-8108, CHG LINE ISOL. c. Adjust FCV-122, CHG FLOW, to obtain 70 gpm Charging flow. d. Close both MVG-8801A(B), HI HEAD TO COLD LEG INJ.
		EOP-16.0
	RO/CRS	Verify SI flow is NOT required: <ul style="list-style-type: none"> a. RCS subcooling on TI-499A(B), A(B) TEMP °F, is GREATER THAN 52.5°F[67.5°F]. b. Check RVLIS level GREATER THAN the following: With 0 RCPs running RVLIS level 61% NR.
		EOP-16.0
	Crew	Verify RCS T _{hot} is stable by using EFW control and SG PORVs
		EOP-16.0

Evaluator Note:

The scenario can be terminated when SI flow is reduced, RCS T_{hot} is being maintained stable, and RB pressure rise is mitigated.

Facility:	VC SUMMER	Scenario No.:	3	Op Test No.:	2011 NRC
Examiners:	_____	Operators:	CRS		
	_____		RO		
	_____		BOP		
Initial Conditions:	<ul style="list-style-type: none"> The power was reduced to replace and test a FWIV actuator IC-40, 25% Power, BOL, GOP-4a, Step 3.12C (IC-303 or IC-307 for 2011) "B" EDG is OOS to clean the lube oil strainer 				
	<ul style="list-style-type: none"> "B" RB spray pump is out of service for bearing replacement 				
	<ul style="list-style-type: none"> National Weather Service has issued a severe weather alert due to a line of heavy thunderstorms moving into the area 				
Turnover:	<ul style="list-style-type: none"> Increase power to 38% per GOP 				
Critical Task:	<ul style="list-style-type: none"> Restore High head safety injection prior to NR RVLIS going less than 34% level (Orange path challenge to Core Cooling) 				
	<ul style="list-style-type: none"> Control EFW flow to "C" SG prior to filling generator above 90% (WOG M.08) 				
	<ul style="list-style-type: none"> Establish Containment Isolation prior to completion of Att. 3 to EOP-1.0 				
Event No.	Malf. No.	Event Type*	Event Description		
1.		N-BOP, CRS R-RO	Power escalation toward 38%		
2.	XMT-MS0360	I- BOP, CRS	SG pressure transmitter PT-2010 fails high, opening SG PORV BOP1		
3.	MSS001E	TS-CRS	Compensating "B" SG pressure transmitter PT-485 fails high, increasing Main Feedwater flow BOP2		
4.	RCS007C	C- RO, TS-CRS	"C" RCP vibrations ramp up, pump must be shutdown RO1		
5.	PRS001B	C-RO, TS-CRS	PT-445 fails high, causing entry to DNB TS. RO2		
6.	CCW007A PMP-CC003F. PMP-CC002B	C-RO, BOP, CRS	Running CCW pump trips. Standby pump on A train fails to start. Opposite Train pump starts but bearing fails, causing high amps then overcurrent trip.		
7.		C-ALL	Trip reactor and reactor coolant pumps due to loss of CCW		
8.	VLV-EF005F	C- BOP, CRS	FCV 3551 MDEFW to C SG fails as is (open)		
9.	PRS007A	M-ALL	Pressurizer Safety valve fails open, requiring manual SI alignment		
			Terminate after EOP-2.1 (Post LOCA Cooldown and Depressurization) entry		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

VC Summer NRC Scenario #3

The crew will assume the watch having pre-briefed on the Initial Conditions (25% power, BOL) increasing power to 38% per GOP-4A.

The crew increases power until the Lead Evaluator directs inserting the first malfunction.

SG pressure transmitter PT-2010 fails high, opening SG PORV PCV-2010. BOP places controller PK-2010 in MANUAL and closes the PORV to prevent uncontrolled power increase and loss of condenser inventory.

PT-485, SG "B" compensating pressure channel fails high, requiring action to prevent overfeeding the "B" SG due to indicated feed flow/steam flow mismatch. CRS must evaluate Tech Specs for SG pressure transmitter failure.

Reactor Coolant Pump vibrations ramp up. Since reactor power is below P-8 (38%) the RO can secure the RCP per ARP-619 point 1-3, RCP C VIBR HI. The BOP must control SG level in the idle loop and the CRS must evaluate Tech Spec 3.4.1.1 and begin a power reduction to MODE 3 over the next hour.

Pressurizer Pressure Transmitter PT-445 fails high, causing two Pressurizer PORVS to open. The PORVs will cycle open and closed at the P-11 interlock pressure of 1970 psig. The RO will close the PORVs and their block valves per AOP-401.5 PRESSURIZER PRESSURE CONTROL CHANNEL FAILURE. The CRS will check that this satisfies Technical Specification 3.4.4 for the PORVs.

All Component Cooling Water flow is lost due to trip of the running pump and failure of the standby pump to start. The RO momentarily restores CCW by starting the opposite train pump and transferring non-essential CCW loads (including RCPs). The one remaining pump then seizes. This will require the crew to trip the reactor and the running RCPs within 10 minutes per AOP-118.1 TOTAL LOSS OF COMPONENT COOLING WATER. The CRS will implement EOP-1.0, REACTOR TRIP OR SAFETY INJECTION in conjunction with the AOP. Alternate cooling to the charging pumps must be established within 20 minutes to prevent a loss of RCP seal cooling (loss of CCW and RCP seals together account for 28% of the core damage frequency).

When the crew attempts to throttle AFW, FCV 3551 MDEFW to C SG will be found to be failed open. The crew will have to either establish local control of the valve or secure the motor-driven EFW pumps and realign the turbine-driven pump prior to overfilling the C SG.

One train of CCW is restored by transferring the swing pump to "B" train. Last event is entered after CCW loads are evaluated in AOP-118.1.

A Pressurizer Safety valve drifts open with a failure of both Trains of Containment Isolation Signal and both High Head injection valves to open. Crew must return to EOP-1.0 (WOG E-0) and use Att. 3 to manually Initiate Phase A Containment Isolation and align High Head Safety Injection. (This must be accomplished prior to Narrow Range RVLIS going less than 34% level, which is the Orange Path challenge to Core Cooling with no RCPs running.) Scenario may be terminated after entry in EOP-2.1.

VCS 2011 NRC Scenario 3 Simulator Setup

Initial Conditions:

- IC-40, 25% Power, BOL, GOP-4a, Step 3.12 (IC 307 for 2011)
- Prior to the scenario, crew should pre-brief on conditions and expectations for the Shift (maintain power, repairs estimated to be complete well before LCO action time expires.

VCS 2011 NRC Scenario 3 Simulator Setup (SNAP 307)

- Conduct two-minute drill
- Mark up procedures in use with "Circle and slash" as applicable

Pre-Exercise:

Ensure simulator has been checked for hardware problems (DORT, burnt out light bulbs, switch malfunctions, chart recorders, etc.)

TQP-801 Booth Operator checklist, has been completed

Hang Red Tags for equipment out of service

Put copy of AOP-118.1 ATT. 3 pg. 4 in booth

PRE-LOAD

- LOA-CCW048 standby Component Cooling Water pump "C" Breaker on "A" train fails to close
- Override OVR-EF015A & EF015B = 100% Flow control valve from Motor-driven EFW to C SG fails as-is (open)
- LOA AUX 118 = RACK OUT "B" RB Spray pump breaker
- LOA-EPS114 = MAINTENANCE ("B" EDG OOS)
- MAL PCS-006A and 006B, Containment Isolation Phase A Signal Failure, Train A(B)=FAILURE TO INIT
- OVR-SG007 CONT ISO PHASE A CONT VENT ISO=false
- Define Event 27 x02i054A second (right) Phase A switch CS-SG02B take to actuate
- Schedule "delete malfunction PCS-006B" on event 27. Run scheduler & minimize (DO NOT CLOSE).
- PMP-CS004F and CS006F failure of "A" and "B" CHG/SI pumps to autostart
- VLV-SI003F and SI004F MVG-8801A and B fail as-is (closed)
- Define Event 28 x03i086o, MVG SS01B C/S taken to OPEN
- Schedule "delete malfunction vlv-si004f" on event 28. Run scheduler & minimize (DO NOT CLOSE).
- Define Event 29 x03i085o, MVG SS01A C/S taken to OPEN
- Schedule "delete malfunction vlv-si003f" on event 29. Run scheduler & minimize (DO NOT CLOSE).

EVENT 1: Power escalation toward 38%

- No simulator manipulations required
- Next event on lead examiner cue

EVENT 2: SG “A” steam pressure transmitter fails high

- Trigger 2, XMT-MS036O = 1300#, no ramp
- Transmitter will not be repaired
- Steam Generator Power Relief Valve will remain in MANUAL

EVENT 3: “B” SG compensating pressure transmitter fails high

- Trigger 3, Malfunction MSS001E = 1300#, 30 second ramp
- Transmitter will not be repaired
- Steam and feed flow will remain selected to alternate channel

EVENT 4: Reactor Coolant Pump vibrations require RCP trip

- Trigger 4, Insert Malfunction RCS007C=14 mils, no ramp, then;
- Modify Malfunction RCS007C = 30 mils, 6 minute ramp
- Power is low enough for crew to trip RCP
- Insert and remove VLV-CS05W to install fuse for 8141C or use LOA RESETS page on thunderview display

EVENT 5: Pressurizer Pressure Transmitter PT-445 fails high, opening two PORVs

- Trigger 5, Malfunction PRS001B = 2500#, 2 minute ramp
- Pressure transmitter will not be repaired

EVENT 6: Trip of running Component Cooling Water pump and failure of other pumps

- Trigger 6, Malfunction CCW007A, trip of “A” CCW pump
- PMP CC002B = 10, 3 minute Time Delay, 6 minute ramped bearing Seizure of “B” train CCW pump

EVENT 7: Pressurizer Safety drifts open

- Trigger 7, Malfunction PRS007A “A” safety drifts fully open, 5 minute ramp
- Crew must operate individual pumps and valves due to total SSPS failure

Trigger 8 Local action to vent Deaerator

- LOA-FWM055, DEAERATOR VENT VALVE 2210-HV , = 1.0 (open), 5 minute TD

Trigger 9 Local action to throttle condensate to blow down heat exchanger flow

- LOA-CND044,045,046 TC-3062A/B/C A/M station mode to MANUAL
- LOA-CND047,048,049 TC-3062A/B/C manual output to 10% open

Trigger 10 Local action to transfer “C” CCW pump to “B” train

- LOA-CCW044 CELL SWITCH OF CCW PUMP C TRAIN A = RACK OUT, 10 min TD
- LOA-CCW045 CELL SWITCH OF CCW PUMP C TRAIN B = RACK OUT, 12 min TD
- LOA-CCW001 CCW PUMP C DISCONNECT SWITCH = TRAIN B, 14 min TD
- LOA-CCW010 CC PP C SUCT LP A ISO VLV = 0 2 min TD 1min ramp
- LOA-CCW012 CC PP C DISCH LP A ISO VLV = 0 4 min TD 1min ramp
- LOA-CCW009 CC PP C SUCT LP B ISO VLV = 1 6 min TD 1min ramp
- LOA-CCW011 CC PP C DISCH LP B ISO VLV = 1 8 min TD 1min ramp

Local action restore control of seal injection flow

- Remove Malfunction VLV-CS010A to restore air to HCV-186

Local action to throttle EFW flow

- Use Malfunction VLV-EF005P as requested to locally throttle FCV-3551

Op Test No.: 2011 NRC Scenario # 3 Event # 1 Page 6 of 52

Event Description: Raise power in accordance with GOP-4A towards 38%

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Instructor:
No action required for event 1

Indications available:
None Applicable

		GOP-4A
	BOP	Select 1/2 on RATE %/MIN.
		GOP-4A
	BOP	Increase LOAD SET in 2% increments to attain 38% Reactor Power.
		GOP-4A
	Crew	At 250 MWe perform the following: 1) Ensure all Extraction Drain Valves are latched. 2) Contact Electrical Maintenance to perform thermography on manual disconnects 8901 and 8903.
		GOP-4A

Booth Operator Instructions:
When called to ensure all extraction drain valves are latched wait 15 min and then report that they are all latched.
When called to perform thermography on the manual disconnects wait 15 min and then report that thermography indicated good closure of the disconnects.

	Crew	At 300 MWe, call the TB operator to perform the following to start filling the drain lines from the 2A and 2B Heaters to the DA: 1) Open XVT12083-HD, 1" BYPASS VALVE FOR XVG-02075 (TB-412) (requires ladder). 2) Open XVT12085-HD, 1" BYPASS VALVE FOR XVG-02074 (TB-412). 3) Throttle XVT02018A-HD, FW HTR 2A DRN TO DEAER LVL CONT VLV BYP, ten turns off the closed seat (TB-463). 4) Throttle XVT02018B-HD, FW HTR 2B DRN TO DEAER LVL CONT VLV BYP, ten turns off the closed seat (TB-463).
		GOP-4A

Op Test No.: 2011 NRC Scenario # 3 Event # 1 Page 7 of 52

Event Description: Raise power in accordance with GOP-4A towards 38%

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Operator Instructions:

When called to start filling the drain lines from the 2 heaters to the DA time compress 20 minutes and then report that based on flow noise it appears that the line to the DA is full.

	BOP	Place a second Condensate Pump in service per SOP-208, Condensate System, when total Condensate flow approaches 9000 gpm as indicated on the following: 1) FI 3026, PUMP A DISCH FLOW. 2) FI 3036, PUMP B DISCH FLOW. 3) FI 3046, PUMP C DISCH FLOW.
		Uses SOP-208 Section B.2
	BOP	Ensure the discharge valve for the pump to be started is closed: a. XVB-614A, A DISCH ISOL. b. XVB-614B, B DISCH ISOL. c. XVB-614C, C DISCH ISOL.
		SOP-208
	BOP	Start one of the following: (PEER ✓) a. XPP-0042A, CO PUMP A. b. XPP-0042B, CO PUMP B. c. XPP-0042C, CO PUMP C.
		SOP-208
	BOP	Open the associated pump discharge valve: (PEER ✓) a. XVB-614A, A DISCH ISOL. b. XVB-614B, B DISCH ISOL. c. XVB-614C, C DISCH ISOL.
		SOP-208
Evaluator Note: The following steps are for alternate dilution that may occur on the power increase.		
		May use SOP-106 Section E.2

Op Test No.: 2011 NRC Scenario # 3 Event # 1 Page 8 of 52

Event Description: Raise power in accordance with GOP-4A towards 38%

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

NOTE 2.0

1. Energizing additional Pressurizer Heaters will enhance mixing.
2. LCV-115A, LTDN DIVERT TO HU-TK, will begin to modulate to the HU-TK position at 70% level on LI-115, VCT LEVEL %.

		SOP-106
	RO	Verify at least one Reactor Coolant Pump is running.
		SOP-106
	RO	Place RX COOL SYS MU switch to STOP.
		SOP-106
	RO	Place RX COOL SYS MU MODE SELECT switch to ALT DIL. (Peer ✓)
		SOP-106
	RO	Adjust FCV-168, TOTAL MU FLOW SET PT, to desired flow rate.
		SOP-106
	RO	Set FIS-168, TOTAL MU FLOW, batch integrator to desired volume. (Peer ✓)
		SOP-106
	RO	Place RX COOL SYS MU switch to START.
		SOP-106
	RO	Verify desired flow rate on FR-113, TOTAL MU GPM (F-168).
		SOP-106
	RO	Verify alternate dilution stops when preset volume is reached on FIS-168, TOTAL MU FLOW, batch integrator.
		SOP-106
	RO	Place RX COOL SYS MU switch to STOP.
		SOP-106

Op Test No.: <u>2011 NRC</u> Scenario # <u>3</u> Event # <u>1</u> Page <u>9</u> of <u>52</u>		
Event Description: Raise power in accordance with GOP-4A towards 38%		
Time	Position	Applicant's Actions or Behavior

	RO	Place RX COOL SYS MU MODE SELECT switch to AUTO. (Peer ✓)
		SOP-106
	RO	Adjust FCV-168, TOTAL MU FLOW SET PT, to 7.5 (120 gpm).
		SOP-106
	RO	Place RX COOL SYS MU switch to START.
		Returns to GOP-4A
At discretion of the Lead Examiner, proceed to the next event		

Op Test No.: 2011 NRC Scenario # 3 Event # 2 Page 10 of 52

Event Description: SG pressure transmitter PT-2010 fails high, opening SG PORV

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Instructor:
When directed, activate trigger 2

Indications available:
Power Rise.
PORV open indication, OPCRIT alarm.

		XCP-632 pt. 4-5, IPCS OPCRIT ALARM
	BOP	Determines that PT-2010 has failed high.
	BOP	Takes M/A station for PWR RELIEF B SETPT to MAN and CLOSED.
	BOP	May place PCV-2010, B SD/ PWR RLF in PWR RLF (by OAP-100.2 V.4 and V.3 regarding manual actions).

Evaluator Note: Per SOP-202 section IV.A pg 4 of 20, if steam release through the SG PORV is required at a later time, the "B" SG switch must be placed in PWR RLF at that time.

	Crew	Conducts post-event brief, contacts SS, and may inform I&C of failure

Booth Operator Instructions:
When called respond as I&C that a troubleshooting plan is being developed.

		Returns to GOP-4A
--	--	-------------------

At the discretion of the Lead Examiner, proceed to the next event

Op Test No.: 2011 NRC Scenario # 3 Event # 3 Page 11 of 52

Event Description: Compensating "B" SG pressure transmitter PT-485 fails high, raising Main Feedwater flow

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Instructor:
When directed, activate trigger 3

Indications available:
XCP-624, 4-1, SG A STMLN ΔP HI
XCP-624, 6-1, SG C STMLN ΔP HI
Increasing Feed flow to B SG.

		XCP-624, 4-1, SG A STMLN ΔP HI
	Crew	Refer to alarm response procedures
		ARP
		PROBABLE CAUSE: 1. Steam line break. 2. Instrument failure. 3. Testing in progress.
		ARP
		AUTOMATIC ACTIONS: 1. Safety Injection when steam line A is 97 psi lower than both the other steam lines as sensed by 2 of 3 pressure channels on steam lines A and C and on A and B. (NO , signal is only 1/3)
		ARP
		CORRECTIVE ACTIONS:
	BOP	Verify steam line pressure indications on the Main Control Board.
		ARP
		SUPPLEMENTAL ACTIONS:
	CRS	If an instrument channel failed, go to AOP-401.3, Steam Flow - Feedwater Flow Protection Channel Failure.
		Transitions to AOP-401.3
IOA	BOP	Verify the failed channel is the controlling channel (YES).

Op Test No.: 2011 NRC Scenario # 3 Event # 3 Page 12 of 52

Event Description: Compensating "B" SG pressure transmitter PT-485 fails high, raising Main Feedwater flow

Time	Position	Applicant's Actions or Behavior
		AOP-401.3
IOA	BOP	Select the operable flow channel: <ul style="list-style-type: none"> Place FW CONTROL CHANNEL SEL Switch to the operable channel. Place STEAM CONTROL CHANNEL SEL Switch to the operable channel.
		AOP-401.3
IOA	BOP	Verify Turbine Load is LESS THAN 950 MWe.(YES)
		AOP-401.3
IOA	BOP	Verify only one SG is AFFECTED. (YES)
		AOP-401.3
IOA	BOP	Adjust the Feedwater Flow Control Valve as necessary to restore feed flow to the AFFECTED SG
		AOP-401.3
IOA	BOP	Check if Feedwater Pump speed control is operating properly: <ul style="list-style-type: none"> Feedwater Header pressure is GREATER THAN Main Steam Header pressure. Feed flow is normal for steam flow and power level. All operating Feedwater Pump speeds and flows are balanced.
		AOP-401.3
	BOP	Verify Narrow Range levels in all SGs are between 60% and 65%.
		AOP-401.3
		Restore the AFFECTED SG control systems to normal: <ul style="list-style-type: none"> Place the Feedwater Flow Control Valve in AUTO. Place the Feedwater Pump Speed Control System in AUTO. REFER TO SOP-210, FEEDWATER SYSTEM.
		AOP-401.3

Op Test No.: 2011 NRC Scenario # 3 Event # 3 Page 13 of 52

Event Description: Compensating "B" SG pressure transmitter PT-485 fails high, raising Main Feedwater flow

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

NOTE - Step 9

Steam flow transmitters FT-474, FT-484, FT-494, FT-475, FT-485, and FT-495 are density compensated by steam pressure transmitters PT-475, PT-485, PT-495, PT-476, PT-486, and PT-496.

		AOP-401.3
	CRS	Within 72 hours, place the failed channel protection bistables in a tripped condition: PB-485A PB-485B-1 PB-485B-2 PB-475B-1 PB-475B-2 FB-488B
		AOP-401.3
	CRS	Identify Technical Specifications: Table 3.3-1 Item 14: Action 6 Trip bistables in 72 hours (may be bypassed for testing for up to 12 hours) Table 3.3-3 Items 1.e, 1.f, 4.e: Action 24 Trip bistables in 72 hours (may be bypassed for testing for up to 12 hours)
		AOP-401.3
Booth Operator Instructions: When called as I&C, report that you will develop a troubleshooting plan.		
	Crew	Conducts Post-Event brief, contacts SS, may request I&C assistance.
Returns to GOP-4A		
When Technical specifications are determined or at the discretion of the Lead Examiner proceed to the next event		

Op Test No.: 2011 NRC Scenario # 3 Event # 4 Page 14 of 52Event Description: RCP ~~seal leakage~~ vibration requires trip of Reactor Coolant Pump

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Instructor:
When directed, activate trigger 4.

Indications available:
XCP-619 1-3, RCP C VIBR HI

		XCP-619 1-3, RCP C VIBR HI
	Crew	Refer to alarm response procedure
		ARP
		PROBABLE CAUSE: 1. Pump shaft vibration caused by: a. Bearing wear. b. Impeller imbalance. c. Misalignment. d. Seismic event. 2. Pump frame vibration caused by: a. Excess shaft vibration. b. Seismic event. 3. Flywheel imbalance. 4. Loss of Coolant Accident.
		ARP
		AUTOMATIC ACTIONS: 1. None.
		ARP
<p style="text-align: center;">CAUTION</p> <p>Reactor Coolant Pump shaft and frame vibrations should increase simultaneously on actual Reactor Coolant Pump high vibration. Channel failure is indicated by the associated shaft or frame bar graph going to zero on the Yokogawa DX 1000 recorder.</p>		
		ARP

Op Test No.: 2011 NRC Scenario # 3 Event # 4 Page 15 of 52Event Description: RCP ~~seal leakage~~ vibration requires trip of Reactor Coolant Pump

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

NOTE

- a. This alarm has reflash capabilities.
- b. This alarm causes XCP-606 3-5, REACTOR BUILDING FANS VIBRATION F MON FLT/WARN to annunciate.

		ARP
		CORRECTIVE ACTIONS:
	RO	Monitor Reactor Coolant Pump C vibration indicators to determine the source and severity of the vibration.
		ARP
	RO	Monitor RCS temperature and pressure to verify they are within limits for Reactor Coolant Pump operation.
		ARP
		SUPPLEMENTAL ACTIONS:
	Crew	With Reactor Coolant Pump C shaft vibration greater than or equal to 20 mils or greater than or equal to 15 mils and increasing at greater than one mil per hour, perform one of the following: <ol style="list-style-type: none"> a. If Reactor Power is greater than 38%, trip the Reactor and secure Reactor Coolant Pump C per SOP-101. (NO) b. If Reactor Power is less than 38%, secure Reactor Coolant Pump C per SOP-101 and proceed to Hot Standby per GOP-4B, Power Operation (Mode 1 - Descending), and GOP-5, Reactor Shutdown From Startup to Hot Standby (Mode 2 to Mode 3), within one hour. (YES)

Op Test No.: 2011 NRC Scenario # 3 Event # 4 Page 16 of 52Event Description: RCP ~~seal leakage~~ vibration requires trip of Reactor Coolant Pump

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	Crew	<p>2. With Reactor Coolant Pump C frame vibration greater than or equal to five mils or greater than three mils and increasing at greater than 0.2 mils per hour, perform one of the following:</p> <p>a. If Reactor Power is greater than 38%, trip the Reactor and secure Reactor Coolant Pump C per SOP-101.</p> <p>b. If Reactor Power is less than 38% (YES), secure Reactor Coolant Pump C per SOP-101 and proceed to Hot Standby per GOP-4B, Power Operation (Mode 1 - Descending), and GOP-5, Reactor Shutdown From Startup to Hot Standby (Mode 2 to Mode 3), within one hour.</p>
		Transitions to SOP-101 section IV.A.2.0
<p>NOTE 1.1</p> <p>The applicable section of Tech Spec 3.4.1 must be met when removing a Reactor Coolant Pump from service.</p>		
		SOP
	Crew	Verifies reactor power is less than 38% (P-8 permissive is illuminated).
		SOP
	CRS	Acknowledges that the plant is being placed in Hot Standby.
		SOP
	RO	<p>Place the associated following Pressurizer Spray Valve for the affected Reactor Coolant Pump in MAN and close:</p> <p>a. PCV 444D, PZR SPRAY, for Reactor Coolant Pump A. (NO)</p> <p>b. PCV 444C, PZR SPRAY, for Reactor Coolant Pump C. (YES)</p>
		SOP
	RO	If the RCS is solid, place PCV-145, LO PRESS LTDN, in MAN. (NA)
		SOP

Op Test No.: 2011 NRC Scenario # 3 Event # 4 Page 17 of 52Event Description: RCP ~~seal leakage~~ vibration requires trip of Reactor Coolant Pump

Time	Position	Applicant's Actions or Behavior
	RO	Secure one of the following Reactor Coolant Pumps as required: a. XPP-0030A, PUMP A. (NO) b. XPP-0030B, PUMP B. (NO) c. XPP-0030C, PUMP C. (YES)
		SOP
	RO	If the RCS is solid, return PCV-145, LO PRESS LTDN, to AUTO, if desired. (NA)
		SOP
	RO	Verify Seal Injection to the secured Reactor Coolant Pump using the applicable following indicator: a. FI-130A, RCP A INJ FLO GPM. b. FI-127A, RCP B INJ FLO GPM. c. FI-124A, RCP C INJ FLO GPM.
		SOP
	Crew	Maintain Component Cooling Water to the secured Reactor Coolant Pump thermal barrier until RCS temperature is less than 150°F.
		SOP
	BOP	Place the following controllers in MAN, as required for the affected RCS loop and maintain Narrow Range Steam Generator level between 60% and 65%: a. PVT-478, SG A FWF. b. FCV-3321, LOOP A MAIN FW BYP. c. PVT-488, SG B FWF. d. FCV-3331, LOOP B MAIN FW BYP. e. PVT-498, SG C FWF. f. FCV-3341, LOOP C MAIN FW BYP.
		SOP
CAUTION 2.8		
Per Tech Spec 3.4.1.1, the plant must be in Hot Standby within one hour of securing the Reactor Coolant Pump.		
		SOP

Op Test No.: 2011 NRC Scenario # 3 Event # 4 Page 18 of 52Event Description: RCP ~~seal leakage~~ vibration requires trip of Reactor Coolant Pump

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	CRS	If not already in Hot Standby, proceed to Hot Standby in accordance with GOP-4B, Power Operation (Mode 1 - Descending), or GOP-4C, Rapid Power Reduction, and GOP-5, Reactor Shutdown From Startup To Hot Standby (Mode 2 To Mode 3).
		SOP
	CRS	Contacts SS and System Controller re. RCP trip and plant shutdown.
		Transitions to GOP-4B
CAUTION 3.1 through 3.12		
a. Thermal Power changes of greater than 15% in any one-hour period requires completion of GTP-702 Attachment III.H.		
b. VCS PID Report, POWER CHANGE SEARCH, should be periodically performed to ensure a thermal power change of greater than 15% in any one-hour period is detected.		
		GOP
NOTE 3.1 through 3.12		
a. Step 3.1 lowers Reactor Power from 100% to 90%.		
b. If the RCS will be opened for maintenance during the shutdown, degassing of the RCS should be initiated per SOP-102, Chemical And Volume Control System.		
c. The setpoint for IFK3136, FLOW TO DEAERATOR, should be adjusted during power changes to maintain LI-3136, DEAER STOR TK NR LVL, between 2.5 and 5.0 feet.		
		GOP
Evaluator Note:		
This guide does not include steps to lower power down to 38%.		
		GOP
NOTE 3.3		
Step 3.3 lowers Reactor Power from 48% to 25%.		
		GOP

Op Test No.: 2011 NRC Scenario # 3 Event # 4 Page 19 of 52

Event Description: RCP seal leakage vibration requires trip of Reactor Coolant Pump

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Reduce load</p> <ol style="list-style-type: none"> Select ½ on Rate %/min (0.5 %/min Load Ramp Rate). Select Load (a dialog box opens). Enter desired value (must be less than the indicated Load Reference). Select OK. Confirm setpoint. Select OK. Verify proper plant response.
		GOP
	BOP	As load decreases, adjust Megavars using GEN FIELD VOLT ADJ as requested by the Load Dispatcher and within the Estimated Generator Capability curve (Enclosure A).
		GOP
	RO	As load decreases, Borate or dilute per SOP-106, Reactor Makeup Water System, to maintain Control Rods above the Rod Insertion Limit.
		GOP
	BOP	Between 30% and 35% Reactor Power, reduce to two Feedwater Booster Pumps per SOP-210, Feedwater System.
		GOP
	BOP	As load decreases, maintain the Blowdown Heat Exchanger condensate outlet temperatures at least 30 degrees below the DA temperature.
		GOP

Op Test No.: 2011 NRC Scenario # 3 Event # 4 Page 20 of 52Event Description: RCP ~~seal leakage~~ vibration requires trip of Reactor Coolant Pump

Time	Position	Applicant's Actions or Behavior
	Crew	<p>When Reactor Power is less than 25%, commence cooling the Feedwater system to less than 180°F as follows:</p> <ol style="list-style-type: none"> Place the following Feedwater Heaters in ISOLAT (I icon) (GRAPHIC 101, 102, 103, 104 or 110 screens): <ol style="list-style-type: none"> FW HTR 1A OPRTR SELECT ISOLATION. FW HTR 1B OPRTR SELECT ISOLATION. FW HTR 2A OPRTR SELECT ISOLATION. FW HTR 2B OPRTR SELECT ISOLATION. FW HTR 4A OPRTR SELECT ISOLATION. FW HTR 4B OPRTR SELECT ISOLATION. Isolate 7th Stage Extraction Steam to the DA as follows: <ol style="list-style-type: none"> Place IPV-2231, MS/PEGGING STM TO DEAERATOR, in MAN and close. Close MVG-1212, EXT STM TO DEAER ISOL. Open XVG02210-HV, FW HTR DEAERATOR VENT ORF BYP HDR ISOL (TB-463).
		GOP
Booth Operator Instructions: When called to Open XVG02210-HV, FW HTR DEAERATOR VENT ORF BYP HDR ISOL use LOA-FWM055, DEAERATOR VENT VALVE 2210-HV (Trigger 8) and then report that it is open.		
		GOP
	Crew	<p>At less than 25% Reactor Power, verify the following status lights de-energize to dim:</p> <ol style="list-style-type: none"> CHAN I IR FLUX HI. CHAN II IR FLUX HI. CHAN I PR FLUX LO SET PT. CHAN II PR FLUX LO SET PT. CHAN III PR FLUX LO SET PT. CHAN IV PR FLUX LO SET PT.
		GOP
	BOP	<p>When total Condensate flow on the following indicators is less than 9000 gpm, reduce to one Condensate Pump running per SOP-208, Condensate System:</p> <ol style="list-style-type: none"> FI-3026, PUMP A DISCH FLOW. FI-3036, PUMP B DISCH FLOW. FI-3046, PUMP C DISCH FLOW.

Op Test No.: 2011 NRC Scenario # 3 Event # 4 Page 21 of 52Event Description: RCP ~~seal leakage~~ vibration requires trip of Reactor Coolant Pump

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

		GOP
		<p>Maintain DA level and temperature control as follows:</p> <ol style="list-style-type: none"> 1) If necessary to maintain DA level, place FC-3136, FLOW TO DEAERATOR, in MAN. 2) Adjust IPV-2231, MS/PEGGING STM TO DEAERATOR, as necessary, to maintain DA temperature between 130°F and 150°F. 3) If DA cooling is required, LCV 3235, DEAER START UP DRAIN CNTRL, may be used to raise flow through the DA. 4) Ensure Steam Generator Blowdown Condensate return temperature is maintained less than or equal to DA temperature as load is reduced.
		GOP
	BOP	<p>As load decreases, transfer the Steam Dumps to the Steam Pressure Mode as follows:</p> <ol style="list-style-type: none"> 1) Place the STM DUMP CNTRL m/a station in MAN. 2) Place the STM DUMP MODE SELECT Switch in STM PRESS. 3) Adjust the STM DUMP CNTRL m/a station setpoint to 8.4. 4) Place the STM DUMP CNTRL m/a station in AUTO.
		GOP
At the discretion of the Lead Examiner, proceed to the next event		

Op Test No.: 2011 NRC Scenario # 3 Event # 5 Page 22 of 52

Event Description: PT-445 fails high

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Instructor:
When directed, activate trigger 5

Indications available:
XCP-616, 2-3, PZR PRESS HI/LO
XCP-616, 2-6, PZR CNTRL PRESS HI
XCP-616, 4-1, PZR SAFETY VLV LINE TEMP HI
XCP-616, 4-2, PZR RLF LINE TEMP HI
XCP-616, 4-3, PZR RLF VLV ISOL
2 PORV's cycling at 1970 psig

		XCP-616, 2-6, PZR CNTRL PRESS HI
	Crew	Refer to alarm response procedures
		ARP
	Crew	Refer to XCP-616, 2-6
		ARP
		PROBABLE CAUSE: 1. Instrument failure. 2. Rapid load reduction.
		ARP
		AUTOMATIC ACTIONS: 1. PCV-445A(445B), PWR RELIEF, open.
		ARP
		CORRECTIVE ACTIONS:
	RO	Compare PI-445, CNTL CHAN PRESS PSIG, with other Pressurizer pressure indications to determine if IPT00445, PRESSURIZER PRESSURE CONTROL PRESS XMTR, has failed high (YES) .
		ARP

Op Test No.: 2011 NRC Scenario # 3 Event # 5 Page 23 of 52

Event Description: PT-445 fails high

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	RO	If IPT00445, PRESSURIZER PRESSURE CONTROL PRESS XMTR, has failed high, perform the following: a. Close PCV-445A, PWR RELIEF and PCV-445B, PWR RELIEF. b. Refer to AOP-401.5, Pressurizer Pressure Control Channel Failure.
		ARP
	CRS	Transition to AOP-401.5, Pressurizer Pressure Control Channel Failure
		Transition to AOP-401.5
NOTE: Through this procedure, "AFFECTED" refers to any PZR PORV that has actuated as a result of the instrument failure.		
		AOP
IOA	RO	Verify the PZR PORVs are closed: (NO)
		AOP
IOA	RO	IF PZR pressure is LESS THAN 2300 psig, THEN perform the following: Close the AFFECTED PZR PORV(s): <ul style="list-style-type: none"> PCV-445A, PWR RELIEF (YES) PCV-445B, PWR RELIEF (YES) PCV-444B, PWR RELIEF (NO)
		AOP
NOTE – Step 2 PZR PRESS control channels PI-444 and PI-445 connect to the same reference leg line as protection channel PI-457.		
		AOP
IOA	RO	Compare the PZR control channel indication to the protection channel indications: (ONLY 445 reading high) <ul style="list-style-type: none"> PI-455, PRESS PSIG PI-456, PRESS PSIG PI-457, PRESS PSIG
		AOP

Op Test No.: 2011 NRC Scenario # 3 Event # 5 Page 24 of 52

Event Description: PT-445 fails high

Time	Position	Applicant's Actions or Behavior
IOA	RO	Check if PI-444, CNTROL CHAN PRESS PSIG, indication is NORMAL. (YES)
		AOP
	RO	Check if PI-445, CNTRL CHAN PRESS PSIG, indication is NORMAL. (NO)
		AOP
	RO	If PT-445 is failed, THEN within one hour close the AFFECTED PORV Block Valves: <ul style="list-style-type: none"> • MVG-8000A, RELIEF 445 A ISOL • MVG-8000C, RELIEF 445 B ISOL
		AOP
	CRS	Determine above action satisfies Technical Specification 3.4.4 Action a. "With one or more PORV(s) inoperable and capable of being manually cycled, within 1 hour: <ol style="list-style-type: none"> 1) Restore the PORV(s) to OPERABLE status or 2) Close the associated block valve(s) and maintain power to the block valve; otherwise, be in at least HOT STANDBY within the next 6 hours and HOT SHUTDOWN within the following 6 hours.
		Tech Specs
	RO	Ensure ROD CNTRL BANK SEL Switch is in AUTO.
		AOP
*	RO	Maintain RCS pressure between 2220 psig and 2250 psig.
		AOP
	CRS	While regaining pressure monitor Technical Specification:3.2.5: Indicated Pressurizer Pressure \geq 2206 psig Action: With any of the above parameters exceeding its limit, restore the parameter to within its limit within 2 hours or reduce THERMAL POWER to less than 5% of RATED THERMAL POWER within the next 4 hours.
		Tech Specs

Op Test No.: <u>2011 NRC</u> Scenario # <u>3</u> Event # <u>5</u> Page <u>25</u> of <u>52</u>		
Event Description: PT-445 fails high		
Time	Position	Applicant's Actions or Behavior

	Crew	Conducts post-event brief and contacts SS. May request I&C assistance.
Booth Operator Instructions: When called that PT-445 has failed high report as I&C that a troubleshooting plan is being developed.		
At the discretion of the Lead Examiner, proceed to the next event.		

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7, & 8 Page 26 of 52

Event Description: Total loss of CCW. Trip reactor and reactor coolant pumps due to loss of CCW, FCV 3551 MDEFW to C SG fails as is (open)

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Instructor:
When directed, activate Trigger 6.

Indications available:
XCP-601 1-3, CCP A/C TRIP FAIL
Other CCW low flow alarms

		XCP-601 1-3, CCP A/C TRIP FAIL
	Crew	Refer to alarm response procedures
		ARP
		PROBABLE CAUSE: 1. Overcurrent trip in conjunction with an overload alarm.
		ARP
		AUTOMATIC ACTIONS: Standby pump starts. (Starts but indication of a sheared shaft)
		ARP
NOTE		
This alarm has reflash capabilities.		
		ARP
		CORRECTIVE ACTIONS:
	RO	Ensure the standby pump starts. (Starts but with sheared shaft)
		ARP

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7, & 8 Page 27 of 52

Event Description: Total loss of CCW. Trip reactor and reactor coolant pumps due to loss of CCW, FCV 3551 MDEFW to C SG fails as is (open)

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

CAUTION 2

a. Any Charging Pump can continue to be operated on a loss of Component Cooling Water to its oil coolers within one of the following:

1) 20 minutes without local temperature monitoring.

OR

2) No time limit as long as any maximum temperature of Attachment 1, Charging Pump Temperature Monitoring, Page 4 of 4, of AOP-118.1, Total Loss of Component Cooling, is NOT exceeded AND local Charging Pump temperature monitoring remains in place.

		ARP
	RO	If no Train A pumps are running, perform the following: a. Ensure a Train B Component Cooling Pump is running. b. Start a Train B Charging Pump. c. Stop the Train A Charging Pump.
		ARP
	RO	If a Train B Component Cooling Pump was started, establish Train B as the active loop per SOP-118. (B CCW overloads)
		ARP
	RO	Verify system pressures, temperatures, and flows are normal. (NO)
		ARP
	CRS	If no Component Cooling Pumps can be started, then go to AOP-118.1, Total Loss of Component Cooling Water.
		Transitions to AOP-118.1

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7, & 8 Page 28 of 52

Event Description: Total loss of CCW. Trip reactor and reactor coolant pumps due to loss of CCW, FCV 3551 MDEFW to C SG fails as is (open)

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Operator Instructions:**When called to investigate the CCW system report that;**

- nothing can be seen wrong with the A CCW pump but that the A breaker has a 51 relay flag dropped on the A phase.
- C breaker on "A" train closing springs are discharged
- B has an overheated bearing housing

When called as electrical maintenance report a latch in the "A" train breaker for the "C" CCW pump is broken. Wait 30 min and then report that the "A" train breaker cannot be repaired quickly, must be replaced.

		AOP
--	--	-----

CAUTION

- Any Charging Pump can be started or continue to be operated on a loss of Component Cooling Water to its oil coolers within one of the following:
 - 20 minutes without local Charging Pump temperature monitoring.
 - OR
 - No time limit as long as any maximum temperature of Attachment 1, Charging Pump Temperature Monitoring, Page 4 of 4, is NOT exceeded AND local Charging Pump temperature monitoring remains in place.
- Any running Reactor Coolant Pump should be stopped if any of the following conditions exist:
 - a. Component Cooling Water flow to the motor bearing coolers can NOT be restored within ten minutes.
 - b. Motor Bearing temperature exceeds 195°F.
 - c. Lower Seal Water Bearing temperature exceeds 225°F.
 - d. Seal Water Outlet temperature exceeds 235°F

		AOP
--	--	-----

NOTE

If a Reactor trip occurs, this procedure should be continued concurrently with the recovery actions of EOP-1.0, REACTOR TRIP/SAFETY INJECTION ACTUATION.

		AOP
--	--	-----

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7, & 8 Page 29 of 52

Event Description: Total loss of CCW. Trip reactor and reactor coolant pumps due to loss of CCW, FCV 3551 MDEFW to C SG fails as is (open)

Time	Position	Applicant's Actions or Behavior
IOA	RO	Determine the cause for the loss of CCW: a. Check for annunciators on XCP-601, 602, and 603. b. REFER TO the appropriate ARPs. c. Attempt to correct the cause for loss of CCW.
		AOP
IOA	RO	Establish either train of CCW as the Active Loop. REFER TO * SOP-118, COMPONENT COOLING WATER. (CANNOT until "C" swapped)
		AOP
*	RO	Verify CCW cooling is available to each running Charging Pump. (NO)
		AOP
	RO	Initiate Attachment 1, Charging. Pump Temperature Monitoring, Page 4 of 4.
		AOP
Booth Operator Instructions: When called to monitor A charging pump temperatures wait 5 min and then report that you are monitoring temperatures. If asked for temperatures indicate that temperatures are rising but are below maximum values (copy of AOP-118.1 Att. Is in the booth). ITI17550A CHG/SI PP A GEARBOX LUBE OIL TEMP IND 115-145 MAX 145 ITI07551 PUMP A OIL CLR OUTLET 120-150 MAX 150 ITI07552 THRUST BRG TEMP 130-155 MAX180 Report gearbox at max temperature before safety valve failure to reduce to one pump running.		
	CRS	GO TO Step 4.
		AOP
	Crew	Check if at least one CCW loop is restored: (NO)
		AOP

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7, & 8 Page 30 of 52

Event Description: Total loss of CCW. Trip reactor and reactor coolant pumps due to loss of CCW, FCV 3551 MDEFW to C SG fails as is (open)

Time	Position	Applicant's Actions or Behavior
	RO	Place any non-running Charging Pump which does NOT have CCW cooling in PULL TO LK NON-A. (B and C)
		AOP
	RO	Close all Letdown Isolation Valves: 1) PVT-8149A(B)(C), LTDN ORIFICE A(B)(C) ISOL. 2) LCV-459, LTDN LINE ISOL. 3) LCV-460, LTDN LINE ISOL. 4) HCV-142, LTDN FROM RHR.
		AOP
	Crew	Establish Charging Pump alternate cooling using Chilled Water per Attachment 1.
		AOP
Booth Operator Instructions: When called to align chilled water to A charging pump wait 10 minutes and then report that alternate cooling is being supplied.		
	CRS	Initiate plant shutdown. REFER TO the appropriate GOP.
		AOP
	CRS	GO TO Step 11.
		AOP
	Crew	Within 10 minutes Trip the reactor and Enter EOP-1.0, REACTOR TRIP/SAFETY INJECTION ACTUATION
		AOP
Evaluator Note: The crew will continue with the steps of AOP-118.1 concurrently with the EOP's. The remaining steps for AOP-118.1 can be found at the end of this guide (page 39)		
		Transitions to EOP-1.0

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7, & 8 Page 31 of 52

Event Description: Total loss of CCW. Trip reactor and reactor coolant pumps due to loss of CCW, FCV 3551 MDEFW to C SG fails as is (open)

Time	Position	Applicant's Actions or Behavior
IOA	RO	Verify Reactor Trip: <ul style="list-style-type: none"> • Trip the Reactor using either Reactor Trip Switch. • Verify all Reactor Trip and Bypass Breakers are open. • Verify all Rod Bottom Lights are lit. • Verify Reactor Power level is decreasing.
		EOP-1.0
IOA	BOP	Verify Turbine/Generator Trip: <ol style="list-style-type: none"> a. Verify all Turbine STM Stop VLVs are closed. b. Ensure Generator Trip (after 30 second delay): <ol style="list-style-type: none"> 1) Ensure the GEN BKR is open. 2) Ensure the GEN FIELD BKR is open. 3) Ensure the EXC FIELD CNTRL is tripped.
		EOP-1.0
IOA	BOP	Verify both ESF buses are energized
		EOP-1.0
IOA	RO	Check if SI is actuated: <ol style="list-style-type: none"> a. Check if either: <ol style="list-style-type: none"> a. SI ACT status light is bright on XCP-6107 1-1. Or b. Any red first out SI annunciator is lit on XCP-626 top row. b. Actuate SI using either SI ACTUATION Switch
		EOP-1.0
IOA	Crew	Check if SI is required: <ol style="list-style-type: none"> a. Check if any of the following conditions exist: <ul style="list-style-type: none"> • PZR pressure less than 1850 psig. OR • RB pressure GREATER THAN 3.6 psig. OR • Steamline pressure LESS THAN 675 psig. OR • Steamline differential pressure GREATER THAN 97 psig. b. Actuate SI using either SI ACTUATION Switch.
		EOP-1.0
	RO	Trip the RCP(s)

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7, & 8 Page 32 of 52

Event Description: Total loss of CCW. Trip reactor and reactor coolant pumps due to loss of CCW, FCV 3551 MDEFW to C SG fails as is (open)

Time	Position	Applicant's Actions or Behavior
		AOP
	CRS	GO TO EOP-1.1, REACTOR TRIP RECOVERY, Step 1.
		Transitions to EOP-1.1
	Crew	Announce plant conditions over the page system.
		EOP-1.1
	BOP	Check FW status: <ul style="list-style-type: none"> • Ensure the FW Flow Control Valves, FCV-478(488)(498), are closed. • Ensure the Main FW Isolation Valves, PVG-1611A(B)(C), are closed. • Ensure the FW Flow Control Bypass Valves, FCV-3321(3331)(3341), are closed.
		EOP-1.1
	BOP	Ensure EFW Pumps are running: <ol style="list-style-type: none"> 1) Ensure both MD EFW Pumps are running. 2) Verify the TD EFW Pump is running if necessary to maintain SG levels.
		EOP-1.1
	BOP	Verify total EFW flow is GREATER THAN 450 gpm.
		EOP-1.1
	BOP	Trip all Main FW pumps.
		EOP-1.1

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7, & 8 Page 33 of 52

Event Description: Total loss of CCW. Trip reactor and reactor coolant pumps due to loss of CCW, FCV 3551 MDEFW to C SG fails as is (open)

Time	Position	Applicant's Actions or Behavior
	BOP	<p>IF RCS temperature is LESS THAN 557°F AND decreasing, THEN stabilize temperature by performing the following as required:</p> <p>a) Close IPV-2231, MS/PEGGING STM TO DEAERATOR.</p> <p>b) Perform one of the following:</p> <ul style="list-style-type: none"> IF Narrow Range SG level is LESS THAN 26% [41%] in all SGs, THEN reduce EFW flow as necessary to stop cooldown while maintaining total EFW flow GREATER THAN 450 gpm. OR WHEN Narrow Range SG level is GREATER THAN 26% [41%] in at least one SG, THEN control EFW flow as necessary to stabilize RCS temperature at 557°F. <p>c) COMMENCE ATTACHMENT 1, STEAM VALVE ISOLATION, while continuing with this procedure.</p> <p>d) IF RCS cooldown continues, THEN close:</p> <ul style="list-style-type: none"> MS Isolation Valves, PVM-2801A(B)(C). MS Isolation Bypass Valves, PVM-2869A(B)(C).
		EOP-1.1
	BOP	Determines that IFV03551-EF will not close using the potentiometers (placing the MCB CLOSE/AUTO/MAN switch in CLOSE will close the valve).
		EOP-1.1
Booth Operator Instructions: If called to locally throttle 3551 use malfunction VLV-EF005P=0 to close the valve.		
		EOP-1.1
	BOP	Ensure the TDEFW pump is running
		EOP-1.1
CRITICAL TASK	BOP	Close the "C" MD FCV or stop the A and B MDEFW pumps prior to overfilling "C" SG (reaching 100% indicated NR level on IPCS).
		EOP-1.1

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7, & 8 Page 34 of 52

Event Description: Total loss of CCW. Trip reactor and reactor coolant pumps due to loss of CCW, FCV 3551 MDEFW to C SG fails as is (open)

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

NOTE - Step 4 (N/A)

If a transition is made to AOP-112.2, STEAM GENERATOR TUBE LEAK NOT REQUIRING SI, the steps of EOP-1.1 which do NOT conflict with AOP-112.2 should be completed as time allows.

		EOP-1.1
	CRS	IF EOP-1.0 was entered from AOP-112.2, THEN RETURN TO AOP-112.2, STEAM GENERATOR TUBE LEAK NOT REQUIRING SI, Step 7. (NO)
		EOP-1.1
	CRS	GO TO Step 5.
		EOP-1.1
	RO	Verify all Control Rods are fully inserted.
		EOP-1.1
	BOP	Check DA level control: a. Open LCV-3235, DEAER START UP DRAIN CNTRL, as necessary to maintain DA level LESS THAN 10.5 ft as indicated on LI-3135, DEAER STOR TK WR LVL FEET. b. Locally adjust ITV-3062A(B)(C), BD COOLER A(B)(C) CDSTE OUT TEMP, to 90% (XPN-0029, NUCLEAR BLOWDOWN PROCESSING PANEL, AB-436).
		EOP-1.1
Booth Operator Instructions: When called to adjust 3062A(B)(C) to 90% closed use trigger 9 to do so. VLV-CO015P, ITV03062A-CO SG BD HX TR A TMP CTRL FAIL POSITION VLV-CO016P, ITV03062B-CO SG BD HX TR B TMP CTRL FAIL POSITION VLV-CO017P, ITV03062C-CO SG BD HX TR C TMP CTRL FAIL POSITION		
		EOP-1.1
	RO	Check PZR level control: a. Verify PZR level is GREATER THAN 17%. b. Verify Charging and Letdown are in service. c. Verify PZR level is trending to 25%.

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7, & 8 Page 35 of 52

Event Description: Total loss of CCW. Trip reactor and reactor coolant pumps due to loss of CCW, FCV 3551 MDEFW to C SG fails as is (open)

Time	Position	Applicant's Actions or Behavior
		EOP-1.1
	RO	Verify PZR pressure is GREATER THAN 1850 psig.
		EOP-1.1
	RO	Verify PZR pressure is stable at OR trending to 2235 psig (2220 psig to 2250 psig).
		EOP-1.1
	BOP	Verify Narrow Range level in all SGs is GREATER THAN 26%.
		EOP-1.1
	BOP	Control EFW flow to maintain Narrow Range SG level between 40% and 60%.
		EOP-1.1
	BOP	Verify all AC buses are energized by offsite power: <ul style="list-style-type: none"> • ESF AC buses • BOP AC buses.
		EOP-1.1
	BOP	Verify PERMISV C-9 status light is bright on XCP-6114 1-3.
		EOP-1.1
	BOP	WHEN RCS Tavg is LESS THAN P-12 (552°F), THEN place both STM DUMP INTERLOCK Switches to BYP INTLK.
		EOP-1.1
	BOP	Verify the MS Isolation Valves, PVM-2801A(B)(C), are open.
		EOP-1.1
	BOP	Place the STM DUMP CNTRL Controller in MAN and closed.
		EOP-1.1

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7, & 8 Page 36 of 52

Event Description: Total loss of CCW. Trip reactor and reactor coolant pumps due to loss of CCW, FCV 3551 MDEFW to C SG fails as is (open)

Time	Position	Applicant's Actions or Behavior
	BOP	Ensure the STM DUMP CNTRL Controller is set to 8.4.
		EOP-1.1
	BOP	Place the STM DUMP MODE SELECT Switch in STM PRESS.
		EOP-1.1
	BOP	Place the STM DUMP CNTRL Controller in AUTO.
		EOP-1.1
<p style="text-align: center;">NOTE - Step 12</p> <ul style="list-style-type: none"> • Priority should be given to running RCP A to supply Normal PZR Spray. • Since a time lag is expected after increasing steam flow before natural circulation parameters can be verified, this procedure should be continued concurrently with the establishment of natural circulation. 		
		EOP-1.1
	RO	Verify RCP A is running. (NO)
		EOP-1.1
	RO	<p>Try to start RCP(s) for Normal PZR Spray: IF no RCP can be started, THEN verify natural circulation from trended values:</p> <ul style="list-style-type: none"> • RCS subcooling on TI-499A(B), A(B) TEMP "F, is GREATER THAN 30°F. • SG pressures are stable OR decreasing. • RCS Thot is stable OR decreasing. • RCS Tcold is at saturation for the current SG pressure. • Core exit TC temperatures are stable OR decreasing. <p>IF natural circulation can NOT be verified, THEN increase dumping steam.</p>
		EOP-1.1
<p>Evaluator Note: The above step is written as if CCW is not yet restored. When CCW is restored the actions of AOP-118.1, TOTAL LOSS OF COMPONENT COOLING WATER Attachment 4 could be used to restore RCP operation.</p>		

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7, & 8 Page 37 of 52

Event Description: Total loss of CCW. Trip reactor and reactor coolant pumps due to loss of CCW, FCV 3551 MDEFW to C SG fails as is (open)

Time	Position	Applicant's Actions or Behavior
	RO	Check the position of NR-45, NIS RECORDER: a. Verify Intermediate Range Power is LESS THAN P-6 (7.5x10 ⁻⁶ %). b. Transfer NR-45, NIS RECORDER, to both Source Range channels. c. Initiate GTP-702, Attachment VI.KK.
		EOP-1.1
Booth Operator Instructions: When called to calibrate the high flux at shutdown alarm (GTP-702, Attachment VI.KK) report that you are working on it.		
Evaluator Note: The above step is written as if power is already below P-6. If power is not below P-6 then the crew will continue with the procedure and complete the step when power does drop below P-6.		
	BOP	Shut down and stabilize the Secondary Plant. REFER TO AOP-214.1, TURBINE TRIP.
		EOP-1.1
		Maintain stable plant conditions: a. Maintain PZR pressure at 2235 psig (2220 psig to 2250 psig). b. Maintain PZR level at 25%. c. Maintain Narrow Range SG levels between 40% and 60%. d. Maintain RCS temperature: • With any RCP running, Tavg at 557°F. OR • With no RCP running, Tcold at 557°F. ' e. REFER TO GOP-5, REACTOR SHUTDOWN FROM STARTUP TO HOT STANDBY (MODE 2 TO MODE 3).
		EOP-1.1
		COMPLETE Attachment I of SAP-116, PLANT TRIP/SAFETY INJECTION PLANT RECOVERY.

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7, & 8 Page 38 of 52

Event Description: Total loss of CCW. Trip reactor and reactor coolant pumps due to loss of CCW, FCV 3551 MDEFW to C SG fails as is (open)

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

		EOP-1.1
<p style="text-align: center;">NOTE - Step 17</p> <p>If no BOP bus is energized:</p> <ul style="list-style-type: none"> A natural circulation cooldown should NOT be initiated unless required by Tech Specs, for plant safety, or CST level decreases to LESS THAN 14.5 ft. The System Controller should be notified of plant conditions to determine the expected duration of the power outage. 		
		EOP-1.1
	Crew	Determine if natural circulation cooldown is required: a. All RCPs are stopped. (YES) b. CST level is LESS THAN 14.5 ft. (NO)
		EOP-1.1
	Crew	Notify the SS and Management Duty Supervisor of plant conditions and request direction.
		EOP-1.1
<p>Booth Operator Instructions: When contacted as MDS ask for crew's recommended course of action and concur with it.</p>		

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7,8 Page 39 of 52

Event Description: Loss of all CCW forces Rx trip, Emergency FW FCV fails open

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

The following actions are from AOP-118.1 after the reactor trip they would be done in conjunction with the EOP steps.

	RO	12. Isolate Charging and Letdown: a. Close all Letdown Isolation Valves: 1) PVT-8149A(B)(C), LTDN ORIFICE A(B)(C) ISOL. 2) LCV-459, LTDN LINE ISOL. 3) LCV-460, LTDN LINE ISOL. 4) HCV-142, LTDN FROM RHR. b. Close FCV-122, CHG FLOW.
		AOP
	RO	Isolate RCP Seals: a. Close MVT-8100, SEAL WTR RTN ISOL. b. Close MVT-8105, SEAL WTR INJ ISOL. c. Close MVG-9606, FROM RB LOAD ISOL (ORB).
		AOP
	Crew	WHEN cooling is established to any Charging Pump, THEN REFER TO ATTACHMENT 4, STARTING A CHARGING PUMP AND SUPPLYING RCP SEAL COOLING, to start the Charging Pump and supply RCP Seal cooling.
		AOP
CAUTION		
RCPs should NOT be restarted prior to an Engineering evaluation, to prevent RCP Seal failure.		
		AOP
Booth Operator Instructions: When called to evaluate the ability to supply CCW to the seals and restart the RCP report that seal injection should not reestablished and that attachment 4 of AOP-118.1 should not be completed.		
		AOP

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7,8 Page 40 of 52

Event Description: Loss of all CCW forces Rx trip, Emergency FW FCV fails open

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

CAUTION - Step 15

RHR Pumps should NOT be run longer than 90 minutes without CCW flow to the RHR Heat Exchangers, to prevent RHR Pump damage.

		AOP
	Crew	Check if the RHR System is operating. (NO)
		AOP
	CRS	GO TO Step 19.
		AOP
	Crew	<p>Monitor other CCW System loads:</p> <p>a. Monitor the temperatures of other operating components cooled by the CCW System:</p> <ul style="list-style-type: none"> • Spent Fuel Pool. • RCDT. • Waste Gas Compressors. • Hydrogen Recombiners. • Sample Coolers. • Recycle Evaporator. • Waste Evaporator. • Excess Letdown Heat Exchanger. <p>b. At Shift Supervisor discretion, remove loads from service as necessary to prevent equipment damage. REFER TO the appropriate system SOPs.</p>
		AOP
	Crew	Check if at least one CCW loop is restored: (YES)
		AOP
<p>Booth Operator Instructions:</p> <p>When called to give direction for AOP-118.1 report that CCW should be returned to service in accordance with SOP-118 and that all loads should be restored to service except for RCP thermal barriers so that a bubble is not formed in CCW and that normal charging and letdown should be returned to service in accordance with SOP-102.</p>		

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7,8 Page 41 of 52

Event Description: Loss of all CCW forces Rx trip, Emergency FW FCV fails open

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Evaluator Note:

At this point AOP-118.1 loops back on itself but direction was given by management in the previous Booth Operator Instruction.

		USES SOP-118 section B.2.4
	RO	Place XPP-58A(B)(C), CCBP A(B)(C), standby pump in OFF.
		SOP
	RO	Ensure MVB-9503A, CC TO RHR HX A, is open.
		SOP
	RO	Start one of the following in slow speed: (PEER ✓) 1) XPP-0001B, PUMP B. Prior to establishing Letdown.
		SOP
CAUTION 2.3.c and 2.3.d		
Failure to complete Step 2.3.d in a timely manner after reducing RHR Heat Exchanger flow will result in a loss of flow through the running CCW Pump or excessive flow perturbations in the CCW non-essential loop.		
		SOP
	RO	Start MVB-9503A, CC TO RHR HX A, stroking in the closed direction.(PEER ✓)
		SOP
	RO	When flow, as indicated on FI-7034, HX B FLOW GPM, is between 5000 gpm and 4000 gpm, perform the following in rapid succession: 1) Open MVB-9687B/9525B, LP A NON-ESSEN LOAD ISOL. 2) Open MVB-9524B/9526B, LP A NON-ESSEN LOAD ISOL. 3) Close MVB-9524A/9526A, LP B NON-ESSEN LOAD ISOL. 4) Close MVB-9687A/9525A, LP B NON-ESSEN LOAD ISOL. 5) Open MVB-9503A, CC TO RHR HX A.
		SOP

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7,8 Page 42 of 52

Event Description: Loss of all CCW forces Rx trip, Emergency FW FCV fails open

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	Crew	Locally verify greater than 1 gpm sample flow on RML0002B, LIQUID RAD MON COMPONENT COOLING (IB-412).
		SOP
Booth Operator Instructions: When called to verify flow on RM-L2 report that it is >5gpm.		
	RO	Ensure the following valves have not automatically closed due to high flow: 1) MVG-9625, CC TO RB. 2) MVG-9626, CC TO RB. 3) MVG-9583, FROM XS LTDN HX. 4) MVT-9593A(B)(C), FROM RCP A(B)(C) THERM BARR.
		SOP
	RO	Transfer the in-service Charging Pump to Train B per SOP-102.
		SOP
Booth Operator Instructions: If asked to return normal cooling to Charging pump tell them that you will return the system to prevent status by using the return as found on Attachment 1A		
		SOP
	RO	Ensure XPP-58A(B)(C), CCBP A(B)(C) are aligned as follows (MCB): 1) One pump is in AUTO and operating. 2) One pump is in AUTO and not operating. 3) One pump is in OFF.
		SOP
Evaluator Note: The following steps return normal charging and letdown to service.		
		Uses SOP-102 section IV.M.2
		Place FCV-122, CHG FLOW, in MAN and close.
		SOP
		Place PCV-145, LO PRESS LTDN, in MAN and open to 70%. (PEER ✓)

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7,8 Page 43 of 52

Event Description: Loss of all CCW forces Rx trip, Emergency FW FCV fails open

Time	Position	Applicant's Actions or Behavior
		SOP
		Place TCV-144, CC TO LTDN HX, in MAN and open to 100%.
		SOP
		Place TCV-143, LTDN TO VCT OR DEMIN, in VCT.
		SOP
		Open PVT-8152, LTDN LINE ISOL.
		SOP
		Open the following: a. LCV-459, LTDN LINE ISOL. b. LCV-460, LTDN LINE ISOL.
		SOP
		Ensure the following Charging Line Isolation Valves are open: a. MVG-8107, CHG LINE ISOL. b. MVG-8108, CHG LINE ISOL.
		SOP
		Slowly open FCV-122, CHG FLOW, to establish 60 gpm flow as indicated on FI-122A, CHG FLOW GPM.
		SOP
		Open Orifice Isolation Valves to obtain the desired Letdown flow rate (60 gpm to 120 gpm): a. PVT-8149A, LTDN ORIFICE A ISOL (45 gpm). b. PVT-8149B, LTDN ORIFICE B ISOL (60 gpm). c. PVT-8149C, LTDN ORIFICE C ISOL (60 gpm).
		SOP
		Adjust FCV-122, CHG FLOW, as required to maintain TI-140, REGEN HX OUT TEMP °F, between 250°F and 350°F while maintaining Pressurizer level.
		SOP

Op Test No.: 2011 NRC Scenario # 3 Event # 6,7,8 Page 44 of 52

Event Description: Loss of all CCW forces Rx trip, Emergency FW FCV fails open

Time	Position	Applicant's Actions or Behavior
		Adjust PCV-145, LO PRESS LTDN, to maintain PI-145, LO PRESS LTDN PRESS PSIG, between 300 psig and 400 psig.
		SOP
		Place PCV-145, LO PRESS LTDN, in AUTO.
		SOP
		Adjust TCV-144, CC TO LTDN HX, potentiometer as necessary to maintain the desired VCT temperature and place in AUTO. Refer to VCS Curve Book, Figure VII.15.
		SOP
		When Pressurizer level is within 1% of and trending to programmed level, place the PZR LEVEL MASTER CONTROL in MAN.
		SOP
		Establish automatic FCV-122, CHG FLOW, control as follows: a. Determine the correct PZR LEVEL MASTER CONTROL setpoint by dividing the current Charging flow by 1.5. b. Manually adjust the PZR LEVEL MASTER CONTROL to this setpoint. c. Place FCV-122, CHG FLOW, in AUTO. (PEER ✓)
		SOP
		Adjust PZR LEVEL MASTER CONTROL in MAN, as necessary, to maintain Pressurizer level at or near programmed level.
		SOP
		When Pressurizer level is within 1% of and trending to programmed level, place PZR LEVEL MASTER CONTROL in AUTO. (PEER ✓)
		SOP
		Monitor LR-459, PZR % LEVEL & LEVEL SP, recorder to verify that Charging flow is maintaining actual Pressurizer level at or near the programmed setpoint.
		SOP

Op Test No.: <u>2011 NRC</u> Scenario # <u>3</u> Event # <u>6,7,8</u> Page <u>45</u> of <u>52</u>		
Event Description: Loss of all CCW forces Rx trip, Emergency FW FCV fails open		
Time	Position	Applicant's Actions or Behavior

		After the Letdown temperatures have stabilized, place TCV-143, LTDN TO VCT OR DEMIN, in DEMIN/AUTO.
		SOP
After letdown is established, the lead evaluator can cue the Safety Valve failure		

Op Test No.: 2011 NRC Scenario # 3 Event # 9 Page 46 of 52

Event Description: PZR Safety valve fails open

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth operator; when directed activate trigger 7

	RO	Reports rapidly lowering RCS Pressure/AUTO SI.
		EOP-1.1
	CRS	Returns to EOP-1.0.

Evaluator's Note: The EOP-1.0 Reference Page Criteria that applies in this scenario is:**REDUCING CONTROL ROOM EMERGENCY VENTILATION**

- Reduce Control Room Emergency Ventilation to one train in operation within 30 minutes of actuation. REFER TO SOP-505, CONTROL BUILDING VENTILATION SYSTEM.

Evaluator's Note:	Actions for ATTACHMENT 3, SI EQUIPMENT VERIFICATION, are provided on the final 3 pages of this scenario guide. There is a critical task to close at least one Phase "A" Isolation Valve in each line that has not properly isolated.	
		EOP-1.0
	BOP	Initiate ATTACHMENT 3, SI EQUIPMENT VERIFICATION (at end of scenario form D2.
CRITICAL TASK	BOP	Either actuates containment isolation manually with switch SG02B or individually closes at least one valve in each line (expected to use the one operable switch, CS-SG02A is failed).
		EOP-1.0
CRITICAL TASK	BOP	Manually opens either MVG-8801A or B to establish a high head injection path. (This must be accomplished prior to NR RVLIS reaching 34% density with no RCPs running-Orange Path challenge to Core Cooling.)
		EOP-1.0
	CREW	Announce plant conditions over the page system.
		EOP-1.0

Op Test No.: 2011 NRC Scenario # 3 Event # 9 Page 47 of 52

Event Description: PZR Safety valve fails open

Time	Position	Applicant's Actions or Behavior
	RO	Verify RB pressure has remained LESS THAN 12 psig on PR-951, RB PSIG (P-951), red pen (YES)
		EOP-1.0
	RO	Check RCS temperature:
		<ul style="list-style-type: none"> With any RCP running, RCS Tavg is stable at OR trending to 557°F.
		<ul style="list-style-type: none"> With no RCP running, RCS Tcold is stable at OR trending to 557°F. (NO)
		EOP-1.0
	BOP	IF RCS temperature is LESS THAN 557 °F AND decreasing, THEN stabilize temperature by performing the following as required:
		<ul style="list-style-type: none"> Close IPV-2231, MS/PEGGING STM TO DEAERATOR.
		<ul style="list-style-type: none"> Perform one of the following:
		<ul style="list-style-type: none"> IF Narrow Range SG level is LESS THAN 26% [41%] in all SGs, THEN reduce EFW flow as necessary to stop cooldown, while maintaining total EFW flow GREATER THAN 450 gpm. OR
		<ul style="list-style-type: none"> WHEN Narrow Range SG level is GREATER THAN 26% [41%] in at least one SG, THEN control EFW flow as necessary to stabilize RCS temperature at 557°F.
		<ul style="list-style-type: none"> COMMENCE ATTACHMENT 6, STEAM VALVE ISOLATION, while continuing with this procedure.
		<ul style="list-style-type: none"> IF RCS cooldown continues, THEN close:
		<ul style="list-style-type: none"> MS Isolation Valves, PVM-2801A(B)(C).
		<ul style="list-style-type: none"> MS Isolation Bypass Valves, PVM-2869A(B)(C).
		EOP-1.0
	RO	Check PZR PORVs and Spray Valves:
		<ul style="list-style-type: none"> PZR PORVs are closed. (YES)
		<ul style="list-style-type: none"> PZR Spray Valves are closed. (YES)
		<ul style="list-style-type: none"> Verify power is available to at least one PZR PORV Block Valve: (YES)
		<ul style="list-style-type: none"> MVG-8000A, RELIEF 445 A ISOL.
		<ul style="list-style-type: none"> MVG-8000B, RELIEF 444 B ISOL
		<ul style="list-style-type: none"> MVG-8000C, RELIEF 445 B ISOL.

Op Test No.: 2011 NRC Scenario # 3 Event # 9 Page 48 of 52

Event Description: PZR Safety valve fails open

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

		<ul style="list-style-type: none"> Verify at least one PZR PORV Block Valve is open. (YES)
		EOP-1.0
Procedure Note: Seal Injection flow should be maintained to all RCPs.		
		EOP-1.0
	RO	Check if RCPs should be stopped (already stopped) :
		EOP-1.0
	BOP	Verify no SG is FAULTED:
		<ul style="list-style-type: none"> No SG pressure is decreasing in an uncontrolled manner. (YES)
		<ul style="list-style-type: none"> No SG is completely depressurized. (YES)
		EOP-1.0
	CREW	Verify Secondary radiation levels indicate SG tubes are NOT RUPTURED: (YES to all)
		<ul style="list-style-type: none"> RM-G19A (B) (C) STMLN HI RNG GAMMA
		<ul style="list-style-type: none"> RM-A9, CNDSR EXHAUST GAS ATMOS MONITOR.
		<ul style="list-style-type: none"> RM-L3, STEAM GENERATOR BLOWDOWN LIQUID MONITOR.
		<ul style="list-style-type: none"> RM-L10, SG BLOWDOWN CW DISCHARGE LIQUID MONITOR.
		EOP-1.0
	RO	Check if the RCS is INTACT: (NO to any or all)
		<ul style="list-style-type: none"> RB radiation levels are normal on:
		<ul style="list-style-type: none"> RM-G7, CONTAINMENT HI RNG GAMMA
		<ul style="list-style-type: none"> RM-G18, CNTMNT HI RNG GAMMA.
		<ul style="list-style-type: none"> RB Sump levels are normal.
		<ul style="list-style-type: none"> RB pressure is LESS THAN 1.5 psig.
		<ul style="list-style-type: none"> The following annunciators are NOT lit:
		<ul style="list-style-type: none"> XCP-606 2-2 (RBCU 1A/2A DRN FLO HI)
		<ul style="list-style-type: none"> XCP-607 2-2 (RBCU 1B/2B DRN FLO HI)
		EOP-1.0
	CRS	Transitions to EOP-2.0, LOSS OF REACTOR OR SECONDARY COOLANT.

Op Test No.: 2011 NRC Scenario # 3 Event # 9 Page 49 of 52

Event Description: PZR Safety valve fails open

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

		EOP-2.0
Procedure Notes:	<ul style="list-style-type: none"> • The EOP REFERENCE PAGE should be monitored throughout the use of this procedure. • Seal Injection flow should be maintained to all RCPs. • Conditions for implementing Emergency Plan Procedures should be evaluated using EPP-001, ACTIVATION AND IMPLEMENTATION OF EMERGENCY PLAN. 	
		EOP-2.0
	RO	Check if RCPs should be stopped (None running).
		EOP-2.0
	BOP	Verify no SG is FAULTED
		<ul style="list-style-type: none"> • No SG decreasing in an uncontrolled manner (YES)
		<ul style="list-style-type: none"> • No SG completely depressurized (YES)
		EOP-2.0
	BOP	Check Intact SG levels
		<ul style="list-style-type: none"> • NR level in intact SGs >26% [41%]
		<ul style="list-style-type: none"> • Control EFW flow to maintain 40-60% NR level
		EOP-2.0
	RO	Reset both SI RESET TRAIN A(B) Switches.
		EOP-2.0
	RO	Reset Containment Isolation:
		<ul style="list-style-type: none"> • RESET PHASE A - TRAIN A(B) CNTMT ISOL.
		<ul style="list-style-type: none"> • RESET PHASE B - TRAIN A(B) CNTMT ISOL.
		EOP-2.0
	RO/BOP	Check if Secondary radiation levels are normal: (YES to all)
		<ul style="list-style-type: none"> • Check radiation levels normal on:
		<ul style="list-style-type: none"> • RM-G19A(B)(C), STMLN HI RNG GAMMA.
		<ul style="list-style-type: none"> • RM-A9, CNDSR EXHAUST GAS ' ATMOS MONITOR.
		<ul style="list-style-type: none"> • RM-L3, STEAM GENERATOR ' BLOWDOWN LIQUID MONITOR.

Op Test No.: 2011 NRC Scenario # 3 Event # 9 Page 50 of 52

Event Description: PZR Safety valve fails open

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> RM-L10, SG BLOWDOWN CW ' DISCHARGE LIQUID MONITOR.
		<ul style="list-style-type: none"> Place SVX-9398A(B)(C), SG A(B)(C) SMPL ISOL, in AUTO.
		<ul style="list-style-type: none"> Notify Chemistry to sample all SG secondary sides, and screen samples for abnormal activity using a frisker.
		EOP-2.0
	RO	Check PZR PORVs and Block Valves:
		<ul style="list-style-type: none"> Verify power is available to the PZR PORV Block Valves:
		<ul style="list-style-type: none"> MVG-8000A, B, C (YES)
		<ul style="list-style-type: none"> Verify all PZR PORVs are closed. (YES)
		<ul style="list-style-type: none"> Verify at least one PZR PORV Block Valve is open. (YES)
		EOP-2.0
	RO/BOP	Place both ESF LOADING SEQ A(B) RESETS to:
		<ul style="list-style-type: none"> NON-ESF LCKOUTS
		<ul style="list-style-type: none"> AUTO-START BLOCKS
		EOP-2.0
	RO	Establish Instrument Air to the RB:
		<ul style="list-style-type: none"> Start one Instrument Air Compressor and place the other in Standby.
		<ul style="list-style-type: none"> Open PVA-2659, INST AIR TO RB AIR SERV.
		<ul style="list-style-type: none"> Open PVT-2660, AIR SPLY TO RB.
		EOP-2.0
	RO	Check if SI flow should be reduced:
		<ul style="list-style-type: none"> RCS subcooling on TI-499A(B), A(B) TEMP °F, is GREATER THAN 52.5 °F. (NO)
		EOP-2.0
	CRS	GO TO Step 11.
		EOP-2.0
	RO	Check if RB Spray should be stopped:
		<ul style="list-style-type: none"> Check if any RB Spray Pumps are running. (NO)

Op Test No.: 2011 NRC Scenario # 3 Event # 9 Page 51 of 52

Event Description: PZR Safety valve fails open

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	CRS	GO TO Step 12. Observe the CAUTION prior to Step 12.
	RO	Check if RHR Pumps should be stopped: (YES)
		<ul style="list-style-type: none"> Stops any running RHR pump
		EOP-2.0
	RO	Check if RCS pressure is stable or decreasing. (YES)
		EOP-2.0
	BOP	Check if pressure in all SGs is stable or increasing. (YES)
		EOP-2.0
	BOP	Check if DGs should be stopped:
		<ul style="list-style-type: none"> Verify both ESF buses are energized by offsite power. (YES)
		<ul style="list-style-type: none"> Stop any unloaded DG. REFER TO SOP-306, EMERGENCY DIESEL GENERATOR.
		EOP-2.0
	RO	Verify equipment is available for Cold Leg Recirculation:
		<ul style="list-style-type: none"> Verify power is available for at least one RHR Pump: (YES)
		<ul style="list-style-type: none"> Open both MVB-9503A(B), CC TO RHR HX A(B).
Caution step 16.c: • If the swing CCW Pump is NOT available, the running pump should NOT be secured to shift it to fast speed, to prevent damage to the Charging Pump on that train.		
		<ul style="list-style-type: none"> Leaves the one running CCW in SLOW speed
	RO	Check the AB for evidence of ECCS leakage (NO)
		EOP-2.0
	RO	Obtain necessary chemistry samples
		EOP-2.0
	RO	Shutdown and stabilize the Secondary Plant
		EOP-2.0
	RO	Check If RCS Cooldown and Depressurization is required (YES)

Op Test No.: <u>2011 NRC</u> Scenario # <u>3</u> Event # <u>9</u> Page <u>52</u> of <u>52</u>		
Event Description: PZR Safety valve fails open		
Time	Position	Applicant's Actions or Behavior

		<ul style="list-style-type: none"> RCS pressure greater than 325 psig (YES)
		EOP-2.0
	CRS	Goes TO EOP-2.1 POST-LOCA COOLDOWN AND DEPRESSURIZATION (crew brief expected).
Evaluator's Note; Scenario may be terminated after transition to EOP-2.1		

Facility:	VC SUMMER	Scenario No:	Op Test No.: 2011 NRC
		Spare	
Examiners:	_____	Operators:	CRS
	_____		RO
	_____		BOP
Initial Conditions:	<ul style="list-style-type: none"> 43% Power, MOL, GOP-4a, Step 3.12L (IC-304 for 2011) "B" EDG is OOS to clean the lube oil strainer "B" RB spray pump is out of service for bearing replacement National Weather Service has issued a severe weather alert due to a line of heavy thunderstorms moving into the area 		
Turnover:	<ul style="list-style-type: none"> Raise power to 100% 		
Critical Task:	<ul style="list-style-type: none"> Actuate SI manually prior to Core Cooling Orange Path challenge Trip Reactor Coolant Pumps prior to Core Cooling Orange Path challenge Isolate the leak by closing MVG-8888B prior to exiting EOP-2.5 (ECA-1.2) Actuate one train of Control Room emergency Ventilation prior to completion of EOP-1.0 Attachment 3 		
Event No.	Malf. No.	Event Type*	Event Description
1.	ANN-EM008	C-BOP, CRS	High temperature on Transformer 1A1 requires transfer of 480V busses 1A1 and 1A2 to alternate power . BOP-1
2.	CRF004L11	C-RO, CRS TS-CRS	Dropped control rod RO-2
	N/A	N-BOP, CRS R-RO,	Decrease power to recover rod
3.	MAL-PRS001A	I-RO, CRS	PT-444 fails high RO-3
4.	PMP-CS004B	C-RO, CRS TS-CRS	Running charging pump bearing seizes RO-1
5.	CNH-FW002O	C-BOP, CRS	FW Bypass valve fails open. BOP-2
6.	VLV-RH007L VLV-RH009L FLX-RHR001	M-ALL	Non isolable LOCA outside containment
7.	MAL-PCS005A MAL-PCS005B	C-ALL	Failure of SI to auto-initiate.
8.	PMP-AH022F and AH023F	C-BOP	Failure of XFN-30A,B, EMERG FLTR FAN A,B to start.
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

The crew will assume the watch having pre-briefed on the Initial Conditions..

A high temperature alarm is received on the 1A1 transformer. Busses 1A1 and 1A2 must be transferred to alternate power. BOP determines that a fault does not exist on the bus and energizes 1A1 and 1A2 by using the tie breakers (tie breakers need to be pulled up to operate). The 1A1-1A2 feeder breaker must be manually opened to deenergize the transformer; if it is opened prior to closing the tie breaker a loss of power to 1A1 and 1A2 will occur: a trouble alarm for the B IA compressor would be received: it clears when power is reestablished. HVAC alarms would indicate that XFN-17A, XFN-24A, XFN-15 and XFN-24 all tripped (AB ventilation is secured). The crew directs the control building operator to reestablish AB ventilation if it is lost. It is important to reestablish AB ventilation to be able to detect the LOCA outside containment later in the scenario. XCP-632,3-3 GEN AUX PNL TRBL, is also received due to a loss of power to the running stator water cooling pump. The turbine building operator reports that the cause of the alarm is XPN-7201 5-2, RESERVE PUMP RUNNING/PULL TO LOCK: the standby stator pump started with normal flow and pressure. The loss of power also affects exhaust hood spray pump A and vacuum pump C but since those pumps are not running no actions are necessary.

Control rod L-11 drops into the core. AOP-403.6, DROPPED CONTROL ROD is entered and RX engineering requests that rod recovery occur at 35% power. Crew reduces power with rods in manual. CRS refers to TS 3.1.1.1, 3.1.3.1, 3.1.3.6, 3.2.4.. 3.1.1.1 is Shutdown margin: STP 134.001 states that SDM is assumed due to cycle design and a SDM calculation is not required. 3.1.3.1 is Group height +/- 12 steps, action d.3 requires reevaluation within 5 days, SDM verification, power distribution monitoring, and thermal power reduction to <75% and high flux trip setpoint reduction to 85% within 4 hours. 3.1.3.6 is RIL and makes the misaligned rod be brought up to the bank (precludes the insertion of the bank to pick up the rod). 3.2.4 is QPTR and requires that the QPTR be in limits above 50% (not applicable since below 50%). Rod will not be recovered.

While power is being decreased, PT-444 fails high. This causes PCV-444B, PWR RELIEF, (Pressurizer PORV) to open as well as the PZR sprays to open. This is ramped to give the RO time to diagnose the failure while conducting task of down power. The crew enters AOP-401.5, PRESSURIZER PRESSURE CONTROL CHANNEL FAILURE, to regain control of pressure. If primary pressure goes below 2206 psig, the CRS will enter TS 3.2.5 POWER DISTRIBUTION LIMITS: DNB PARAMETERS.

The A charging pump bearing gradually seizes, permitting either a manual trip or automatic trip on overcurrent. Damage to the A charging pump may cause the crew to enter TS 3.5.2 for a loss of a ECCS system until the C pump is racked up on A train and the A charging pump is racked down. The crew will use AOP-102.2, LOSS OF CHARGING, to reestablish charging and letdown.

FW Bypass valve to A SG fails open increasing flow to A SG. BOP should take manual control of feed regulating valve and control level per the ARP to avoid the requirement for manual Reactor trip at 75% level.

During the down power the plant experiences a LOCA outside containment due to **leaking SI check valves from the RCS loops to RHR (via 8888B) the increased pressure causes a flex leak before the third check valve to the B RHR pump.** The crew will go through AOP-101.1, LOSS OF REACTOR COOLANT NOT REQUIRING SI and determine that an SI is required. A critical task will be for the crew to actuate SI prior to exiting EOP-1.0 (E-0). In EOP-1.0 (E-0) the BOP will discover that neither CB emergency filter fans started as required and will start at least one of the fans; starting one train is critical to limit control room dose during a LOCA outside Containment. The crew will go through EOP 1.0 (E-0) and determine that the RCS leak is outside of containment and transition to EOP-2.5 (ECA-1.2). The crew will isolate the leak and transition to EOP-2.0 (E-1). **The scenario can be terminated at this point.**

VCS 2011 NRC Spare Scenario Simulator Setup (SNAP 304 or 308)**Initial Conditions:**

- 40% Power, MOL, GOP-4a, Step 3.16
- Prior to the scenario, crew should pre-brief on conditions and expectations for the Shift (maintain power, repairs estimated to be complete well before LCO action time expires.
- Conduct two-minute drill
- Mark up procedures in use with "Circle and slash" as applicable

Pre-Exercise:

Ensure simulator has been checked for hardware problems (DORT, burnt out light bulbs, switch malfunctions, chart recorders, etc.)

TQP-801 Booth Operator checklist, has been completed

Hang Red Tags for equipment out of service

Ensure limiter is at 120% (fully off the limiter).

Ensure all BOP tie breakers are in the full down position.

PRE-LOAD

- LOA AUX 118 = RACK OUT "B" RB Spray pump breaker
- LOA-EPS114 = MAINTENANCE ("B" EDG OOS)
- MAL PCS005A SAFETY INJECTION FAILURE TRAIN A = FAIL TO AUTO INIT
- MAL PCS005B SAFETY INJECTION FAILURE TRAIN B = FAIL TO AUTO INIT
- MAL PMP-AH022F CNTRL ROOM EMERG FAN A FAIL TO START
- MAL PMP-AH023F CNTRL ROOM EMERG FAN B FAIL TO START
- OVR RH017B, 018B, and RH007 = OFF/FALSE (keeps RHR valve red lights off)

Trigger 1: Loss of 480VAC bus 1A1

- Insert ANN-EM008 XFMR XTF-1A1 HIGH TEMP = ON

Trigger 2: Dropped control rod

- Malfunction CRF004L11 DROPPED ROD L11 = Stationary
- Power reduction to recover rod

Trigger 3: Master PZR pressure PT-444 fails high

- Malfunction PRS001A PRESSURIZER PRESSURE CHANNEL 444 FAILURE = 2500#, 30 second ramp

Trigger 4: A charging pump bearing seizes leading to trip

- Malfunction PMP-CS004B severity 10, 5 minute ramp.

Trigger 5: Feedwater bypass flow control valve fails open

- Malfunction CNH-FW002O FW BYPASS VALVE FV-3321 FAILURE =100%, 90 sec ramp

Trigger 6: LOCA outside containment

- Malfunction MAL-RHR013B = 0.05 RHR DISCH CHECK VALVE 8974B LEAKAGE (0.05=800 GPM)
- Malfunction MAL-RHR013E = 0.05 RHR DISCH CHECK VALVE 8973C LEAKAGE (0.05=800 GPM)
- Malfunction FLX-RHR011at RLF VLV 8864B = 2500 gpm

Trigger 7: rack up C charging pump (when directed by crew)

- LOA-CVC043 CHARGING PUMP C SUPPLY BRKR TRAIN A = RACK IN
- LOA-CVC041 CHARGING PUMP C SUPPLY BRKR TRAIN B = RACK OUT

Trigger 8: Restart of AB ventilation system (if directed by crew)

- OVR-AH058E SS-AH011 A.B. HEPA EXH FAN(XFN-24A-AH) SWITCH = True
- OVR-AH045C CS-AH005 A.B. MAIN SUPPLY FAN(XFN-15A-AH) = True
- OVR-AH046C CS-AH005 A.B. MAIN SUPPLY FAN(XFN-17A-AH) = True
- OVR-AH053E SS-AH173 F.H.B. SUPPLY FAN(XFN-20-AH) ST= True

Trigger 9: Match flags on Stator Water cooling

- LOA-TUR015 Stator Water cooling pump A to OFF
- LOA-TUR016 Stator Water cooling pump B to ON

Trigger 10: Energize RHR Loop A suction valves

- LOA RHR009 (8701A, 1DA2X) and LOA RHR011 (8702A, 1DB2Y) = CLOSE

Trigger 11: Energize RHR Loop B suction valves

- LOA RHR010 (8701B, 1DA2Y) and LOA RHR012 (8702B, 1DB2Y) = CLOSE

Trigger 29: Allow Control Room Emergency fan to start

- MAL PMP-AH022F CNTRL ROOM EMERG FAN A FAIL TO START Delete in 1 sec.
- Event: X16I036T == 1

Trigger 30: Allow Control Room Emergency fan to start

- MAL PMP-AH023F CNTRL ROOM EMERG FAN B FAIL TO START Delete in 1 sec.
- Event: X16I038T ==1

Op Test No.: 2011 NRC Scenario # Spare Event # 1 Page 5 of 44

Event Description: High temperature on BOP transformer XTF-1A1 requires transfer of BOP loads

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Instructor:**When directed, activate trigger 1****Indications available:****Electrical panel alarm XCP-635 Point 1-1 XFMR XTF 1A1 HIGH TEMP lit**

		ARP XCP-635 Pt 1-1
	BOP	Acknowledges alarm and opens Annunciator Response procedure.
		ARP
	BOP	Directs TB operator to investigate transformer XTF-1A1
		ARP
Booth Instructor: When contacted as Turbine Building operator, report XTF-1A1 winding temperatures indicate 200°Centigrade, smell of hot insulation, NO FIRE at XTF-1A1. If asked if the fan is running respond that it is not and that it will not start.		
	BOP	Determines that a fault does not exist on either buss and energizes 1A1 and 1A2 by using SOP-308, 480 VOLT NON-ESF DISTRIBUTION
		SOP-308 section IV.A.2

Op Test No.: 2011 NRC Scenario # Spare Event # 1 Page 6 of 44

Event Description: High temperature on BOP transformer XTF-1A1 requires transfer of BOP loads

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

SOP-308 section IV.A.2**CAUTION:**

Instrument Air Compressor A should be in service before closing the 1B3-1A1 Bus Tie Breaker, as closing the 1B3-1A1 Bus Tie Breaker will trip Instrument Air Compressor B.

NOTE:

a. Automatic Sync-check takes a few seconds for the breaker to close. The amount of time parallel feeding occurs on each bus should be kept to a minimum.

b. XSW1A3 - 1C3 Tie Breaker closure affects CRDM Shroud Exhaust fan operation as follows:

1) If both XFN0067A and XFN0067B are racked in, then regardless of the operating fan combination, XFN0067C and XFN0067D will be tripped and XFN0067A and XFN0067B will start when the tie breaker is closed.

2) If either XFN0067A or XFN0067B is not racked in, then regardless of the operating fan combination, neither XFN0067C nor XFN0067D will be tripped and XFN0067A and XFN0067B will not be started when the tie breaker is closed.

		SOP
	BOP	Perform the following for buses having Bus Tie Breakers (XSW1A1, XSW1A2, XSW1A3, XSW1B1, XSW1B2, XSW1B3, XSW1B4, XSW1C1, XSW1C3 and XSW1C4): <ol style="list-style-type: none"> Pull the Bus Tie Breaker control switch up, to the Manual position. Close the Bus Tie Breaker. Open the 480 Volt Main Incoming Breaker to disconnect the 480 Volt Bus from the transformer being removed from service.
		SOP
	BOP	Perform the following steps on the affected 480 Volt Buses not having a Bus Tie Breaker connection: (NONE)

Op Test No.: 2011 NRC Scenario # Spare Event # 1 Page 7 of 44

Event Description: High temperature on BOP transformer XTF-1A1 requires transfer of BOP loads

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

		SOP
	BOP	Open the 7.2 KV/480V Transformer Feeder Breaker.
		SOP
Caution: Opening a breaker does not provide an acceptable safety margin for electrical work. The breaker should be racked out and any associated air disconnects opened prior to commencing maintenance.		
		SOP
	Crew	Calls AO to: Unlock and remove the key from the 480 Volt Main Incoming Breaker reinstating the interlock. Place the key in the 7.2 KV/480V Bank Disconnect and unlock it. Open the 7.2 KV/480V Bank Disconnect.
Booth Instructor: When called to finalize the removal of the transformer report that electrical maintenance has requested that it be left in the current configuration and that they will bringing up a troubleshooting plan.		
	Crew	Notifies SS and Electrical Maintenance of failure
		ARP
Evaluator's note; if tie breakers are closed prior to opening 7.2KV transformer feeder breaker, no loads are lost. The following events are included if the bus is deenergized.		

Op Test No.: 2011 NRC Scenario # Spare Event # 1 Page 8 of 44

Event Description: High temperature on BOP transformer XTF-1A1 requires transfer of BOP loads

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	BOP	A trouble alarm for the B IA compressor is received: it clears when power is reestablished.
		Not expected; ARPs
	BOP	HVAC alarms indicate that XFN-17A, XFN-24A, XFN-15 and XFN-24 all tripped (Aux Bldg ventilation is secured). The crew directs the control building operator to reestablish AB ventilation. It is important to reestablish AB ventilation to be able to detect the LOCA outside containment later in the scenario.
		Not expected; ARPs
	BOP	XCP-632,3-3 GEN AUX PNL TRBL, is also received due to a loss of power to the running stator water cooling pump.
		Not expected; ARPs
Booth operator instructions; when contacted as the turbine building operator, report standby stator water coolant pump running and use Trigger 9 to match flags and clear alarm		
		Not expected; ARPs
	Crew	Notifies Electrical Maintenance of failure
Booth Operator Instructions: When called respond as EM that transformer temperatures are 200°F and the fan is not running.		
	BOP	Directs TB operator to investigate generator aux panel alarm
		Not expected; ARPs

Op Test No.: 2011 NRC Scenario # Spare Event # 1 Page 9 of 44

Event Description: High temperature on BOP transformer XTF-1A1 requires transfer of BOP loads

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Booth Operator Instructions: When called as TB operator respond “The turbine building operator reports that the cause of the alarm is XPN-7201 5-2, RESERVE PUMP RUNNING/PULL TO LOCK: the standby stator pump started with normal flow and pressure.” Use Trigger 9 to match flags on stator cooling water pumps.

		Not expected; ARPs
	Crew	Directs Control Bldg operator to restart AB ventilation
		Not expected; ARPs

Booth Operator Instructions:

When called as Control Building insert Trigger 8 to restart ventilation systems

		Not expected; ARPs
	Crew	Conducts post-event brief, contacts SS.
		Not expected; ARPs

At the discretion of the Lead Examiner, proceed to the next event

2011 NRC Spare Scenario after workup Scenario Outline		Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>2</u> Page <u>10</u> of <u>44</u>		
Event Description: Dropped control rod		
Time	Position	Applicant's Actions or Behavior

Booth Instructor: when directed activate trigger 2		
Indications available: XCP-621 pt. 3-1 ONE ROD ON BOTTOM XCP-620 pt. 1-4 PR CHAN DEV XCP-620 pt. 1-5 PR UP DET FLUX HI DEV AUTO DEFEAT XCP-620 pt. 1-6 PR LOW DET FLUX HI DEV AUTO DEFEAT XCP-621 DRPI ALARM NON-URGENT 10% reduction in Power range NI-44 reading		
		ARP XCP-621 pt. 3-1
	Crew	Refer to alarm response procedures
		ARP
		PROBABLE CAUSE: 1. A shutdown or control group rod fails to withdraw. 2. A shutdown or control group rod dropped (yes). 3. DRPI System malfunction. 4. Plant shutdown in progress.
		ARP
		AUTOMATIC ACTIONS: 2. Automatic outward rod motion to match T_{ave} to T_{ref} until the withdrawal limit is reached.
		ARP

Op Test No.: 2011 NRC Scenario # Spare Event # 2 Page 11 of 44

Event Description: Dropped control rod

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	CRS	CORRECTIVE ACTIONS: 2. If a shutdown or control group rod has dropped and the Reactor did not trip (yes) , implement AOP-403.6, Dropped Control Rod.
		Enters AOP-403.6
IOA	RO	Verify only one Control Rod has dropped (yes) .
		AOP
IOA	RO	Place ROD CNTRL BANK SEL Switch in MAN.
		AOP
	Crew	Stabilize the plant; a. Decrease Main Turbine load to maintain T_{avg} within 5°F of T_{ref} . b. Verify PZR pressure is stable or trending to 2235 psig (2220 psig to 2250 psig). c. Verify PZR level is stable at OR trending to program level.
		AOP
	RO	Check if Reactor power is LESS THAN 75%. (yes)
		AOP
	CRS	Initiate GTP-702, Attachments IV.A, IV.B, and IV.C to monitor Shutdown Margin, rod deviation, and rod insertion.
		AOP
	CRS	Notify the following plant personnel prior to moving Control Rods: Management Duty Supervisor and Rod Control System Engineer.

Op Test No.: 2011 NRC Scenario # Spare Event # 2 Page 12 of 44

Event Description: Dropped control rod

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	CRS	Provide Reactor Engineering with the following information: Time rod dropped: ____. Dropped rod location: ____. Initial Reactor power level: ____. Current Reactor power level: ____. Current QPTR: _____.
		AOP
	RO	Determine and correct the cause of the failure (will not be corrected).
		AOP
NOTE - Step 9 This Step must be completed before continuing with Step 10.		
		AOP
	RO	Obtain the following information from Reactor Engineering: Power level at which recovery is to be performed: (35%) . Rate of Control Rod movement during recovery: no restriction
		AOP
Booth Operator Instructions: When called as Reactor Engineering, direct recovery at 35% power, with no restriction on the rate of control rod movement during the recovery.		

Op Test No.: 2011 NRC Scenario # Spare Event # 2 Page 13 of 44

Event Description: Dropped control rod

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

		AOP
	Crew	If necessary, reduce Reactor Power to the power level determined in Step 9. REFER TO GOP-4B, POWER OPERATION (MODE 1 - DESCENDING) OR GOP-4C, RAPID POWER REDUCTION.
		AOP
Evaluator Note: GOP-4B expected due to small size of power reduction		
		Uses GOP-4B
NOTE 3.3 Step 3.3 lowers Reactor Power from 48% to 25%.		
		GOP
	BOP	<p>Reduce load</p> <ul style="list-style-type: none"> a) Select desired Ramp Rate on Load Limit (usually Normal). b) Select Setpoint on Load Limit (a dialog box opens). c) Enter desired load (must be less than the indicated Load Reference). d) Select OK. e) Confirm setpoint. f) Select OK. g) Verify Load Limit status indicates LIMITING. h) Verify proper system response.

2011 NRC Spare Scenario after workup Scenario Outline		Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>2</u> Page <u>14</u> of <u>44</u>		
Event Description: Dropped control rod		
Time	Position	Applicant's Actions or Behavior

		GOP
	BOP	As load decreases, adjust Megavars using GEN FIELD VOLT ADJ as requested by the Load Dispatcher and within the Estimated Generator Capability curve (Enclosure A).
		GOP
	RO	As load decreases, Borate or dilute per SOP-106, Reactor Makeup Water System, to maintain Control Rods above the Rod Insertion Limit (rods are left in manual, AOP adjusts turbine load to keep Tavg within 5°F of program).
		GOP
After a >5% power change, proceed to the next event with Lead Evaluator concurrence.		

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>3</u> Page <u>15</u> of <u>44</u>		
Event Description: PZR Pressure Transmitter PT-444 fails high		
Time	Position	Applicant's Actions or Behavior

Booth Instructor: When directed, activate trigger 3		
Indications available: XCP-616, 2-5, PZR PCS HI XCP-616, 2-3, PZR PRESS HI/LO XCP-616, 2-6, PZR CNTRL PRESS HI XCP-616, 4-1, PZR SAFETY VLV LINE TEMP HI XCP-616, 4-2, PZR RLF LINE TEMP HI XCP-616, 4-3, PZR RLF VLV ISOL 1 PORV and two spray valves open (red lights on, green lights off)		
	Crew	Refer to alarm response procedures
	Crew	Refer to XCP-616, 2-5
		ARP XCP-616, 2-5
		PROBABLE CAUSE: 1. Rapid load reduction. 2. Instrument malfunction (yes) . 3. Pressure controller failure.
		ARP
		AUTOMATIC ACTIONS: 1. Pressurizer heaters cut off. 2. PCV-444B, PWR RELIEF, opens. 3. PCV-444C(444D), PZR SPRAY, open fully.

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>3</u> Page <u>16</u> of <u>44</u>		
Event Description: PZR Pressure Transmitter PT-444 fails high		
Time	Position	Applicant's Actions or Behavior

		ARP
		CORRECTIVE ACTIONS:
	RO	Compare PI-444, CNTL CHN PRESS PSIG, with other Pressurizer pressure indications to determine if IPT00444, PRESSURIZER PRESSURE CONTROL PRESS XMTR, has failed high (yes) .
		ARP
	RO	If IPT00444, PRESSURIZER PRESSURE CONTROL PRESS XMTR, has failed high (yes) , perform the following: a. Close PCV-444B, PWR RELIEF. b. Close PCV-444C, PZR SPRAY, and PCV-444D, PZR SPRAY. c. Turn on Pressurizer heaters as necessary to control pressure. d. Place the PZR PRESS MASTER CONTROL in MAN and control pressure manually. e. Refer to AOP-401.5, Pressurizer Pressure Control Channel Failure.
		ARP
	CRS	Transitions to AOP-401.5, Pressurizer Pressure Control Channel Failure
		Enters AOP-401.5
NOTE: Through this procedure, "AFFECTED" refers to any PZR PORV that has actuated as a result of the instrument failure.		
		AOP
IOA	RO	Verify the PZR PORVs are closed: (NO)
		AOP

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>3</u> Page <u>17</u> of <u>44</u>		
Event Description: <u>PZR Pressure Transmitter PT-444 fails high</u>		
Time	Position	Applicant's Actions or Behavior

IOA	RO	IF PZR pressure is LESS THAN 2300 psig, THEN perform the following: Close the AFFECTED PZR PORV(s): <ul style="list-style-type: none"> PCV-445A, PWR RELIEF (NO) PCV-445B, PWR RELIEF (NO) PCV-444B, PWR RELIEF (YES)
		AOP
NOTE – Step 2 PZR PRESS control channels PI-444 and PI-445 connect to the same reference leg line as protection channel PI-457.		
		AOP
IOA	RO	Compare the PZR control channel indication to the protection channel indications: (ONLY 444 reading high) <ul style="list-style-type: none"> PI-455, PRESS PSIG PI-456, PRESS PSIG PI-457, PRESS PSIG
		AOP
IOA	RO	Check if PI-444, CNTROL CHAN PRESS PSIG, indication is NORMAL. (NO)
		AOP
IOA	RO	a) Ensure the PZR Spray Valves are closed: <ul style="list-style-type: none"> PCV-444C, PZR SPRAY PCV-444D, PZR SPRAY b) Control PZR PRESS MASTER CONTROL in MAN. c) Operate the PZR Heaters and Spray Valves in manual to control RCS pressure between 2220 psig and 2250 psig. d) Within one hour; close MVG-8000B. RELIEF 444 B ISOL

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>3</u> Page <u>18</u> of <u>44</u>		
Event Description: PZR Pressure Transmitter PT-444 fails high		
Time	Position	Applicant's Actions or Behavior

		AOP
	RO	Check if PI-445, CNTRL CHAN PRESS PSIG, indication is NORMAL. (YES)
		AOP
	CRS	Determine above action satisfies Technical Specification 3.4.4 Action a. "With one or more PORV(s) inoperable and capable of being manually cycled, within 1 hour: 1) Restore the PORV(s) to OPERABLE status or 2) Close the associated block valve(s) and maintain power to the block valve; otherwise, be in at least HOT STANDBY within the next 6 hours and HOT SHUTDOWN within the following 6 hours."
		Tech Specs
	RO	Ensure ROD CNTRL BANK SEL Switch is in AUTO.
		AOP
*	RO	Maintain RCS pressure between 2220 psig and 2250 psig.
		AOP
	CRS	While regaining pressure monitor Technical Specification:3.2.5: Indicated Pressurizer Pressure \geq 2206 psig Action: With any of the above parameters exceeding its limit, restore the parameter to within its limit within 2 hours or reduce THERMAL POWER to less than 5% of RATED THERMAL POWER within the next 4 hours.
		Tech Specs
	Crew	Determine and correct the cause of the channel failure (will not be corrected during scenario) .

2011 NRC Spare Scenario after workup		Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>3</u> Page <u>19</u> of <u>44</u>			
Event Description: PZR Pressure Transmitter PT-444 fails high			
Time	Position	Applicant's Actions or Behavior	

		AOP
Booth Operator Instructions: When called as I&C report that a troubleshooting plan is being developed.		
		AOP
	Crew	Conducts post-event brief, contacts SS and I&C.
		AOP
At the discretion of the Lead Examiner, proceed to the next event.		

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>4</u> Page <u>20</u> of <u>44</u>		
Event Description: <u>Charging pump bearing seizes causing loss of charging</u>		
Time	Position	Applicant's Actions or Behavior

Booth Instructor: when directed, activate trigger 4		
Indications available: XCP-614 5-1, CHG LINE FLO HI/LO Charging pump amps increase Amber overload light above charging pump control switch		
		ARP XCP-614 5-1
	Crew	Refer to alarm response procedure
		ARP
		AUTOMATIC ACTIONS: 1. None.
		ARP
	RO	CORRECTIVE ACTIONS: 1. If the running Charging Pump amps are abnormal (yes), secure the Charging Pump and go to AOP-102.2, Loss of Charging.
		ARP
	CRS	Enters AOP-102.2, LOSS OF CHARGING
		Enters AOP-102.2
	RO	Checks if charging flow is normal (NO)
		ARP

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>4</u> Page <u>21</u> of <u>44</u>		
Event Description: <u>Charging pump bearing seizes causing loss of charging</u>		
Time	Position	Applicant's Actions or Behavior

	RO	<div style="border-left: 1px solid black; padding-left: 10px;"> <p>b) Close <u>all</u> Letdown Isolation Valves:</p> <p>1) PVT-8149A(B)(C), LTDN ORIFICE A(B)(C) ISOL. <input type="checkbox"/></p> <p>2) PVT-8152, LTDN LINE ISOL. <input type="checkbox"/></p> <p>3) LCV-459, LTDN LINE ISOL. <input type="checkbox"/></p> <p>4) LCV-460, LTDN LINE ISOL. <input type="checkbox"/></p> <p>c) Close FCV-122, CHG FLOW. <input type="checkbox"/></p> <p>d) Verify CCW flow to the RCP Thermal Barriers is GREATER THAN 90 gpm on FI-7273A(B), THERM BARR FLOW GPM. <input type="checkbox"/></p> <p>e) Display Dedicated Display ZZRCPBRG on the IPCS to monitor RCP temperatures. <input type="checkbox"/></p> <p>f) Contact Electrical and Mechanical Maintenance to investigate. <input type="checkbox"/></p> </div>
		AOP
	RO	IF Charging Pump suction is aligned to the VCT THEN ensure both LCV-115C(E), VCT OUTLET ISOL, are open (YES)
		AOP

Op Test No.: 2011 NRC Scenario # Spare Event # 4 Page 22 of 44

Event Description:	Charging pump bearing seizes causing loss of charging
--------------------	---

Time	Position	Applicant's Actions or Behavior
	RO	<p>b. Ensure the following valves are open:</p> <ul style="list-style-type: none"> 1) MVG-8106, CHG PP. <input type="checkbox"/> 2) MVT-8109A(B)(C), CHG PP A(B)(C). <input type="checkbox"/> 3) MVG-8130A(B), LP A SUCT TO CHG PP C. <input type="checkbox"/> 4) MVG-8131A(B), LP B SUCT TO CHG PP C. <input type="checkbox"/> 5) MVG-8132A(B), CHG PP C TO LP A DISCH. <input type="checkbox"/> 6) MVG-8133A(B), CHG PP C TO LP B DISCH. <input type="checkbox"/>
		AOP
		<p>c. Check the Charging header valve lineup as follows:</p> <ul style="list-style-type: none"> 1) Ensure MVG-8107, CHG LINE ISOL, is open. <input type="checkbox"/> 2) Ensure MVG-8108, CHG LINE ISOL, is open. <input type="checkbox"/> 3) Ensure FCV-122, CHG FLOW, is in MAN and CLOSE. <input type="checkbox"/> 4) Ensure <u>one</u> of the following valves is open: <ul style="list-style-type: none"> • PVT-8146, NORM CHG TO RCS LP B. <input type="checkbox"/> <li style="text-align: center;"><u>OR</u> • PVT-8147, ALT CHG TO RCS LP A. <input type="checkbox"/> 5) Verify VCT level is GREATER THAN 20%. <input type="checkbox"/>

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>4</u> Page <u>23</u> of <u>44</u>		
Event Description: <u>Charging pump bearing seizes causing loss of charging</u>		
Time	Position	Applicant's Actions or Behavior

		AOP
	RO	6) Locally verify Charging Pump suction pressure is between 50 psig and 100 psig as indicated on the following: PI-151A, SUCTION PRESS, for Charging Pump A. PI-152A, SUCTION PRESS, for Charging Pump B. PI-153A, SUCTION PRESS, for Charging Pump C.
		AOP
Booth Instructor: When contacted as ABLL, report suction pressure as 57 psig.		
Booth Instructor: if asked, "B" Charging pump was running yesterday prior to train swap.		
Booth Instructor: When contacted as SS, authorize starting either "B" or "C" charging pump (whichever one is recommended to be started)		
		Uses SOP-102 section III.B. 2
CAUTION To ensure proper pump starting during a Blackout or Safety Injection, normally, only one Charging Pump should be racked in to each train.		
NOTE Normally, only one Charging Pump is run at a time. This section may be used to start an additional Charging Pump (in the opposite train) for testing purposes only.		

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>4</u> Page <u>24</u> of <u>44</u>		
Event Description: Charging pump bearing seizes causing loss of charging		
Time	Position	Applicant's Actions or Behavior

CAUTION

If the Charging Pump has been out of service for an extended period of time (30 days to 45 days) during normal plant operation, the difference in Boric Acid Concentration in the stagnant piping could change RCS Tave, depending on time in core life, by as much as 0.2° F when the pump is placed in service.

		SOP
	Crew	Directs racking up "C" charging pump on "A" train <u>or</u> starting "B" train CCW and "B" train charging pump
		SOP
Booth Instructor: When contacted as Intermediate Building operator, use trigger 7 to rack up "C" chg pump. Report that the pump was last operated seven days ago. (This shows that the case does not need to be flushed.) Report that Att. VA to SOP-102 is complete (This shows that the C charging pump has been aligned to A header)		
	CRS	Determines that flushing of the casing in not required
		SOP section 2.4
	RO	Checks that XPP-43B(C)-PP1, CHG PP B(C) AUX OIL PP, is running.
		SOP
	RO	Starts XPP-0043B(C), PUMP B(C). (PEER check)
		SOP
	RO	Verifies XPP-43B(C)-PP1, CHG PP B(C) AUX OIL PP, stops automatically

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>4</u> Page <u>25</u> of <u>44</u>		
Event Description: <u>Charging pump bearing seizes causing loss of charging</u>		
Time	Position	Applicant's Actions or Behavior

		SOP
	RO	Verifies PI-121, CHG PRESS PSIG, is between 2650 psig and 2850 psig
		SOP
	RO	Monitors the following for proper pump operation: a. LR-459, PZR % LEVEL & LEVEL SP. b. FI-130A, RCP A INJ FLO GPM. c. FI-127A, RCP B INJ FLO GPM. d. FI-124A, RCP C INJ FLO GPM.
		Uses SOP-102 section IV.M.
	RO	Places FCV-122, CHG FLOW, in MAN and close.
		SOP
	RO	Places PCV-145, LO PRESS LTDN, in MAN and open to 70%. (PEER check)
		SOP
	RO	Places TCV-144, CC TO LTDN HX, in MAN and open to 100%.
		SOP
	RO	Places TCV-143, LTDN TO VCT OR DEMIN, in VCT.
		SOP
	RO	Opens PVT-8152, LTDN LINE ISOL.
		SOP

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>4</u> Page <u>26</u> of <u>44</u>		
Event Description: <u>Charging pump bearing seizes causing loss of charging</u>		
Time	Position	Applicant's Actions or Behavior

	RO	Opens the following: a. LCV-459, LTDN LINE ISOL. b. LCV-460, LTDN LINE ISOL.
		SOP
	RO	Ensure the following Charging Line Isolation Valves are open: a. MVG-8107, CHG LINE ISOL. b. MVG-8108, CHG LINE ISOL.
		SOP
	RO	Slowly open FCV-122, CHG FLOW, to establish 60 gpm flow as indicated on FI-122A, CHG FLOW GPM.
		SOP
	RO	Open Orifice Isolation Valves to obtain the desired Letdown flow rate (60 gpm to 120 gpm): a. PVT-8149A, LTDN ORIFICE A ISOL (45 gpm). b. PVT-8149B, LTDN ORIFICE B ISOL (60 gpm) OR c. PVT-8149C, LTDN ORIFICE C ISOL (60 gpm).
		SOP
	RO	Adjust FCV-122, CHG FLOW, as required to maintain TI-140, REGEN HX OUT TEMP °F, between 250°F and 350°F while maintaining Pressurizer level.
		SOP

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>4</u> Page <u>27</u> of <u>44</u>		
Event Description: <u>Charging pump bearing seizes causing loss of charging</u>		
Time	Position	Applicant's Actions or Behavior

	RO	Adjust PCV-145, LO PRESS LTDN, to maintain PI-145, LO PRESS LTDN PRESS PSIG, between 300 psig and 400 psig.
		SOP
	RO	Place PCV-145, LO PRESS LTDN, in AUTO.
		SOP
	RO	Adjust TCV-144, CC TO LTDN HX, potentiometer as necessary to maintain the desired VCT temperature and place in AUTO.
		SOP
	RO	When Pressurizer level is within 1% of and trending to programmed level, place the PZR LEVEL MASTER CONTROL in MAN.
	RO	Establish automatic FCV-122, CHG FLOW, control as follows: a. Determine the correct PZR LEVEL MASTER CONTROL setpoint by dividing the current Charging flow by 1.5. b. Manually adjust the PZR LEVEL MASTER CONTROL to this setpoint. c. Place FCV-122, CHG FLOW, in AUTO. . (PEER check)
		SOP
	RO	Adjust PZR LEVEL MASTER CONTROL in MAN, as necessary, to maintain Pressurizer level at or near programmed level.
		SOP
	RO	When Pressurizer level is within 1% of and trending to programmed level, place PZR LEVEL MASTER CONTROL in AUTO. . (PEER check)

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>4</u> Page <u>28</u> of <u>44</u>		
Event Description: Charging pump bearing seizes causing loss of charging		
Time	Position	Applicant's Actions or Behavior

		SOP
	RO	Monitor LR-459, PZR % LEVEL & LEVEL SP, recorder to verify that Charging flow is maintaining actual Pressurizer level at or near the programmed setpoint.
		SOP
	RO	After the Letdown temperatures have stabilized, place TCV-143, LTDN TO VCT OR DEMIN, in DEMIN/AUTO.
		SOP
	Crew	Conducts Post-event brief, contacts SS. May contact Mechanical Maintenance for pump repair.
		SOP
At the discretion of the Lead Examiner, proceed to the next event		

2011 NRC Spare Scenario after workup		Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>5</u> Page <u>29</u> of <u>44</u>			
Event Description: Feedwater bypass valve fails open			
Time	Position	Applicant's Actions or Behavior	

Booth Instructor: When directed, activate trigger 5		
Indications available: XCP-624, 1-5, SG A LVL DEV XCP-624, 1-1, SG A LVL HI-HI Increasing level on "A" SG.		
	Crew	Refer to alarm response procedures
Evaluator Note: The crew may attempt to go to AOP-210.1, FEEDWATER FLOW CONTROL VALVE FAILURE but that procedure is written for a failure of the main feed regulation valves and not the bypass valves so the steps of AOP-210.1 are not included.		
		ARP XCP-624, 1-5
		PROBABLE CAUSE: (none apply) 1. Step load increase or decrease. 2. Steam Generator A level control system malfunction. 3. FCV-478, A FCV, malfunction. 4. Testing in progress. 5. Instrument failure.
		ARP
		AUTOMATIC ACTIONS: 1. FCV-478, A FCV, will modulate to attempt to restore level to 61.6%.

2011 NRC Spare Scenario after workup		Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>5</u> Page <u>30</u> of <u>44</u>			
Event Description: Feedwater bypass valve fails open			
Time	Position	Applicant's Actions or Behavior	

		ARP
		CORRECTIVE ACTIONS:
	BOP	1. If required, restore Steam Generator A level to between 60% and 65% by performing the following: a. Manually control PVT-478, SG A FWF
		ARP
	BOP	2. Evaluate SG A Narrow Range level indicators LI-474, LI-475, and LI-476: a. For increasing level: 1) At 70% Narrow Range level: (a) During startups (below 15% power) close the Feed Regulating valves with the B Train Switches. (b) When above 15% power take manual control of PVT-478, SG A FWF. (c) Ensure Feed Flow is 200 kbh to 400 kbh less than Steam Flow. 2) At 75% Narrow Range level: (a) Trip the Reactor if above 15% power. (b) Close the Feed Isolation valves. (c) Trip the Turbine. (d) Trip the Feed Pumps. (e) Close the Feedwater Regulating valves, if not closed earlier. (f) If the Reactor has <u>NOT</u> been tripped, reduce power to between 1% and at 1% to 2% per minute. (g) Reestablish Emergency Feed.
		ARP
		SUPPLEMENTAL ACTIONS:
	BOP	1. Correct the level deviation and restore automatic control (NO , valve is failed open).
		ARP
Booth Operator Instructions: When called as I&C report that you will develop a troubleshooting plan.		

2011 NRC Spare Scenario after workup		Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>5</u> Page <u>31</u> of <u>44</u>			
Event Description: Feedwater bypass valve fails open			
Time	Position	Applicant's Actions or Behavior	

		ARP
	Crew	Conducts post-event brief and contacts SS. May contact I&C for Bypass Feed Reg. valve troubleshooting.
Evaluator Note: If the crew decides to leave the bypass valve open then they should enter Technical Specification 3.3.2 Functional unit 1.b action 14.		
Booth Operator: If called to fail air to the bypass valve so that it closes use VLV-FW010A, IFV03321-FW MN FW BYPASS VLV A LOSS OF AIR to do so.		
At the discretion of the Lead Examiner proceed to the next event		

2011 NRC Spare Scenario after workup		Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>6, 7, 8</u> Page <u>32</u> of <u>44</u>			
Event Description: <u>LOCA Outside Containment</u>			
Time	Position	Applicant's Actions or Behavior	

Booth Instructor: When directed, activate trigger 6.		
Indications available: Indications available: XCP-614 pt. 5-1 CHG FLO HI/LO XCP-616 pt. 1-5 PZR LCS DEV HI/LO XCP-616 pt. 2-2 PZR PRESS LO XCP-616 pt. 2-3 PZR PRESS HI/LO XCP-616 pt. 1-3 BLCK HTRS ISOL LTDN PZR LCS LO		
	Crew	Refer to alarm response procedures
		Uses ARP XCP-614 pt. 5-1
		PROBABLE CAUSE: <div style="margin-left: 40px;"> 1. RCS temperature transient. 2. RCS excessive leakage (yes). 3. Flow controller malfunction. 4. Charging Pump malfunction. 5. Flow control valve failure. </div>
	CRS	Transitions to AOP-101.1 LOSS OF REACTOR COOLANT NOT REQUIRING SI

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>6, 7, 8</u> Page <u>33</u> of <u>44</u>		
Event Description: <u>LOCA Outside Containment</u>		
Time	Position	Applicant's Actions or Behavior

		Transitions to AOP-101.1
NOTE; If a Reactor Trip occurs AND SI is NOT required, this procedure should be continued after the actions of EOP-1.1. REACTOR TRIP RECOVERY, are completed.		
IOA	RO	Verify PZR level is at or trending to program level (NO) .
		AOP
IOA	RO	a) Open FCV-122. CHG FLOW as necessary to maintain PZR level.
		AOP
IOA	RO	b) If PZR level continues to decrease (yes) , THEN reduce Letdown to one 45 gpm orifice: 1) Set PCV-145, LO PRESS LTDN to 70%. 2) Ensure PVT-8149A. LTDN ORIFICE A ISOL is open. 3) Close both PVT-8149B(C) LTDN ORIFICE B(C) ISOL. 4) Adjust PCV-145, LO PRESS LTDN to maintain PI-145 LO PRESS LTDN PRESS PSIG between 300 psig and 400 psig. 5) Place PCV-145, LO PRESS LTDN, in AUTO.
		AOP
IOA	RO	2. Check if SI is required: a. Check if any of the following criteria are met: <ul style="list-style-type: none"> • PZR level is decreasing with Charging maximized and Letdown minimized. • PZR level is approaching 12% (yes). • PZR pressure is approaching 1870 psig. • VCT level is approaching 5% (yes).

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>6, 7, 8</u> Page <u>34</u> of <u>44</u>		
Event Description: <u>LOCA Outside Containment</u>		
Time	Position	Applicant's Actions or Behavior

IOA	RO	b. Perform the following: 1) Trip the Reactor 2) GO TO EOP-1.0. REACTOR TRIP/SAFETY INJECTION ACTUATION. <u>WHEN</u> EOP-1.0 Immediate Actions are complete, THEN actuate SI.
	CRS	Direct entry to EOP-1.0, Reactor Trip/Safety Injection Actuation
		Enters EOP-1.0
IOA	RO	Verify Reactor Trip: <ul style="list-style-type: none"> Trip the Reactor using either Reactor Trip Switch. Verify all Reactor Trip and Bypass Breakers are open. Verify all Rod Bottom Lights are lit. Verify Reactor Power level is decreasing.
		EOP-1.0
IOA	BOP	Verify Turbine/Generator Trip: <ol style="list-style-type: none"> Verify all Turbine STM Stop VLVs are closed. Ensure Generator Trip (after 30 second delay): <ol style="list-style-type: none"> Ensure the GEN BKR is open. Ensure the GEN FIELD BKR is open. Ensure the EXC FIELD CNTRL is tripped.
		EOP-1.0
IOA	BOP	Verify both ESF buses are energized.
		EOP-1.0

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>6, 7, 8</u> Page <u>35</u> of <u>44</u>		
Event Description: <u>LOCA Outside Containment</u>		
Time	Position	Applicant's Actions or Behavior

IOA	RO	Check if SI is actuated: a. Check if either: • SI ACT status light is bright on XCP-6107 1-1 (NO) . Or • Any red first out SI annunciator is lit on XCP-626 top row (YES) .
		EOP-1.0
CRITICAL TASK	RO	b. Actuate SI using either SI ACTUATION Switch
		EOP-1.0
	BOP	Initiate ATTACHMENT 3, SI EQUIPMENT VERIFICATION.
		EOP-1.0
Evaluator Note: The steps for Attachment 3, SI EQUIPMENT VERIFICATION can be found at the end of this scenario guide.		
	Crew	Announce plant conditions over the page system.
		EOP-1.0
	RO	Verify RB pressure has remained LESS THAN 12 psig on PR-951, RB PSIG (P-951), red pen. (YES)
		EOP-1.0

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>6, 7, 8</u> Page <u>36</u> of <u>44</u>		
Event Description: <u>LOCA Outside Containment</u>		
Time	Position	Applicant's Actions or Behavior

	RO	Verify both the following annunciators are lit; (NO) c. XCP-612 3-2 (RB SPR ACT). d. XCP-612 4-2 (PHASE B ISOL).
		EOP-1.0
	RO	Check RCS temperatures: With any RCP OR RCS Tavg is stable at or trending to 557°F OR With no RCP running, RCS Tcold is stable at OR trending to 557°F. (NO) Close IPV-2231, MS/PEGGING STM TO DEAERATOR. Throttle EFW to 450 gpm total until one SG > 26%.
		EOP-1.0
	RO	Check if PZR PORVs are closed (yes) .
		EOP-1.0
	RO	Check if PZR Spray Valves are closed (yes) .
		EOP-1.0
	RO	Verify power is available to at least one PZR PORV Block Valve: <ul style="list-style-type: none"> MVG-8000A, RELIEF 445 A ISOL (yes). MVG-8000B, RELIEF 444 B ISOL (yes). MVG-8000C, RELIEF 445 B ISOL (yes).
		EOP-1.0
	RO	Verify at least one PZR PORV Block Valve is open (yes) ..
		EOP-1.0
NOTE - Step 11 Seal Injection flow should be maintained to all RCPs.		

2011 NRC Spare Scenario after workup		Scenario Outline		Form ES-D-2	
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>6, 7, 8</u> Page <u>37</u> of <u>44</u>					
Event Description: <u>LOCA Outside Containment</u>					
Time	Position	Applicant's Actions or Behavior			

		EOP-1.0
	RO	Check if RCPs should be stopped: (YES)
		EOP-1.0
Critical Task	RO	Stop all Reactor Coolant Pumps
		EOP-1.0
	RO	Verify no SG is FAULTED: <ul style="list-style-type: none"> No SG pressure is decreasing in an uncontrolled manner (yes). No SG is completely depressurized. (yes).
		EOP-1.0
	RO	Verify Secondary radiation levels indicate SG tubes are <u>NOT</u> RUPTURED: (yes) <ul style="list-style-type: none"> RM-G19A(B)(C), STMLN HI RNG GAMMA. <input type="checkbox"/> RM-A9, CNDSR EXHAUST GAS ATMOS MONITOR. <input type="checkbox"/> RM-L3, STEAM GENERATOR BLOWDOWN LIQUID MONITOR. <input type="checkbox"/> RM-L10, SG BLOWDOWN CW DISCHARGE LIQUID MONITOR. <input type="checkbox"/>
		EOP-1.0

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>6, 7, 8</u> Page <u>38</u> of <u>44</u>		
Event Description: <u>LOCA Outside Containment</u>		
Time	Position	Applicant's Actions or Behavior

	RO	<p>Check if the RCS is INTACT: (YES based on CNTMT conditions)</p> <p>a. RB radiation levels are normal on:</p> <ul style="list-style-type: none"> • RM-G7, CNTMT HI RNG GAMMA. <input type="checkbox"/> • RM-G18, CNTMT HI RNG GAMMA. <input type="checkbox"/> <p>b. RB Sump levels are normal. <input type="checkbox"/></p> <p>c. RB pressure is LESS THAN 1.5 psig. <input type="checkbox"/></p> <p>d. The following annunciators are <u>NOT</u> lit:</p> <ul style="list-style-type: none"> • XCP-606 2-2 (RBCU 1A/2A DRN FLO HI). <input type="checkbox"/> • XCP-607 2-2 (RBCU 1B/2B DRN FLO HI). <input type="checkbox"/>
		EOP-1.0
	RO	<p>Reset both SI RESET TRAIN A(B) Switches.</p>
		EOP-1.0
	RO	<p>Reset Containment Isolation:</p> <ul style="list-style-type: none"> • RESET PHASE A - TRAIN A(B) CNTMT ISOL. ' • RESET PHASE B - TRAIN A(B) CNTMT ISOL.
		EOP-1.0
	BOP	<p>Place both ESF LOADING SEQ A(B) ' RESETS to:</p> <p>a. NON-ESF LCKOUTS. '</p> <p>b. AUTO-START BLOCKS.</p>

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>6, 7, 8</u> Page <u>39</u> of <u>44</u>		
Event Description: <u>LOCA Outside Containment</u>		
Time	Position	Applicant's Actions or Behavior

		EOP-1.0
Evaluator's note; "A" compressor was stripped on load shed but either it or the Supplemental can be started now that non-ESF lockouts are reset. The "B" compressor is locked out since 1A1 is on alternate feed.		
	RO	Establish Instrument Air to the RB: a. Verifies the "A" IA compressor is running and Verifies the "B" IA compressor is in standby(NO) Restarts "A", the Supplemental, or the Diesel air compressor. b. Opens PVA-2659, INST AIR TO RB AIR SERV. c. Opens PVT-2660, AIR SPLY TO RB.
		EOP-1.0
	RO	Check if SI flow should be reduced: (no)
		EOP-1.0
	CRS	Initiate monitoring of the Critical Safety Function Status Trees. REFER TO EOP-12.0, MONITORING OF CRITICAL SAFETY FUNCTIONS.
		EOP-1.0
Evaluator's note; STA can perform this function as directed 10 minutes after he is called to the control room.		
*	RO	Check SG levels; a. Verify level in all SGs > 26% (yes) b. Control EFW flow to maintain NR levels 40%-60%
		EOP-1.0

2011 NRC Spare Scenario after workup		Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>6, 7, 8</u> Page <u>40</u> of <u>44</u>			
Event Description: <u>LOCA Outside Containment</u>			
Time	Position	Applicant's Actions or Behavior	

Booth operator note; If contacted as chemistry wait 30 minutes, then report all secondary activities are normal.		
	RO	Check if secondary activity is normal (yes)
		EOP-1.0
	RO	<p>Check for loss of Reactor Coolant outside Containment (yes)</p> <p>a. Verify AB radiation levels are normal on:</p> <ul style="list-style-type: none"> • RM-A3, MAIN PLANT VENT EXH ATMOS MONITOR: PARTICULATE, IODINE, GAS. <input type="checkbox"/> • RM-A13, PLANT VENT HI RANGE. <input type="checkbox"/> • RM-A11, AB VENT GAS ATMOS MONITOR. <input type="checkbox"/> • Local area monitors. <input type="checkbox"/> <p>b. Verify annunciator XCP-631 6-1 is <u>NOT</u> lit (AB SMP LVL HI). <input type="checkbox"/></p> <p>c. Verify annunciators XCP-606 3-4 and XCP-607 3-4 are <u>NOT</u> lit (LD TRBL AB SMP/FLDRN LVL HI). <input type="checkbox"/></p>
		EOP-1.0
	CRS	<p>23 Evaluate the cause of abnormal AB conditions. <u>IF</u> the cause is a loss of RCS inventory outside Containment, <u>THEN GO TO EOP-2.5, LOCA OUTSIDE CONTAINMENT, Step 1.</u> <input type="checkbox"/></p>

2011 NRC Spare Scenario after workup		Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>6, 7, 8</u> Page <u>41</u> of <u>44</u>			
Event Description: LOCA Outside Containment			
Time	Position	Applicant's Actions or Behavior	

Evaluator Note: The closure of the MSIV's may occur at various points in the scenario based on the time the crew takes, but this is where it occurred during workup week.		
	CRS	Enters EOP-2.5 LOCA OUTSIDE CONTAINMENT

2011 NRC Spare Scenario after workup		Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>6, 7, 8</u> Page <u>42</u> of <u>44</u>			
Event Description: <u>LOCA Outside Containment</u>			
Time	Position	Applicant's Actions or Behavior	

		Enters EOP-2.5
Booth Operator Instructions: ramp flex leak size to 5000 gpm over 5 minutes to maintain RCS pressure decrease trend for clear EOP path.		
		EOP-2.5
	Crew	Announces plant conditions over the page system.
		EOP-2.5
Booth Operator Instructions: when directed to energize 8701 and 8702 valves, use triggers 10 (A loop) and 11 (C loop) to do so.		
Evaluator note; a Steamline SI and Main Steam isolation signal may occur above 675# steamline SI; the low decay heat in this snap causes cooldown from SI flow.		
		EOP-2.5
	RO	<div style="display: flex; justify-content: space-between;"> <div> <p>2 Ensure the following are closed:</p> <p>a. RHR Pump Suction Valves from the RCS:</p> <p>1) MVG-8701A and MVG-8702A, RCS LP A TO PUMP A (Status Lights XCP-6106 1-11(2-11)), for Train A.</p> <p>2) MVG-8701B and MVG-8702B, RCS LP C TO PUMP B (Status Lights XCP-6106 1-12(2-12)), for Train B.</p> </div> <div style="border-left: 1px solid black; padding-left: 10px; display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 20px;"><input type="checkbox"/></div> <div><input type="checkbox"/></div> </div> </div> <p style="text-align: right; margin-top: 10px;">(YES)</p>
		EOP-2.5

2011 NRC Spare Scenario after workup		Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>6, 7, 8</u> Page <u>43</u> of <u>44</u>			
Event Description: <u>LOCA Outside Containment</u>			
Time	Position	Applicant's Actions or Behavior	

	RO	<p>b. Other paths out of Containment:</p> <p>1) Normal Letdown Isolation:</p> <ul style="list-style-type: none"> • PVT-8149A(B)(C), LTDN ORIFICE A(B)(C) ISOL. <input type="checkbox"/> • PVT-8152, LTDN LINE ISOL. <input type="checkbox"/> <p>2) RCP Seal Return Isolation:</p> <ul style="list-style-type: none"> • MWT-8100, SEAL WTR RTN ISOL. <input type="checkbox"/> • MWT-8112, SEAL WTR RTN ISOL. <input type="checkbox"/> <p>3) PZR Sample Isolation:</p> <ul style="list-style-type: none"> • SVX-9356A, PZR STM SMPL ISOL. <input type="checkbox"/> • SVX-9356B, PZR LIQ SMPL ISOL. <input type="checkbox"/> <p>4) RCS Loop B Sample Isolation:</p> <ul style="list-style-type: none"> • SVX-9364B, RCS LP B SMPL ISOL. <input type="checkbox"/> • SVX-9365B, RCS LP B SMPL ISOL. <input type="checkbox"/> <p>5) RCS Loop C Sample Isolation:</p> <ul style="list-style-type: none"> • SVX-9364C, RCS LP C SMPL ISOL. <input type="checkbox"/> • SVX-9365C, RCS LP C SMPL ISOL. <input type="checkbox"/> <p style="text-align: right;">(ALL CLOSED)</p>
		EOP-2.5
	RO	Check if RCS pressure is continuing to decrease (yes) .

2011 NRC Spare Scenario after workup	Scenario Outline	Form ES-D-2
Op Test No.: <u>2011 NRC</u> Scenario # <u>Spare</u> Event # <u>6, 7, 8</u> Page <u>44</u> of <u>44</u>		
Event Description: <u>LOCA Outside Containment</u>		
Time	Position	Applicant's Actions or Behavior

Booth operator instructions; adjust size of flex leak as required to keep RCS pressure trending down.		
		EOP-2.5
	RO	4. Try to identify and isolate the break: (requires operating "A" and "B" train "power lockout" switches to restore control power) a. Close MVG-8888A, RHR LP A TO COLD LEGS.
		EOP-2.5
	RO	Check if RCS pressure is continuing to decrease (yes)
		EOP-2.5
	RO	c. Open MVG-8888A, RHR LP A TO COLD LEGS.
		EOP-2.5
Critical Task	RO	d. Close MVG-8888B, RHR LP B TO COLD LEGS
		EOP-2.5
	RO	Check if RCS pressure is continuing to decrease (no)
		EOP-2.5
	CRS	Transitions to EOP-2.0 LOSS OF EMERGENCY COOLANT RECIRCULATION.
Lead Examiner can terminate the scenario at this point.		

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: JPPF-049

2011 NRC InPlant i RO: CONTROL ROOM
EVACUATION (DUTIES OF BOP OPERATOR)

APPROVAL: RJ APPROVAL DATE: 7/30/2011

REV NO: 7

CANDIDATE: _____

EXAMINER: _____

THIS JPM IS APPROVED

TASK:

000-068-05-01

PERFORM CONTROL ROOM EVACUATION

TASK STANDARD:

AOP-600.1 Attachment II performed with the following complete:

1. All MFPs have been tripped
2. Rod Drive MG set feeder breakers have been tripped
3. RCP "B" is left running ('A' and 'C' RCP is tripped already).
4. Two condensate pumps have been tripped
5. Three FWBP's have been tripped.

The use of applicable Human Performance Tools (3-way communications, self checking, peer checking, phonetic alphabet, etc) and industrial safety practices meets expectations.

TERMINATING CUE: Step 12 of Attachment II is complete or when examinee returns procedure to examiner.

PREFERRED EVALUATION LOCATION**PREFERRED EVALUATION METHOD**

PLANT

SIMULATE

REFERENCES:

SOP-313

LOCAL SWITCHGEAR BREAKER OPERATIONS

ISP-027

ELECTRICAL SAFETY

AOP-600.1

CONTROL ROOM EVACUATION

INDEX NO.**K/A NO.****RO****SRO**

0000682130

2.1.30

Ability to locate and operate components, including local controls.

4.4

4.0

TOOLS:

AOP-600.1, Attachment II, Steps 10-12
ISP-027 Electrical Safety
SOP-313
Picture of the inside of a 7.2 KV breaker.

EVALUATION TIME

14

TIME CRITICAL

No

10CFR55: 45(a)13

TIME START: _____

TIME FINISH: _____

PERFORMANCE TIME: _____

PERFORMANCE RATING:

SAT: _____

UNSAT: _____

EXAMINER: _____

SIGNATURE

DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is operating at 100% power, with all controls in automatic. A call has been received that a bomb has been placed in the control room. The SS has directed a control room evacuation. AC power is available to both ESF Buses. The reactor has been tripped by the Reactor Operator.

INITIATING CUES: The Control Room Supervisor directs the BOP Operator to perform Attachment 2 of AOP-600.1, Steps 10 through 12.

***AT NO TIME ARE YOU TO OPERATE
ANY PLANT EQUIPMENT!***

***FOR ELECTRICAL MANIPULATIONS,
AT NO TIME ARE YOU TO BREAK THE
PLANE OF THE ELECTRICAL PANEL!***

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is operating at 100% power, with all controls in automatic. A call has been received that a bomb has been placed in the control room. The SS has directed a control room evacuation. AC power is available to both ESF Buses. The reactor has been tripped by the Reactor Operator.

INITIATING CUES: The Control Room Supervisor directs the BOP Operator to perform Attachment 2 of AOP-600.1, Steps 10 through 12.

***AT NO TIME ARE YOU TO OPERATE ANY
PLANT EQUIPMENT!***

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

STEP: 1

CUES:

Procedure CAUTION - Step 10 "Reactor Trip should be verified with the Reactor Operator prior to securing the Main Feedwater Pumps."

Evaluator note: Initial conditions have indicated that the RO has already tripped the reactor. If the candidate calls the Reactor Operator to verify the reactor trip respond as the Reactor Operator that the reactor has been tripped.

CR SEQ

No Yes Verifies reactor has been tripped.

STEP STANDARD:

Calls the reactor operator and verifies reactor has been tripped.

COMMENTS:

SAT _____

UNSAT _____

STEP: 2

CUES:

CR SEQ

Yes Yes Locally trip all Main Feedwater Pumps (436' TB).

STEP STANDARD:

Pulls MFP "PULL TO TRIP" handle on front standard for MFP's "A" "B" & "C". Verifies trip by noting RPM decrease locally OR trips MFPs from local DCS station.

COMMENTS:

SAT

UNSAT _____

STEP: 3

CUES:

If asked as the Shift Supervisor if ISP-027, ELECTRICAL SAFETY INDUSTRIAL SAFETY PROCEDURE, requirements can be waived respond that the requirements can be waived. This waiver will be applied to the rest of the task.

Note: If candidate does not wish to waive ISP-027 requirements then the following are required: Hard hat (as posted); safety glasses, hearing protection (as posted); Fire Retardant Pants and shirt or Fire Retardant coveralls.

Examiner provides feedback of "no change in status" if examinee indicates he/she would trip a 480V breaker using the TRIP Pushbutton on the right side of the breaker. This p/b only works when the breaker is racked out to the "test" position.

CR SEQ

No	Yes	Locally at XSW1A Switchgear Room (TB-436): Trips ROD DRIVE M/G SET "B" - XMG0001B-CR, XSW1B1 06C.
----	-----	---

STEP STANDARD:

Trips rod drive MG set "B" bkr 06C at XSW-1B1 by pushing on red TRIP pushbutton on left side on front of breaker. Verifies a green "OPEN" flag results and red light OFF, green light ON

COMMENTS:

SAT _____

UNSAT _____

STEP: 4

CUES:

Examiner informs examinee that the "A" FWBP, bkr 06 red light is lit.

CR SEQ

No	Yes	Check status of XSW1A 06 FD WTR BOOSTER PUMP "A" XPP0028A-FW breaker.
----	-----	---

STEP STANDARD:

Verifies that the "A" FWBP, bkr 06 is closed by observing red light on outside of cubicle door.

COMMENTS:

SAT _____

UNSAT _____

STEP: 5

CUES:

Cue examinee that RCP "A" Bkr has a green light lit on front of cubicle. (Note: This will "setup" alternate path portion of this JPM. Examinee will have to leave 'B' RCP running in Step 12.c.)

CR SEQ

No Yes Checks status of XSW1A 09, RX COOLANT PUMP "A" XPP0030A-RC.

STEP STANDARD:

Checks RCP "A" breaker at XSW1A 09. Verifies a green light on outside of cubicle door.

COMMENTS:

SAT _____

UNSAT _____

STEP: 6

CUES:

Examiner informs examinee that the "A" condensate pump breaker red light is lit.

CR SEQ

No Yes Check status of XSW1A 07, COND PUMP "A" XPP0042A-CO breaker.

STEP STANDARD:

Verifies that the "A" condensate pump bkr 07 is closed by observing red light or outside of cubicle door.

COMMENTS:

SAT _____

UNSAT _____

STEP: 7

CUES:

If asked as the Shift Supervisor if ISP-027, ELECTRICAL SAFETY INDUSTRIAL SAFETY PROCEDURE, requirements can be waived respond that the requirements can be waived.

Note: If candidate does not wish to waive ISP-027 requirements then the following are required: 25 Cal/cm2, arc flash suit and hood (use of an arc flash hood without a hard hat in an area with overhead work in progress will require manager approval. Otherwise no hard hat is required when in an arc flash hood). Short sleeve natural fiber shirt, voltage rated gloves, safety glasses, earmuffs are the preferred hearing protection when an arc flash suit is being worn, however earplugs may be used. Fire Retardant coveralls or Fire Retardant Shirt (tucked in) & Pants. A 10' flash protection boundary is established.

Examiner Note: Do not let candidate open the breaker door. A picture has been included of the inside of a 7.2 breaker. Picture shows a breaker racked down and open, but will be used to discuss how the breaker will be tripped.

CR SEQ

Yes Yes Locally at XSW1B and XSW1C Switchgear Room (TB-412): If Condensate Pump "A" is running THEN trip both of the following: Trip XSW1B 09, COND PUMP "B" XPP0042B-CO breaker.

STEP STANDARD:

Trips breaker XSW1B 09 for Cond Pump "B" by pushing the "MANUAL TRIP" lever on front of breaker (inside cubicle door). Verifies a green light on outside of cubicle door results.

COMMENTS:

SAT _____

UNSAT _____

STEP: 8

CUES:

Examiner informs examinee the cubicle for COND PUMP "C" XPP0042C has a green light lit on the front of the cubicle.

CR SEQ

No Yes Checks status of XSW1C 06, COND PUMP "C" XPP0042C-CO breaker.

STEP STANDARD:

Checks COND PUMP "C" Breaker, XSW01C 06. Verifies a green light ON outside of cubicle door.

COMMENTS:

SAT _____

UNSAT _____

STEP: 9

CUES:

Same ISP-027, ELECTRICAL SAFETY INDUSTRIAL SAFETY PROCEDURE, requirements as the Condensate pumps.

Examiner Note: Do not let candidate open the breaker door. A picture has been included of the inside of a 7.2 breaker. Picture shows a breaker racked down and open, but will be used to discuss how the breaker will be tripped.

CR SEQ

Yes Yes If Feedwater Booster Pump "A" is running, THEN trip all of the following: Trips XSW1B 06, FD WTR BOOSTER PUMP "B" XPP0028B-FW breaker.

STEP STANDARD:

Trips the FWBP "B" bkr 06 manually at XSW-1B by pushing the "MANUAL TRIP" lever on front of breaker (inside cubicle door). Verifies a green light on outside of cubicle door results.

COMMENTS:

SAT _____

UNSAT _____

STEP: 10

CUES:

Same ISP-027, ELECTRICAL SAFETY INDUSTRIAL SAFETY PROCEDURE, requirements as the Condensate pumps.

Examiner Note: Do not let candidate open the breaker door. A picture has been included of the inside of a 7.2 breaker. Picture shows a breaker racked down and open, but will be used to discuss how the breaker will be tripped.

CR SEQ

Yes Yes Trips XSW1B 13, FD WTR BOOSTER PUMP "D" XPP0028D-FW breaker.

STEP STANDARD:

Trips the FWBP "D" bkr 13 manually at XSW-1B by pushing the "MANUAL TRIP" lever on front of breaker (inside cubicle door). Verifies a green light on outside of cubicle door results.

COMMENTS:

SAT

UNSAT _____

STEP: 11

CUES:

Same ISP-027, ELECTRICAL SAFETY INDUSTRIAL SAFETY PROCEDURE, requirements as the Condensate pumps.

Examiner Note: Do not let candidate open the breaker door. A picture has been included of the inside of a 7.2 breaker. Picture shows a breaker racked down and open, but will be used to discuss how the breaker will be tripped.

CR SEQ

Yes Yes Trips XSW1C 08, FD WTR BOOSTER PUMP "C" XPP0028C-FW breaker.

STEP STANDARD:

Trips the FWBP "C" bkr 08 manually at XSW-1C by pushing the "MANUAL TRIP" lever on front of breaker (inside cubicle door). Verifies a green light on outside of cubicle door results.

COMMENTS:

SAT _____

UNSAT _____

STEP: 12

CUES:

Cue candidate, when looking at breaker positions, that XSW1B 07, RX COOLANT PUMP B XPP0030B-RC has a red light lit and that XSW1C 03, RX COOLANT PUMP C XPP0030C-RC has a green light lit.

This is the alternative path portion of this JPM.

It is critical that the "B" RCP be left running since both the "A" and "C" pumps are already tripped in this JPM.

Same ISP-027, ELECTRICAL SAFETY INDUSTRIAL SAFETY PROCEDURE, requirements as the Condensate pumps.

CR SEQ

Yes Yes If RCP A is running (NO), goes to RNO. Ensure one of the following is open: XSW1B 07, RX COOLANT PUMP "B" XPP0030B-RC OR XSW1C 03, RX COOLANT PUMP "C" XPP0030C-RC.

STEP STANDARD:

Does NOT trip the RCP "B" bkr 07 at XSW-1B (because RCP "C" bkr 03 at XSW-1C is already open).

COMMENTS:

SAT _____

UNSAT _____

STEP: 13

CUES:

Same ISP-027 considerations as Condensate pumps if it was to be operated but since only verifying proper position there are no ISP-027 requirements.

CR SEQ

No Yes Ensure XSW 1C 02 Press Heater
Transformer XTF 4103-RC is closed.

STEP STANDARD:

Verifies that the PZR Heater
Transformer Breaker 02 at XSW-1C is
closed by observing red light on outside
of cubicle door or a red "closed" flag on
front of breaker.

COMMENTS:

SAT _____

UNSAT _____

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPPF-049

DESCRIPTION: 2011 NRC InPlant i RO: CONTROL ROOM EVACUATION (DUTIES OF BOP OPERATOR)

IC SET:

INSTRUCTIONS:

COMMENTS:

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: JPPF-044

2011 NRC InPlant i SRO: CONTROL ROOM
EVACUATION (Followup Actions of CRS)

APPROVAL: RJ APPROVAL DATE: 7/30/2011

REV NO: 15

CANDIDATE: _____

EXAMINER: _____

SRO ONLY

THIS JPM IS APPROVED

TASK:

000-068-05-01 PERFORM CONTROL ROOM EVACUATION

TASK STANDARD:

Flow has been established to the RCS and the S/Gs. SW is running to cool D/G's & CCW on both trains. The RCS is emergency boration. The use of applicable Human Performance Tools (3-way communications, self checking, peer checking, phonetic alphabet, etc) and industrial safety practices meets expectations.

TERMINATING CUE: Emergency boration is completed or emergency boration is (incorrectly) deemed "not required" or when examinee returns procedure to examiner.

PREFERRED EVALUATION LOCATION***PREFERRED EVALUATION METHOD***

PLANT

SIMULATE

REFERENCES: AOP-600.1 CONTROL ROOM EVACUATION

<i>INDEX NO.</i>	<i>K/A NO.</i>		<i>RO</i>	<i>SRO</i>
000068K318	AK3.18	Actions contained in EOP for control room evacuation emergency task	4.2	4.5
000068K309	AK3.09	Transfer of the following to local control: charging pumps, charging header flow control valve, PZR heaters, and boric acid transfer pumps	3.9	4.4

TOOLS: AOP-600.1, BEGINNING WITH STEP 4

EVALUATION TIME 25 ***TIME CRITICAL*** No ***10CFR55:*** 45(a)13

TIME START: _____ TIME FINISH: _____ PERFORMANCE TIME: _____

PERFORMANCE RATING: SAT: _____ UNSAT: _____

EXAMINER: _____

SIGNATURE

DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is operating at 100%, with all controls in automatic. A call has been received that a bomb has been placed in the control room. The Shift Supervisor has directed a control room evacuation. Bomb detection experts from the State Law Enforcement are on their way to the site.

INITIATING CUES: The Shift Supervisor directs you, the CRS, to perform AOP-600.1, CONTROL ROOM EVACUATION, at the CREP, beginning with Step 4.

***AT NO TIME ARE YOU TO OPERATE
ANY PLANT EQUIPMENT!***

***FOR ELECTRICAL MANIPULATIONS,
AT NO TIME ARE YOU TO BREAK THE
PLANE OF THE ELECTRICAL PANEL!***

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is operating at 100%, with all controls in automatic. A call has been received that a bomb has been placed in the control room. The Shift Supervisor has directed a control room evacuation. Bomb detection experts from the State Law Enforcement are on their way to the site.

INITIATING CUES: The Shift Supervisor directs you, the CRS, to perform AOP-600.1, CONTROL ROOM EVACUATION, at the CREP, beginning with Step 4.

***AT NO TIME ARE YOU TO OPERATE ANY
PLANT EQUIPMENT!***

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

STEP: 1

CUES:

Evaluator Note: Steps 1 - 21 of the JPM (steps 4-6 of the procedure) are performed in 'A' CREP Room.

Evaluator Note: The candidate is just aligning the controls in steps 1-9 of the JPM (step 4 of the procedure). It is not until controls are taken to local that any change in indication will occur.

CR SEQ

Yes No Align the following controls (CREP XPN-7200A): Set FCV-122, CHG FLOW, potentiometer to 5.0.

STEP STANDARD:

Rotates the potentiometer wheel clockwise until 5 appears in the window.(5 full turns).

COMMENTS:

SAT _____

UNSAT _____

STEP: 2

CUES:

This is the expected position and so no operator action should have to be taken. Cue candidate that position is how it appears.

CR SEQ

No No Set IFV-3536, TD EFP to SG A, potentiometer fully clockwise.

STEP STANDARD:

Rotates IFV-3536 potentiometer clockwise until no further rotation can be made.

COMMENTS:

SAT _____

UNSAT _____

STEP: 3

CUES:

This is the expected position and so no operator action should have to be taken. Cue candidate that position is how it appears.

CR SEQ

No No Set IFV-3546, TD EFP to SG B, potentiometer fully clockwise.

STEP STANDARD:

Rotates IFV-3546 potentiometer clockwise until no further rotation can be made.

COMMENTS:

SAT _____

UNSAT _____

STEP: 4

CUES:

This is the expected position and so no operator action should have to be taken. Cue candidate that position is how it appears.

CR SEQ

No No Set IFV-3556, TD EFP to SG C, potentiometer fully clockwise.

STEP STANDARD:

Rotates IFV-3556 potentiometer clockwise until no further rotation can be made.

COMMENTS:

SAT _____

UNSAT _____

STEP: 5

CUES:

CR SEQ

Yes No Place LCV-459, LTDN LINE ISOL, in OPEN.

STEP STANDARD:

Positions the LCV-459 control switch to the OPEN position.

COMMENTS:

SAT _____

UNSAT _____

STEP: 6

CUES:

CR SEQ

Yes No Place LCV-460, LTDN LINE ISOL, in OPEN.

STEP STANDARD:

Positions the LCV-460 control switch to the OPEN position.

COMMENTS:

SAT _____

UNSAT _____

STEP: 7

CUES:

CR SEQ

Yes No Place two letdown orifices in OPEN and one in CLOSE

STEP STANDARD:

Positions two of three PVT-8149 (A,B,C) LTDN ORIFICE (A,B,C) ISOL control switches to the OPEN position. Ensures one is positioned to CLOSE.

COMMENTS:

SAT _____

UNSAT _____

STEP: 8

CUES:

CR SEQ

Yes No Place TSC BYPASS in ON

STEP STANDARD:

Positions the TSC BYPASS switch to the ON position.

COMMENTS:

SAT _____

UNSAT _____

STEP: 9

CUES:

This is the expected position and so no operator action should have to be taken. Cue candidate that position is how it appears.

CR SEQ

No No At the Auxiliary Panel, place PCV-445A, PORV in CLOSE.

STEP STANDARD:

Verifies the PCV-445A control switch is in the CLOSE position.

COMMENTS:

SAT _____

UNSAT _____

STEP: 10

CUES:

After switch placed in LOCAL, cue operator that red light is lit on PZR HTRS BU GROUP 1.

CR SEQ

Yes No Transfer the following to LOCAL (CREP
XPN-7200A): PZR HTRS BU GROUP 1
XFER to LOCAL.

STEP STANDARD:

Positions the transfer switch from
REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 11

CUES:

After switch placed in LOCAL, cue operator that there was no change in FI-122B.

CR SEQ

Yes No FCV-122, CHG FLOW CNTRL XFER to
LOCAL.

STEP STANDARD:

Positions the transfer switch from
REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 12

CUES:

After switch placed in LOCAL, cue operator that red light is lit on SW PUMP A

CR SEQ

Yes No XPP-0039A, SW PUMP A XFER to LOCAL.

STEP STANDARD:

Positions the transfer switch from
REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 13

CUES:

After switch placed in LOCAL, cue operator that no lights are lit on SW Pump C.

CR SEQ

No No XPP-0039C, SW PP C TRAIN A XFER to LOCAL.

STEP STANDARD:

Positions the transfer switch from REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 14

CUES:

Examiner Note: There will be no change in indications with this transfer.

CR SEQ

Yes No TD EFP FD VLV XFER to LOCAL.

STEP STANDARD:

Positions the transfer switch from REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 15

CUES:

After switch placed in LOCAL, cue operator that red light is lit.

Examiner Note: Response here will be based on correct operator action in step 5 of the JPM (if switch was left in closed then indication will be both red and green light lit till valve strokes and then green light lit).

CR SEQ

Yes No LCV-459, LTDN LINE ISOL XFER to LOCAL.

STEP STANDARD:

Positions transfer switch from REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 16

CUES:

After switch placed in LOCAL, cue operator that red light is lit.

Examiner Note: Response here will be based on correct operator action in step 6 of the JPM (if switch was left in closed then indication will be both red and green light lit till valve strokes and then green light lit).

CR SEQ

Yes No LCV-460, LTDN LINE ISOL XFER to LOCAL.

STEP STANDARD:

Positions transfer switch from REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 17

CUES:

After switch placed in LOCAL, cue operator that red light is lit if selected to open, green light is lit if selected to closed (as positioned by operator in step 7 of JPM).

CR SEQ

Yes No PVT-8149A, LTDN LINE A ISOL XFER to LOCAL.

STEP STANDARD:

Positions transfer switch from REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 18

CUES:

After switch placed in LOCAL, cue operator that red light is lit if selected to open, green light is lit if selected to closed (as positioned by operator in step 7 of JPM).

CR SEQ

Yes No PVT-8149B, LTDN LINE B ISOL XFER to LOCAL.

STEP STANDARD:

Positions transfer switch from REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 19

CUES:

After switch placed in LOCAL, cue operator that red light is lit if selected to open, green light is lit if selected to closed (as positioned by operator in step 7 of JPM).

CR SEQ

Yes No PVT-8149C, LTDN LINE C ISOL XFER to LOCAL.

STEP STANDARD:

Positions transfer switch from REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 20

CUES:

After switch placed in LOCAL, cue operator that green light is lit.

Examiner Note: Response here will be based on correct operator action in step 9 of the JPM (if switch was left in open then indication will be both red and green light lit till valve strokes and then red light lit).

CR SEQ

Yes No PCV-445A, PORV XFER (Auxiliary Panel) to LOCAL.

STEP STANDARD:

Positions transfer switch from REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 21

CUES:

Examiner cues operator that Service Water Pump breaker for Service Water Pump "A" indicator red light is lit and no lights are lit on Service Water Pump "C".

CR SEQ

No Yes Ensure one Service Water Pump running on Train A (CREP A)

STEP STANDARD:

Verifies Service Water Pump "A" red light lit.

COMMENTS:

SAT _____

UNSAT _____

STEP: 22

CUES:

Evaluator Note: Steps 22 - 48 of the JPM (steps 7-12 of the procedure) are performed in 'B' CREP Room.

Evaluator Note: The candidate is just aligning the controls in steps 22-29 of the JPM (step 7 of the procedure). It is not until controls are taken to local that any change in indication will occur.

This is the expected position and so no operator action should have to be taken. Cue candidate that position is how it appears.

CR SEQ

No No Align the following controls (CREP XPN-7200B): Set IFV-3531, MD EFP TO SG A potentiometer fully clockwise

STEP STANDARD:

Rotates IFV-3531 potentiometer clockwise until no further rotation can be made.

COMMENTS:

SAT _____

UNSAT _____

STEP: 23

CUES:

This is the expected position and so no operator action should have to be taken. Cue candidate that position is how it appears.

CR SEQ

No No Set IFV-3541, MD EFP TO SG B potentiometer fully clockwise

STEP STANDARD:

Rotates IFV-3541 potentiometer clockwise until no further rotation can be made.

COMMENTS:

SAT _____

UNSAT _____

STEP: 24

CUES:

This is the expected position and so no operator action should have to be taken. Cue candidate that position is how it appears.

CR SEQ

No No Set IFV-3551, MD EFP TO SG C potentiometer fully clockwise

STEP STANDARD:

Rotates IFV-3551 potentiometer clockwise until no further rotation can be made.

COMMENTS:

SAT _____

UNSAT _____

STEP: 25

CUES:

This is the expected position and so no operator action should have to be taken. Cue candidate that position is how it appears.

CR SEQ

No No Place XPP-13B, BA XFER PUMP B in OFF

STEP STANDARD:

Verifies the B.A. Transfer Pump "B" control switch in OFF.

COMMENTS:

SAT _____

UNSAT _____

STEP: 26

CUES:

CR SEQ

Yes No Place XVT-8152, LTDN ISOL in OPEN

STEP STANDARD:

Positions the XVT-8152 control switch to OPEN.

COMMENTS:

SAT _____

UNSAT _____

STEP: 27

CUES:

CR SEQ

Yes No Place PVG-2030, STEAM TO TD EFP in OPEN

STEP STANDARD:

Positions the XVT-2030 control switch to OPEN.

COMMENTS:

SAT _____

UNSAT _____

STEP: 28

CUES:

CR SEQ

Yes No Place TSC BYPASS in ON

STEP STANDARD:

Positions the TSC BYPASS Switch to the ON position.

COMMENTS:

SAT _____

UNSAT _____

STEP: 29

CUES:

This is the expected position and so no operator action should have to be taken. Cue candidate that position is how it appears.

CR SEQ

No No At the Auxiliary Panel, place PORV PCV-444B in CLOSE

STEP STANDARD:

Verifies the PCV-444B control switch is in CLOSE.

COMMENTS:

SAT _____

UNSAT _____

STEP: 30

CUES:

After switch placed in LOCAL, cue operator that the green light is lit.

CR SEQ

Yes No Transfer the following to LOCAL (CREP XPN-7200B): PZR HTRS BU GROUP 2 XFER to LOCAL

STEP STANDARD:

Positions the transfer switch from REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 31

CUES:

After switch placed in LOCAL, cue operator that the green light is lit.

CR SEQ

Yes No MVT-8104, EMERG BA FLOW CNTRL XFER to LOCAL.

STEP STANDARD:

Positions the transfer switch from REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 32

CUES:

After switch placed in LOCAL, cue operator that the red light is lit.

CR SEQ

Yes No XPP-0039B, SW PUMP B XFER to LOCAL.

STEP STANDARD:

Positions the transfer switch from
REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 33

CUES:

After switch placed in LOCAL, cue operator that no lights are lit.

CR SEQ

Yes No XPP-0039C, SW PUMP C TRAIN B XFER
to LOCAL.

STEP STANDARD:

Positions the transfer switch from
REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 34

CUES:

Examiner Note: There will be no change in indications with this transfer.

CR SEQ

Yes No MD EFP FEED VALVES XFER to LOCAL.

STEP STANDARD:

Positions the transfer switch from
REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 35

CUES:

After switch placed in LOCAL, cue operator that the green light is lit.

Examiner Note: Response here will be based on correct operator action in step 25 of the JPM (if switch was taken to open then indication will be both red and green light lit till valve strokes and then red light lit).

CR SEQ

Yes No XPP-13B, BA PUMP B XFER to LOCAL.

STEP STANDARD:

Positions the transfer switch from
REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 36

CUES:

After switch placed in LOCAL, cue operator that the red light is lit.

Examiner Note: Response here will be based on correct operator action in step 26 of the JPM (if switch was left in closed then indication will be both red and green light lit till valve strokes and then green light lit).

CR SEQ

Yes No XVT-8152, LTDN ISOL XFER to LOCAL.

STEP STANDARD:

Positions the transfer switch from
REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 37

CUES:

After switch placed in LOCAL, cue operator that the red light is lit.

Examiner Note: Response here will be based on correct operator action in step 27 of the JPM (if switch was left in closed then indication will be both red and green light lit till valve strokes and then green light lit).

CR SEQ

Yes No PVG-2030, STEAM TO TD EFP XFER to
LOCAL.

STEP STANDARD:

Positions the transfer switch from
REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 38

CUES:

After switch placed in LOCAL, cue operator that green light is lit.

Examiner Note: Response here will be based on correct operator action in step 29 of the JPM (if switch was taken to open then indication will be both red and green light lit till valve strokes and then red light lit).

CR SEQ

Yes No PCV-444B, PORV XFER (Auxiliary Panel) to LOCAL.

STEP STANDARD:

Positions the transfer switch from REMOTE to LOCAL

COMMENTS:

SAT _____

UNSAT _____

STEP: 39

CUES:

Examiner cues operator that Service Water Pump breaker for Service Water Pump "B" indicator red light is lit and no lights are lit on Service Water Pump "C".

CR SEQ

No Yes Ensures one Service Water pump running on Train B (CREP B)

STEP STANDARD:

Verifies the Service Water Pump "B" red light lit.

COMMENTS:

SAT _____

UNSAT _____

STEP: 40

CUES:

After examinee looks at NI-36A (located on the A CREP panel XPN-7200A) cue operator that NROATC tripped the Reactor 27 minutes ago and Intermediate Range power is 1x10⁻⁷% power. If examinee asks for specific source range counts, inform examinee that NI-32A reads 1000 counts.

CR SEQ

No Yes Check if N-33 can be aligned.

STEP STANDARD:

Determines sufficient time has passed to align N-33.

COMMENTS:

SAT _____

UNSAT _____

STEP: 41

CUES:

If examinee asks for specific source range counts, inform examinee that NI-33 reads 1,000 counts.

CR SEQ

Yes Yes On XPN7300, place INI-0033, N33 DET
HIGH VOLTAGE Switch in ON

STEP STANDARD:

Positions the switch to ON position as
indicated by red light lit.

COMMENTS:

SAT _____

UNSAT _____

STEP: 42

CUES:

Procedure Note - Steps 12 through 19: "If Main Control Board damage has occurred OR if
equipment does NOT operate as required, it may be operated using appropriate portions of FEP-
4.0, CONTROL ROOM EVACUATION DUE TO FIRE"

Cue examinee that Rod F10 indicated 18 steps, and rod K2 indicated 96 steps prior to leaving the
Control Room.

Evaluator Note: This is where this JPM becomes alternate path.

CR SEQ

No Yes Check if Emergency boration is required.

STEP STANDARD:

Checks for plant conditions which would
require emergency boration from chart in
AOP-600.1

COMMENTS:

SAT _____

UNSAT _____

STEP: 43

CUES:

After switch placed in OPEN, cue operator that red light is lit.

CR SEQ

Yes Yes Open MVT-8104 EMERG BA FLOW CNTRL

STEP STANDARD:

Rotates control switch to OPEN position

COMMENTS:

SAT _____

UNSAT _____

STEP: 44

CUES:

After switch placed in START, cue operator that red light is lit.

CR SEQ

Yes Yes Start XPP-13B, BA XFER PUMP B

STEP STANDARD:

Rotates control switch to START position

COMMENTS:

SAT _____

UNSAT _____

STEP: 45

CUES:

Cue operator that FI-110A indicates 100 GPM.

CR SEQ

Yes Yes Verify flow on FI-110A, EMERGENCY BA FLOW GPM.

STEP STANDARD:

Checks indication on FI-110A EMERGENCY BA FLOW GPM.

COMMENTS:

SAT

UNSAT _____

STEP: 46

CUES:

Cue operator that 25 minutes have elapsed since he opened MVT-8104 was opened.

If asked about current source range counts indicate that counts are 500 cps.

Evaluator Note: It is critical to borate for at least 25 minutes.

CR SEQ

Yes Yes Verify required boration is completed.

STEP STANDARD:

Notes that it will take 25 minutes for required boration.

COMMENTS:

SAT _____

UNSAT _____

STEP: 47

CUES:

Cue operator that the green light is lit.

If asked about FI-110A, cue the operator the flow has decreased to 0 gpm.

CR SEQ

Yes Yes CLOSE MVT-8104, EMERG BA FLOW
CNTRL.

STEP STANDARD:

Rotates control switch to CLOSE position

COMMENTS:

SAT _____

UNSAT _____

STEP: 48

CUES:

Cue operator that the green light is lit

CR SEQ

Yes Yes Stop XPP-13B , BA XFER PUMP B

STEP STANDARD:

Rotates control switch to OFF position

COMMENTS:

SAT _____

UNSAT _____

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPPF-044

DESCRIPTION: 2011 NRC InPlant i SRO: CONTROL ROOM EVACUATION (Followup Actions of CRS)

IC SET:

INSTRUCTIONS:

COMMENTS:

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: JPP-205

2011 NRC InPlant j RO & SRO: CROSS TRAIN
CONNECTION OF BATTERY CHARGER XBC1A-1B
(ALIGNING AC FROM TRAIN A AND DC TO TRAIN
B)

APPROVAL: RJ APPROVAL DATE: 7/30/2011

REV NO: 3

CANDIDATE: _____

EXAMINER: _____

THIS JPM IS APPROVED

TASK:

063-007-01-04 PLACE A BATTERY CHARGER IN SERVICE

TASK STANDARD:

The use of applicable Human Performance Tools (3-way communications, self checking, peer checking, phonetic alphabet, etc) and industrial safety practices meets expectations. AC input from XMC-1DA2Y is aligned to battery charger XBC1A-1B. DC output from XBC1A-1B is aligned to Train B.

TERMINATING CUE: Enclosure K is complete or student hands JPM back to examiner.**PREFERRED EVALUATION LOCATION****PREFERRED EVALUATION METHOD**

PLANT

SIMULATE

REFERENCES: FEP-2.0 TRAIN A PLANT SHUTDOWN TO HOT STANDBY

INDEX NO.	K/A NO.		RO	SRO
000068A110	AA1.10	Power distribution: ac and dc	3.7	3.9

TOOLS: FEP-2.0, Enclosure E page 3 and K
FEP-2.0
FLASHLIGHT
5A plant key (typically on operator key ring).

EVALUATION TIME 15 **TIME CRITICAL** NO **10CFR55:** 45(a)8

TIME START: _____ TIME FINISH: _____ PERFORMANCE TIME: _____

PERFORMANCE RATING: SAT: _____ UNSAT: _____

EXAMINER: _____
SIGNATURE DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: 90 minutes ago, the plant was at 100% power when a fire occurred in Fire Zone IB-25.4. The Shift Supervisor directed the CRS to implement the FEPs and the CRS has subsequently selected FEP-2.0 based on the location of the fire. The Control Room Supervisor has directed you, as the AB Upper Level, to perform Enclosure E of FEP-2.0. You have successfully completed the enclosure through Step 5. The "A" Battery Charger, XBC1A is operable and supplying DPN-1HA.

INITIATING CUES: The CRS now directs you to complete FEP-2.0, Enclosure E, Step 6.a., Align the 1A-1B Battery Charger per Enclosure K.

***AT NO TIME ARE YOU TO OPERATE
ANY PLANT EQUIPMENT!***

***FOR ELECTRICAL MANIPULATIONS,
AT NO TIME ARE YOU TO BREAK THE
PLANE OF THE ELECTRICAL PANEL!***

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: 90 minutes ago, the plant was at 100% power when a fire occurred in Fire Zone IB-25.4. The Shift Supervisor directed the CRS to implement the FEPs and the CRS has subsequently selected FEP-2.0 based on the location of the fire. The Control Room Supervisor has directed you, as the AB Upper Level, to perform Enclosure E of FEP-2.0. You have successfully completed the enclosure through Step 5. The "A" Battery Charger, XBC1A is operable and supplying DPN-1HA.

INITIATING CUES: The CRS now directs you to complete FEP-2.0, Enclosure E, Step 6.a., Align the 1A-1B Battery Charger per Enclosure K.

***AT NO TIME ARE YOU TO OPERATE ANY
PLANT EQUIPMENT!***

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

STEP: 1

CUES:

Procedure Caution: "If XBC1A is not operable, DO NOT perform this attachment. Leave XVC1A-1B on DPN-1HA and warn the Control Room that they will have to control the Steamline Power Reliefs and the Emergency Feedwater Flow Control Valves locally when the Train B battery is exhausted. It is more important in FEP-2.0 to keep a battery charger supplying Train A than Train B".

Examiner Note: The operability of XBC1A was given in the initial conditions, but if called as the control room report that XBC1A is operable.

CR SEQ

No	Yes	Verify that XBC1A-1B, SWING BATTERY CHARGER, is not supplying DPN-1HA (TRAIN A-DC breaker is OFF).
----	-----	--

STEP STANDARD:

On XBC1A-1B, ensures the Train A-DC breaker is OFF (pointing down).

COMMENTS:

SAT

UNSAT _____

STEP: 2

CUES:

NOTE: Breakers are expected to be already open (unless swing charger is in service during exam). If swing charger is in service cue that breakers move freely in down direction to "OFF" and step is then critical.

CR SEQ

No	Yes	Open both TRAIN A-AC and TRAIN B-AC breakers and both TRAIN A-DC and TRAIN B-DC breakers on XET-4003.
----	-----	---

STEP STANDARD:

At XET-4003, opens both Train A-AC and Train B-AC and both Train A-DC and Train B-DC breakers (pointing down) to the "OFF" position.

COMMENTS:

SAT

UNSAT _____

STEP: 3

CUES:

Procedure Note - 3:
"a. The spare Interlock Key is on the FEP Key Ring.
b. The keys for the mechanical breaker interlocks fit in the breakers diagonally opposed to each other as illustrated on Page 3. The key that fits the upper left hand breaker fits the lower right hand breaker and the key that fits the upper right hand breaker, fits the lower left hand breaker."
Examiner Note: The 5A key that will allow the operator to access the battery rooms is located on the operator's key ring. The spare interlock key is on the FEP Key Ring which the operator can obtain from the FEP key locker (AB-412 in the hallway on the way to the battery rooms).
Examiner Note: Interlock keys should already be inserted in either both the Train A breakers (in which case the extra interlock key will go into the Train B-DC breaker) or both the Train B breakers (in which case the extra interlock key will go into the Train A-AC breaker). The keys must be turned to pull way a physical bar to allow the breakers to close.

CR SEQ

Yes Yes Insert the spare interlock key into the TRAIN A-AC or TRAIN B-DC interlock key slot on XET-4003 and bypass the interlock.

STEP STANDARD:

Operator inserts spare interlock key into either TRAIN A-AC or TRAIN B-DC interlock key slot on XET-4003 and places switch in "OFF".

COMMENTS:

SAT _____

UNSAT _____

STEP: 4

CUES:

Breakers move freely in up direction.

CR SEQ

Yes Yes Close the TRAIN A-AC breaker on XET-4003.

STEP STANDARD:

Operator positions TRAIN A-AC breaker upward to the "ON" position on XET-4003.

COMMENTS:

SAT

UNSAT _____

STEP: 5

CUES:

Breaker moves freely in up direction.

CR SEQ

Yes Yes Close the TRAIN B-DC breaker on XET-4003.

STEP STANDARD:

Operator positions TRAIN B-DC breaker upward to the "ON" position on XET-4003.

COMMENTS:

SAT _____

UNSAT _____

STEP: 6

CUES:

NOTE: Breaker is expected to be already open (unless swing charger is in service during exam). If swing charger is in service cue that breakers move freely in LEFT direction to "OFF" and step is then critical.

CR SEQ

No Yes Open DPN-1HA-ED 13, BATTERY CHARGER 1A-1B FEED TO DPN1HA.

STEP STANDARD:

Operator places breaker 13 (BATTERY CHARGER 1A-1B FEED TO DPN1HA) in DPN-1HA-ED to the LEFT (OFF) position.

COMMENTS:

SAT _____

UNSAT _____

STEP: 7

CUES:

Breaker moves freely upward to the "ON" position

CR SEQ

Yes Yes Close the following on XBC1A-1B Battery Charger: DC OUTPUT(CB2); AC INPUT (CB1) on the left side.

STEP STANDARD:

Operator places breakers DC OUTPUT and AC INPUT to the "UP" position on XBC1A-1B Battery Charger.

COMMENTS:

SAT _____

UNSAT _____

STEP: 8

CUES:

Examiner uses pen or pencil to point to 135 volts on the "DC OUTPUT" VOLTMETER (half way between 120 & 150 marks).

CR SEQ

No Yes Verify DC OUTPUT VOLTMETER stabilizes between 129 and 140 volts.

STEP STANDARD:

Operator checks that DC OUTPUT VOLTMETER stabilizes between 129 and 140 volts.

COMMENTS:

SAT _____

UNSAT _____

STEP: 9

CUES:

Procedure Note 9: "Allow five to ten seconds for the capacitors to fully charge and the battery charger to stabilize."

CR SEQ

No Yes Verify the capacitors are fully charged by observing that the red indicator lights on XPN5294 ED, BATT CHARGER CAP BOX, are illuminated.

STEP STANDARD:

After 5-10 seconds (per NOTE 9), operator verifies red indicator lights for the capacitors are lit on XPN-5294-ED.

COMMENTS:

SAT

UNSAT _____

STEP: 10

CUES:

Procedure Note 10: "If XBA1B has been on a constant discharge, the battery charger voltage may drop below 129 volts with a high charging rate of a nominal 360 amps, but voltage will return to between 129 and 140 volts as the battery recharges."

CR SEQ

Yes Yes Close DPN-1HB-ED 13, BATTERY CHARGER 1A-1B FEED TO DPN1HB.

STEP STANDARD:

Operator places breaker 13 on DPN-1HB-ED to right ("ON") position.

COMMENTS:

SAT _____

UNSAT

STEP: 11

CUES:

[Examiner, as Control Room repeats back communication.. (Ensure 3-way communication is used.)]

CR SEQ

No Yes Notify the Control Room that XBC1A 1B is cross connected.

STEP STANDARD:

Operator reports XBC1A-1B is cross connected to Control Room, using expected communications techniques.

COMMENTS:

SAT _____

UNSAT _____

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPP-205

DESCRIPTION: 2011 NRC InPlant j RO & SRO: CROSS TRAIN CONNECTION OF BATTERY CHARGER XBC1A-1B (ALIGNING AC FROM TRAIN A AND DC TO TRAIN B)

IC SET:

INSTRUCTIONS:

COMMENTS:

DPN-1HA-ED odd breaker #'s on left, even BKR # on right. All "OFF" positions on outside and all "ON" positions on the inside. BKR 16, 22, 26, & 17 use international symbols of 'I' for "on/closed" & 'O' for "off or open".

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: JPP-408

2011 NRC InPlant k RO & SRO: ALIGN SPENT FUEL
COOLING LOOP B TO RETURN REFUELING
CAVITY WATER TO THE RWST

APPROVAL: RJ APPROVAL DATE: 7/30/2011

REV NO: 3

CANDIDATE: _____

EXAMINER: _____

THIS JPM IS APPROVED

TASK:

344-042-03-02

DIRECT CORRECTIVE ACTIONS TO MITIGATE THE
CONSEQUENCES OF THE OFF NORMAL EVENT***TASK STANDARD:***

Water is aligned so that it can be transferred to the RWST from the refueling cavity.

TERMINATING CUE: Attachment 1 of AOP-115.4 is complete or candidate turns in JPM sheet.***PREFERRED EVALUATION LOCATION******PREFERRED EVALUATION METHOD***

PLANT

SIMULATE

REFERENCES:

<i>INDEX NO.</i>	<i>K/A NO.</i>		<i>RO</i>	<i>SRO</i>
0330002120	2.1.20	Ability to interpret and execute procedure steps.	4.6	4.6

TOOLS: AOP-115.4, Attachment 1.***EVALUATION TIME*** 30 ***TIME CRITICAL*** NO ***10CFR55:*** 55.45.b.8

TIME START: _____ TIME FINISH: _____ PERFORMANCE TIME: _____

PERFORMANCE RATING: SAT: _____ UNSAT: _____**EXAMINER:** _____

SIGNATURE

DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: Plant is in MODE 6. Refueling was occurring when all RHR was lost and was not able to be return to service. Containment Closure has been established. Cold leg injection from the 'A' Charging pump has been established. The Spent Fuel Pool Gate has been installed.

INITIATING CUES: The CRS directs you to Align Spent Fuel Cooling Loop B to return Refueling Cavity water to the RWST by performing AOP-115.4 Attachment 1.

***AT NO TIME ARE YOU TO OPERATE
ANY PLANT EQUIPMENT!***

***FOR ELECTRICAL MANIPULATIONS,
AT NO TIME ARE YOU TO BREAK THE
PLANE OF THE ELECTRICAL PANEL!***

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: Plant is in MODE 6. Refueling was occurring when all RHR was lost and was not able to be return to service. Containment Closure has been established. Cold leg injection from the 'A' Charging pump has been established. The Spent Fuel Pool Gate has been installed.

INITIATING CUES: The CRS directs you to Align Spent Fuel Cooling Loop B to return Refueling Cavity water to the RWST by performing AOP-115.4 Attachment 1.

***AT NO TIME ARE YOU TO OPERATE ANY
PLANT EQUIPMENT!***

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

Friday, September 02, 2011

STEPS**STEP:** 1**CUES:**

If candidate asks status of Spent Fuel Cooling report from the control room that A is in service and B is secured.

If candidate walks to pumps to determine operation, cue candidate that A is running (red light lit and flow noise) and B is shutdown (green light lit and no flow noise).

CR SEQ

No Yes Check if Spent Fuel Cooling Loop A is operating and if Loop B is shutdown.

STEP STANDARD:

Calls control room and using three-way communication asks status of Spent Fuel Cooling or goes to the Spent Fuel Cooling pumps and determines that XPP0032A-SF, SPENT FUEL PIT COOLING PUMP A, is running and XPP0032B-SF, SPENT FUEL PIT COOLING PUMP B, is secured. The candidate can also walk up to the pumps and determine their operating condition.

COMMENTS:**SAT****UNSAT** _____**STEP:** 2**CUES:****CR SEQ**

Yes Yes Align Component Cooling Water to Spent Fuel Pool Heat Exchanger B (AB-388):
Open XVB09624B-CC, SPENT FUEL HT EXCH B CC WTR INLET VALVE (AB-388).

STEP STANDARD:

Opens XVB09624B-CC, SPENT FUEL HT EXCH B CC WTR INLET VALVE (AB-388). by rotating handwheel completely counter-clockwise.

COMMENTS:**SAT** _____**UNSAT** _____

STEP: 3

CUES:

Evaluator Note: Cue the candidate that the valve indicates 50% open. The candidate can choose to leave the valve in any throttled position.

CR SEQ

No Yes Ensure XVB09628B, CC SPENT FUEL HT EXCH B CC WTR OUTLET VLV is throttled open (AB-388)

STEP STANDARD:

Verifies valve is throttled open to a mid position based on free movement of the handwheel in both the clockwise and counter-clockwise directions or by looking at valve position indicator.

COMMENTS:

SAT _____

UNSAT _____

STEP: 4

CUES:

Cue the candidate that XPP014, SPENT FUEL PURIFICATION PUMP, is stopped.

CR SEQ

No Yes Align Spent Fuel Cooling Loop B to return Refueling Cavity water to the RWST: Ensure XPP0014, SPENT FUEL PURIFICATION PUMP (AB-412) is stopped.

STEP STANDARD:

Candidate can verify stopped motor or can use control switch position to determine if XPP014 is stopped.

COMMENTS:

SAT _____

UNSAT _____

STEP: 5

CUES:

Examiner Note: Steps 5 - 13 of the JPM are all part of procedure step 4b. and do not have to be completed in any particular order.

CR SEQ

No No Ensure the following are closed: Ensure XVD06669-SF, SPENT FUEL POOL PUR HDR ISOL VALVE (FB-436) is closed.

STEP STANDARD:

Verifies that handwheel does not move in clockwise direction.

COMMENTS:

SAT _____

UNSAT _____

STEP: 6

CUES:

CR SEQ

No No Ensure XVD06674-SF, SPENT FUEL POOL
PUR HDR SUPPLY VALVE (FB-436) is
closed.

STEP STANDARD:

Verifies that handwheel does not move
in clockwise direction.

COMMENTS:

SAT _____

UNSAT _____

STEP: 7

CUES:

CR SEQ

No No Ensure XVG06666-SF, CASK LOADING
AREA SF HEADER ISOL VALVE (FB-436)
is closed.

STEP STANDARD:

Verifies that handwheel does not move
in clockwise direction.

COMMENTS:

SAT _____

UNSAT _____

STEP: 8

CUES:

CR SEQ

No No Ensure XVG06660-SF, SPENT FUEL POOL
OUTLET HDR ISOL VALVE (AB-412) is
closed.

STEP STANDARD:

Verifies that handwheel does not move
in clockwise direction.

COMMENTS:

SAT _____

UNSAT _____

STEP: 9

CUES:

CR SEQ

No No Ensure XVG06664-SF, REFUEL WTR STG TK SF HDR B SUCT ISOL (AB-412) is closed.

STEP STANDARD:

Verifies that handwheel does not move in clockwise direction.

COMMENTS:

SAT _____

UNSAT _____

STEP: 10

CUES:

CR SEQ

No No Ensure XVG06667-SF, SF HDR B CASK LOADING AREA ISOL VALVE (AB-388) is closed.

STEP STANDARD:

Verifies that handwheel does not move in clockwise direction.

COMMENTS:

SAT _____

UNSAT _____

STEP: 11

CUES:

CR SEQ

No No Ensure XVG06661-SF, SF COOLING PUMP B SF POOL HDR ISOL VLV (AB-388) is closed.

STEP STANDARD:

Verifies that handwheel does not move in clockwise direction.

COMMENTS:

SAT _____

UNSAT _____

STEP: 12

CUES:

CR SEQ

No No Ensure XVD06692-SF, SF PUR HDR SF
HEADER B SUP ISOL VALVE (AB-388) is
closed.

STEP STANDARD:

Verifies that handwheel does not move
in clockwise direction.

COMMENTS:

SAT _____

UNSAT _____

STEP: 13

CUES:

CR SEQ

Yes Yes Unlock and open XVG06668-SF, FUEL
TRANSFER CANAL SF HDR ISOL VALVE
(FB-436)

STEP STANDARD:

Removes locking device and takes
handwheel in fully counterclockwise
direction.

COMMENTS:

SAT _____

UNSAT _____

STEP: 14

CUES:

Examiner Note: Steps 14-18 of the JPM are all part of procedure step 4d. and do not have to be
completed in any particular order.

CR SEQ

Yes No Open the following: Open XVG06665-SF,
SPENT FUEL COOLING PUMP B SUCT
ISOL VLV (AB-412)

STEP STANDARD:

Turns handwheel in the fully
counterclockwise direction.

COMMENTS:

SAT _____

UNSAT _____

STEP: 15

CUES:

CR SEQ

Yes No Open XVG06651-SF, SPENT FUEL
COOLING PUMP B SUCTION VALVE (AB-
412).

STEP STANDARD:

Turns handwheel in the fully
counterclockwise direction.

COMMENTS:

SAT _____

UNSAT _____

STEP: 16

CUES:

CR SEQ

Yes No Open XVG06655-SF, SPENT FUEL
COOLING PUMP B DISCHARGE VLV (AB-
412).

STEP STANDARD:

Turns handwheel in the fully
counterclockwise direction.

COMMENTS:

SAT _____

UNSAT _____

STEP: 17

CUES:

CR SEQ

Yes No Open XVG06662-SF, REFUEL WTR STG
TK SPENT FUEL ISOL VALVE (YD-170' W).

STEP STANDARD:

Turns handwheel in the fully
counterclockwise direction.

COMMENTS:

SAT _____

UNSAT _____

STEP: 18

CUES:

CR SEQ

Yes No Open XVG06663-SF, SPENT FUEL
HEADER B DISCH ISOL VALVE (AB-388).

STEP STANDARD:

Turns handwheel in the fully
counterclockwise direction.

COMMENTS:

SAT _____

UNSAT _____

STEP: 19

CUES:

If candidate wants to check pump oil level before start indicate that oil level is as seen.

CR SEQ

Yes Yes Start XPP0032B-SF, SPENT FUEL PIT COOLING PUMP B (AB-412).

STEP STANDARD:

Takes switch to start verifies pump starts and that red light is lit. (May check oil level of pump prior to pump start)

COMMENTS:

SAT _____

UNSAT _____

STEP: 20

CUES:

Procedure Caution: "To prevent damage to the Spent Fuel Cooling Pump, loop flow should NOT be throttled to LESS THAN 600 gpm."

If called as control room report that level is 460 ft 3 inches. After candidate opens valve report levels are rising.

CR SEQ

Yes Yes Adjust XVT06659-SF, SPENT FUEL HEAT EXCHANGER B OUTLET VLV (AB-388), as necessary to maintain Refueling Cavity level greater than 460 ft 6 inches.

STEP STANDARD:

Contacts control room and throttles XVT06659-SF as directed.

COMMENTS:

SAT _____

UNSAT _____

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPP-408

DESCRIPTION: 2011 NRC InPlant k RO & SRO: ALIGN SPENT FUEL COOLING LOOP B TO
RETURN REFUELING CAVITY WATER TO THE RWST

IC SET:

INSTRUCTIONS:

COMMENTS:

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: JPSF-045B

2011 NRC Sim a RO & SRO: ENSURE
CONTAINMENT ISOLATION

APPROVAL: RJ APPROVAL DATE: 7/30/2011

REV NO: 2

CANDIDATE: _____

EXAMINER: _____

THIS JPM IS APPROVED

TASK:

000-055-05-01

RESPOND TO LOSS OF OFF SITE AND ON SITE POWER

TASK STANDARD:

Containment isolation verified and complete with IFV-4701B directed to be closed and 2662 A is closed from the Main Control Board. The use of applicable Human Performance Tools (3-way communications, self checking, peer checking, phonetic alphabet, etc) and industrial safety practices meets expectations.

TERMINATING CUE: XVT-2662 A is closed and local operator reports IFV-4701B is closed.

PREFERRED EVALUATION LOCATION***PREFERRED EVALUATION METHOD***

SIMULATOR

PERFORM

REFERENCES:

EOP-1.0

REACTOR TRIP/SAFETY INJECTION ACTUATION

<i>INDEX NO.</i>	<i>K/A NO.</i>		<i>RO</i>	<i>SRO</i>
103000K102	K1.02	Containment isolation/containment integrity	3.9	4.1

TOOLS: EOP-1.0, Attachment 3, Step 13-14. Attachment 4 and 5.

EVALUATION TIME 10 ***TIME CRITICAL*** NO ***10CFR55:*** 45(a)3

TIME START: _____ TIME FINISH: _____ PERFORMANCE TIME: _____

PERFORMANCE RATING:

SAT: _____ UNSAT: _____

EXAMINER:_____
SIGNATURE_____
DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant has just experienced a LOCA and safety injection.

INITIATING CUES: The CRS directs verifying Phase "A" and Containment Ventilation Isolation per EOP-1.0, Attachment 3, Step 13.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant has just experienced a LOCA and safety injection.

INITIATING CUES: The CRS directs verifying Phase "A" and Containment Ventilation Isolation per EOP-1.0, Attachment 3, Step 13.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

STEP: 1

CUES:

CR SEQ

No Yes Verifies Phase "A" and Containment Ventilation Isolation on XCP-6103, 6104 and 6106. REFER TO ATTACHMENT 4, CONTAINMENT ISOLATION VALVE MCB STATUS LIGHT LOCATIONS, as needed.

(This is EOP-1.0 Att. 3 Step 13).

STEP STANDARD:

Operator ensures Phase "A" Isolation by appearance of phase "A" valve status lights on MCB XCP-6104, 6103 and 6106. Refers to Attachment 4. Notes RB AIR SERV ISOL 2662A(B) CLSD are both dim. Also notes that SG B BLWDN ISOL 503B CLSD and CDRM CLG WTR ISOL 7501 CLSD are also both dim.

COMMENTS:

SAT _____

UNSAT

STEP: 2

CUES:

CR SEQ

No Yes Actuates Phase A/Containment Ventilation Isolation.

STEP STANDARD:

Places either TRAIN A & B CS-SG02A(B) switch to ACTUATE position. Notes that CDRM CLG WTR ISOL 7501 CLSD now turns bright, but that none of the other indicators change states.

COMMENTS:

SAT _____

UNSAT _____

STEP: 3

CUES:

NOTE TO EVALUATOR: Placing 2662A RB AIR SERV ISOL to closed is the critical part of this step.

CR SEQ

Yes Yes Operator attempts to close 503B, 2662 A, and 2662 B from the MCB valve control switches.

STEP STANDARD:

Places the control switches (individually) for 503B, 2662 A, and 2662 B to the "CLOSED" position. Notes 2662 A closes but that the other valves still indicate that they are open.

COMMENTS:

SAT _____

UNSAT

STEP: 4

CUES:

NOTE TO EVALUATOR: Steps 3, 4, and 5 should be performed in sequence.

CR SEQ

No Yes Operator refers to Attachment 5 to identify backup isolation valve for XVG-503B

STEP STANDARD:

Operator determines that IFV4701B is the backup valve for XVG-503B. (Page 1 of Attachment 5).

COMMENTS:

SAT _____

UNSAT _____

STEP: 5

CUES:

NOTE: Since 503B is an air operated valve outside of containment the AO may be directed to locally bleed air off 503B to isolate the penetration as well.

NOTE to Booth Operator: When requested by student to locally close IFV-4701 B reply that the valve is closed.

CR SEQ

Yes Yes Directs AO to locally close IFV-4701B

STEP STANDARD:

Uses plant page or radio to direct AB lower to close IFV-4701B backup to MVG-503B, STEAM GEN B BLOWDOWN HEADER ISOL VALVE.

COMMENTS:

SAT _____

UNSAT _____

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPSF-045B

DESCRIPTION: 2011 NRC Sim a RO & SRO: ENSURE CONTAINMENT ISOLATION

IC SET: 10

INSTRUCTIONS:

(322 for 2011)

1. Activate:

VLV-IA003P	SEVERITY=100	(XVT-2662A fails to 100% open position)
VLV-IA004P	SEVERITY=100	(XVT-2662B fails to 100% open position)
VLV-BD002P	SEVERITY=100	(XVG-503B fails to 100% open position)
VLV-AC001P	SEVERITY=100	(XVT 7501A fails to 100% open position)

Logic to get valves to move correctly

Event 1: X021053A==1| X021054A==1

VLV-AC001P SEVERITY=0 RAMP=25 (XVT 7501A closes when Phase A initiated)

Event 2: X021407C==1

VLV-IA003P SEVERITY=100 DELETE= 01 (XVT-2662A is allowed to be closed)

MAL-RCS005A (Large break LOCA on 'A' loop)

2. RUN 120 Seconds

3. While running, trip RCP's and perform immediate action of EOP-1.0.

4. When student is ready:

RUN

5. When requested by student to locally close XVT-4701 B reply that time compression is being used and that the valve is closed.

COMMENTS:

Performance of this JPM is related to PRA event 0-CNTMISOL-HE "Operator fails to manually initiate Phase A Isolation".

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: JPS-161

2011 NRC Sim b RO & SRO: BLOCK SOURCE
RANGE HI FLUX TRIP.

APPROVAL: RJ APPROVAL DATE: 9/3/2011

REV NO: 2

CANDIDATE: _____

EXAMINER: _____

THIS JPM IS APPROVED

TASK:

001-025-01-01 OPERATE CONTROL RODS MANUALLY AT POWER

TASK STANDARD:

Reactor power is increased and stabilized at 10-3% without causing a reactor trip.

TERMINATING CUE: Reactor power is stabilized at 10-3%.***PREFERRED EVALUATION LOCATION******PREFERRED EVALUATION METHOD***

SIMULATOR

PERFORM

REFERENCES:

<i>INDEX NO.</i>	<i>K/A NO.</i>		<i>RO</i>	<i>SRO</i>
015000A403	A4.03	Trip bypasses	3.8	3.9

TOOLS: GOP-3, REACTOR STARTUP FROM HOT STANDBY TO
STARTUP (MODE 3 TO MODE 2)***EVALUATION TIME*** 25 ***TIME CRITICAL*** NO ***10CFR55:*** 55.45.b.6

TIME START: _____ TIME FINISH: _____ PERFORMANCE TIME: _____

PERFORMANCE RATING:

SAT: _____ UNSAT: _____

EXAMINER: _____

SIGNATURE

DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: A reactor startup is in progress per GOP-3, REACTOR STARTUP FROM HOT STANDBY TO STARTUP (MODE 3 TO MODE 2). The crew has just brought the reactor critical and has leveled power in accordance with step 3.11. Tave was verified to be above the minimum temperature for criticality 10 minutes prior to criticality, Critical Rod Height position was 122 steps on Bank D and was verified to be above the Rod Insertion Limit, all in accordance with step 3.11.

INITIATING CUES: The CRS directs you to Increase Reactor Power to 10-3% in accordance with GOP-3, REACTOR STARTUP FROM HOT STANDBY TO STARTUP (MODE 3 TO MODE 2) step 3.12.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: A reactor startup is in progress per GOP-3, REACTOR STARTUP FROM HOT STANDBY TO STARTUP (MODE 3 TO MODE 2). The crew has just brought the reactor critical and has leveled power in accordance with step 3.11. Tave was verified to be above the minimum temperature for criticality 10 minutes prior to criticality, Critical Rod Height position was 122 steps on Bank D and was verified to be above the Rod Insertion Limit, all in accordance with step 3.11.

INITIATING CUES: The CRS directs you to Increase Reactor Power to 10-3% in accordance with GOP-3, REACTOR STARTUP FROM HOT STANDBY TO STARTUP (MODE 3 TO MODE 2) step 3.12.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

STEP: 1

CUES:

Evaluator Note: The candidate may level power to block the source range and then reestablish a positive startup rate. The critical aspect of this step is to raise reactor power.

CR SEQ

Yes Yes Establish a stable Startup Rate of less than one decade per minute.

STEP STANDARD:

Withdraws rods to establish a stable startup rate of less than one decade per minute.

COMMENTS:

SAT _____

UNSAT _____

STEP: 2

CUES:

CR SEQ

No Yes At 7.5x10⁻⁶%, perform the following:
1) Verify P6 Permissive energizes to bright.
2) Verify a minimum of one decade overlap between Source Range Channels and Intermediate Range Channels.

STEP STANDARD:

Verifies P6 energize to bright and a one decade overlap exists between source and intermediate range power channels.

COMMENTS:

SAT _____

UNSAT _____

STEP: 3

CUES:

CR SEQ

Yes Yes Prior to 1E5 CPS, perform the following:
Momentarily place SR TRAIN A Switch in BLOCK.

STEP STANDARD:

Places SR TRAIN A Switch to BLOCK.

COMMENTS:

SAT _____

UNSAT _____

STEP: 4

CUES:

CR SEQ

No Yes Verify SR A TRIP BLCK Permissive energizes to bright.

STEP STANDARD:

Verifies SR A TRIP BLCK Permissive energizes to bright.

COMMENTS:

SAT _____

UNSAT _____

STEP: 5

CUES:

CR SEQ

Yes Yes Momentarily place SR TRAIN B Switch in BLOCK.

STEP STANDARD:

Places SR TRAIN B Switch to BLOCK.

COMMENTS:

SAT

UNSAT _____

STEP: 6

CUES:

CR SEQ

No Yes Verify SR B TRIP BLCK Permissive energizes to bright.

STEP STANDARD:

Verifies SR B TRIP BLCK Permissive energizes to bright.

COMMENTS:

SAT _____

UNSAT _____

STEP: 7

CUES:

CR SEQ

No Yes Perform one of the following for continued monitoring of Intermediate and Power Range instrument:
1) If available for use, select one Intermediate Range Channel and one Power Range Channel on NR-45, NIS RECORDER.
2) Ensure at least one Intermediate Range and at least one Power Range instrument are selected for continuous monitoring using computer display NR45.

STEP STANDARD:

Selects one power range and one intermediate range channel on NR-45.

COMMENTS:

SAT _____

UNSAT _____

STEP: 8

CUES:

CR SEQ

Yes Yes Stabilize Reactor Power at 10-3%.

STEP STANDARD:

Inserts rods to stabilize power at 10-3%.

COMMENTS:

SAT _____

UNSAT

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPS-161

DESCRIPTION: 2011 NRC Sim b RO & SRO: BLOCK SOURCE RANGE HI FLUX TRIP.

IC SET:

INSTRUCTIONS:

(321 for 2011)

1. Start from a snap that is ready for startup training.
2. Pull rods to criticality and stabilize power below $7.6E-6$ % power.
3. Freeze.
4. Ensure N-45 is placed into fast speed.
5. Set RO IPCS screen to RX STRT on ZZ menu.
6. When candidate is ready go to run.

COMMENTS:

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: JPSF-012A

2011 NRC Sim c RO: DROPPED ROD RECOVERY

APPROVAL: RJ APPROVAL DATE: 7/30/2011

REV NO: 8

CANDIDATE: _____

EXAMINER: _____

THIS JPM IS APPROVED

TASK:

000-003-05-01 RESPOND TO DROPPED CONTROL ROD

TASK STANDARD:

Manual reactor trip inserted after second control rod drops. The use of applicable Human Performance Tools (3-way communications, self checking, peer checking, phonetic alphabet, etc) and industrial safety practices meets expectations.

TERMINATING CUE: Manual reactor trip inserted.***PREFERRED EVALUATION LOCATION******PREFERRED EVALUATION METHOD***

SIMULATOR

PERFORM

REFERENCES: AOP-403.6 DROPPED CONTROL ROD

<i>INDEX NO.</i>	<i>K/A NO.</i>		<i>RO</i>	<i>SRO</i>
000003A102	AA1.02	Controls and components necessary to recover rod	3.6	3.4

TOOLS: AOP-403.6 (TO RECORD AFFECTED BANK HEIGHTS and to provide engineering numbers for limitations on rod withdrawal rates).***EVALUATION TIME*** 15 ***TIME CRITICAL*** No ***10CFR55:*** 45(A)5

TIME START: _____ TIME FINISH: _____ PERFORMANCE TIME: _____

PERFORMANCE RATING: SAT: _____ UNSAT: _____**EXAMINER:** _____
SIGNATURE DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant was operating at 75% power with all controls in automatic when Control Rod "F2" dropped due to a blown fuse. The blown fuse was replaced in the 1AC power cabinet. Actions of AOP-403.6, DROPPED CONTROL ROD, have been completed through Step 10. Maximum power level and rod recovery rate have been established per the AOP. The control building operator has already taken Key #91 and has reported that the P/A CONVERTER reading for the AFFECTED Bank is 230 steps.

INITIATING CUES: CRS has directed NROATC to recover Control Rod "F2" per AOP-403.6, starting with Step 11.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant was operating at 75% power with all controls in automatic when Control Rod "F2" dropped due to a blown fuse. The blown fuse was replaced in the 1AC power cabinet. Actions of AOP-403.6, DROPPED CONTROL ROD, have been completed through Step 10. Maximum power level and rod recovery rate have been established per the AOP. The control building operator has already taken Key #91 and has reported that the P/A CONVERTER reading for the AFFECTED Bank is 230 steps.

INITIATING CUES: CRS has directed NROATC to recover Control Rod "F2" per AOP-403.6, starting with Step 11.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

STEP: 1

CUES:

PROCEDURE NOTE: Steps 11 through 15
Throughout the following steps. "AFFECTED" refers to any Control Rod Bank which contains a dropped Control Rod.

In this JPM the "AFFECTED" bank is Control Bank "A".

CR SEQ

No Yes Record Step Counter readings for both groups of the AFFECTED bank.

STEP STANDARD:

Step counter reading for both groups in Control Bank "A" have been recorded as 230 steps.

COMMENTS:

SAT _____

UNSAT _____

STEP: 2

CUES:

Booth Operator: It is not expected that you will be called to obtain key 91 and obtain this reading since it is in the initial conditions, but if called report that the P/A CONVERTER reading is 230 steps on Control Bank "A".

CR SEQ

No Yes Record P/A Converter Reading.

STEP STANDARD:

P/A Converter reading has been recorded.

COMMENTS:

SAT _____

UNSAT _____

STEP: 3

CUES:

CR SEQ

Yes Yes Rotate ROD CNTRL BANK SEL Switch clockwise to the AFFECTED bank position.

STEP STANDARD:

ROD CNTRL BANK SEL Switch has been rotated clockwise to the CBA position.

COMMENTS:

SAT _____

UNSAT _____

STEP: 4

CUES:

Resetting Shutdown Bank A vs. Control Bank A constitutes a failure of this step if the error is not detected and corrected before withdrawing the dropped rod.

CR SEQ

Yes Yes Reset the Step Counter for the AFFECTED group to zero.

STEP STANDARD:

Momentarily depresses the RS pushbutton on the Step Counter for Bank A GROUP 1. Notes the indication is 000.

COMMENTS:

SAT _____

UNSAT _____

STEP: 5

CUES:

As the CRS, Examiner should prompt the Examinee to disconnect the affected bank. Explain that the BOP Operator will watch the MCB while he accomplishes this task.

CR SEQ

Yes Yes Place all Lift Coil Disconnect Switches for the affected bank, except switches for the dropped rod, to the ROD DISCONNECTED position.

STEP STANDARD:

All lift coil disconnect switches for Control Bank "A" rods, except Rod "F2" have been placed in the ROD DISCONNECTED position.

COMMENTS:

SAT _____

UNSAT _____

STEP: 6

CUES:

If rod withdrawal rate is requested, inform Examinee to refer to the provided AOP. Rod Control System Fail Urgent Alarm will alarm per procedure note. If Examinee asks whether to depress the ROD CNTRL ALARM RESET switch, as the CRS, direct Examinee to depress the switch after the rod has been realigned.

CR SEQ

Yes Yes Withdraw the dropped rod: Drive the affected bank out.

STEP STANDARD:

Rod F2 is moving in the outward direction.

COMMENTS:

SAT _____

UNSAT _____

STEP: 7

CUES:

CR SEQ

No Yes Verify dropped rod movement on DRPI.

STEP STANDARD:

DRPI indicator for rod "F2" in Control Bank "A" is verified to be moving out in 6 step increments.

COMMENTS:

SAT _____

UNSAT _____

STEP: 8

CUES:

CR SEQ

No Yes When dropped rod moves 6 steps, then verify ONE ROD ON BOTTOM annunciator clears.

STEP STANDARD:

ONE ROD ON BOTTOM annunciator is observed to be flashing (in the reset condition).

COMMENTS:

SAT _____

UNSAT _____

STEP: 9

CUES:

No turbine manipulations are required since Tavg will remain within 5°F of Tref.

CR SEQ

No Yes Adjust turbine load to maintain Tavg within $\pm 5^\circ\text{F}$ of Tref.

STEP STANDARD:

Tavg - Tref within $\pm 5^\circ\text{F}$.

COMMENTS:

SAT _____

UNSAT _____

STEP: 10

CUES:

CR SEQ

Yes Yes Continue rod withdrawal to the demand position.

STEP STANDARD:

Rod withdrawn at not more than 48 steps per minute or 80% power as determined in step 6.

COMMENTS:

SAT _____

UNSAT _____

STEP: 11

CUES:

Note to Examiner: If candidate notices the stuck rod, but recommends to the CRS to attempt to move rods to ensure the rod is stuck, cue the candidate that the CRS will evaluate that recommendation and will call I&C for a troubleshooting plan.

The immediate action for a struck rod is satisfied in this sequence by stopping rod withdrawal and leaving the Rod Bank Selector Switch in CB A but the candidate may transfer rods to MANUAL.

When the applicant has identified the stuck rod and stopped rod withdrawal, cue the booth operator to insert the malfunction to drop two rods.

Note to Booth Operator: DO NOT insert rod drop malfunction until cued by Examiner.

CR SEQ

Yes Yes Observes that Rod F2 stops moving at 48 steps and is apparently stuck.

STEP STANDARD:

Notifies that rod F2 is stuck and stops rod withdrawal before step counter reads 62 steps. (Stopping at 61 or less is satisfactory).

COMMENTS:

SAT _____

UNSAT _____

STEP: 12

CUES:

CR SEQ

No Yes Observes that Rod H2 drops into the core and rod F2 drops into the core as well.

STEP STANDARD:

Evaluates as 2 dropped rods.

COMMENTS:

SAT _____

UNSAT _____

STEP: 13

CUES:

The Examinee should insert a manual reactor trip upon observing control rods F2 and H2 drop. Continuing to withdraw original dropped rod more than 12 steps after the second rod is dropped constitutes failure.

CR SEQ

Yes Yes Inserts a manual reactor trip.

STEP STANDARD:

Places the manual reactor trip switch to the TRIP position. Both reactor trip breakers indicate green light ON, red light OFF. All rod bottom lights are lit.

COMMENTS:

SAT _____

UNSAT _____

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPSF-012A

DESCRIPTION: 2011 NRC Sim c RO: DROPPED ROD RECOVERY

IC SET: 11

INSTRUCTIONS:

(320 for 2011)

1. RUN

2. Activate:

MAL-CRF004F2 FAIL TO = STATIONARY (Control rod F2 drops)
ANN-CP002 CMPTR NIS PR TILTS = ON

Set on Trigger #1 DELETE IN: 30 seconds TD = 0

4. Control Tav_g-T_{ref} deviation within $\pm 1.5^{\circ}\text{F}$ with rods in AUTO.

5. Place rod control in MANUAL.

6. Allow SIPCS to update QPTR and Axial Flux parameters prior to going to FREEZE.

7. Record the following information in AOP-403.6 Step 7 & 9 prior to start:

Step 7:

Time Rod Dropped: 15 minutes ago

Dropped Rod Location: "F2"

Initial Power Level: 75%

Current Power Level: <75%

Current QPTR: 1.02

Step 9:

Power Level at which recovery is to be performed: <80%

Rod Rate: not more than 48 steps/min.

8. FREEZE

9. When student is ready:

RUN

10. When control rod F2 is withdrawn to exactly 48 steps, insert using event/trigger1:

Event logic: mcrfns(17)==48 (rod at 48 steps).

MAL-CRF007F2 SELECT=TRIPPABLE (Rod F2 sticks)

11. When directed by the Examiner insert trigger 2:

MAL-CRF004H2 SELECT=STATIONARY (Control rod H2 drops)

MAL-CRF007F2	SELECT=TRIPPABLE	Delete in 1 second (removes stuck rod)
MAL-CRF004F2	SELECT=STATIONARY	(Control rod F2 drops)

COMMENTS:

Booth Operator: When told to take key 91 and go to the Rod Control Cabinet (IB-463) and locally at XCA4-CR P/A Converter Cabinet for the affected bank give Examinee P/A Converter reading of 230 steps.

DO NOT insert rod drop malfunction (trigger 2) until cued by Examiner.

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: JPS-002A

2011 NRC Sim d RO: TRANSFER TO HOT LEG
RECIRCULATION

APPROVAL: RJ APPROVAL DATE: 7/30/2011

REV NO: 4

CANDIDATE: _____

EXAMINER: _____

THIS JPM IS APPROVED

TASK:

000-137-05-01

TRANSFER RHR FROM COLD LEG TO HOT LEG RECIRCULATION

TASK STANDARD:

Safety Injection system has been aligned for Hot Leg Recirculation. Charging pumps have not been runout or deadheaded. The use of applicable Human Performance Tools (3-way communications, self checking, peer checking, phonetic alphabet, etc) and industrial safety practices meets expectations.

TERMINATING CUE: 'B' charging pump is started.***PREFERRED EVALUATION LOCATION******PREFERRED EVALUATION METHOD***

SIMULATOR

PERFORM

REFERENCES: EOP-2.0 LOSS OF REACTOR OR SECONDARY COOLANT
EOP-2.3 TRANSFER TO HOT LEG RECIRCULATION

<i>INDEX NO.</i>	<i>K/A NO.</i>		<i>RO</i>	<i>SRO</i>
006000A402	A4.02	Valves	4.0	3.8
006000K418	K4.18	Valves normally isolated from their control power	3.6	3.7

TOOLS: EOP-2.3***EVALUATION TIME*** 10 ***TIME CRITICAL*** No ***10CFR55:*** 45(a)7

TIME START: _____ TIME FINISH: _____ PERFORMANCE TIME: _____

PERFORMANCE RATING: SAT: _____ UNSAT: _____***EXAMINER:*** _____

SIGNATURE

DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: It has been 8 hours since a Loss of Coolant Accident occurred and the plant is presently in the Cold Leg Recirculation mode. The CRS has entered EOP-2.3 (Hot Leg Recirculation) from EOP-2.0. CHG/SI Pump C is aligned to "B" train.

INITIATING CUES: The CRS directs the NROATC to transfer from Cold Leg to Hot Leg Recirculation per EOP-2.3.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: It has been 8 hours since a Loss of Coolant Accident occurred and the plant is presently in the Cold Leg Recirculation mode. The CRS has entered EOP-2.3 (Hot Leg Recirculation) from EOP-2.0. CHG/SI Pump C is aligned to "B" train.

INITIATING CUES: The CRS directs the NROATC to transfer from Cold Leg to Hot Leg Recirculation per EOP-2.3.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

STEP: 1

CUES:

Procedure Note: "Hot Leg Recirculation should be established at eight hours after a Loss of Reactor Coolant Accident."

The eight (8) hours is given in the initial conditions, but if the candidate requests this information from the CRS cue the candidate that 8 hours have elapsed.

Examiner Note: If Charging Pump "A" is still running when 8885 is closed, it will be deadheaded; this constitutes failure. Running the charging pump with both 8885 and 8884 open runs the pump out, also failing.

CR SEQ

Yes Yes Align Train A Charging Pumps for Hot Leg Recirculation:
Stop the Charging Pump on "A" Train

STEP STANDARD:

Places CHG/SI Pump 'A' control switch to STOP and verifies CHG/SI Pump 'A' indicates OFF.

COMMENTS:

SAT _____

UNSAT

STEP: 2

CUES:

CR SEQ

No Yes Check if CHG/SI Pump C is aligned to Train A by verifying XFER switch XET 2002C ON TRAIN A IS LIT.

STEP STANDARD:

XFER SWITCH XET 2002C on Train A is not lit, goes to alternative action.

COMMENTS:

SAT _____

UNSAT

STEP: 3

CUES:

CR SEQ

No Yes Ensure MVG-8132A and MVG-8132B, CHG PP C TO LP A DISCH are closed.

STEP STANDARD:

Verifies MVG-8132A and MVG-8132B CHG PP C TO LP A DISCH are closed, verifying green light ON and red light is OFF for each valve.

COMMENTS:

SAT

UNSAT _____

STEP: 4

CUES:

CR SEQ

Yes Yes Close charging LP "A" ALT to COLD LEG (MVG-8885).

STEP STANDARD:

MVG-8885, CHG LP A TO COLD LEGS, indicates CLOSE.

COMMENTS:

SAT _____

UNSAT _____

STEP: 5

CUES:

Examiner Note: Candidate must energize power lockout to change the position of MVG-8884

CR SEQ

Yes Yes Open CHG LP "A" to HOT LEGS (MVG-8884).

STEP STANDARD:

MVG-8884, CHG LP A TO HOT LEGS, indicates OPEN.

COMMENTS:

SAT

UNSAT _____

STEP: 6

CUES:

Booth Operator: If called to check out the "A" charging pump for a start report the pump is ready for start and that suction pressure is 53 psig.

CR SEQ

Yes Yes Start "A" Charging Pump.

STEP STANDARD:

Places CHG/SI Pump 'A control switch to START and verifies CHG/SI PUMP "A" indicates ON with normal running amps.

COMMENTS:

SAT

UNSAT _____

STEP: 7

CUES:

CR SEQ

Yes Yes Align Train B Charging Pumps for Hot Leg Recirculation:
Stop "B" charging pump.

STEP STANDARD:

Places CHG/SI Pump 'B' control switch to STOP and verifies CHG/SI Pump 'B' indicates OFF with 0 amps.

COMMENTS:

SAT _____

UNSAT _____

STEP: 8

CUES:

CR SEQ

No Yes Check if 'C' charging pump is aligned to Train B.

STEP STANDARD:

Verifies XFER SWITCH XET2000C ON TRAIN B is lit.

COMMENTS:

SAT _____

UNSAT _____

STEP: 9

CUES:

CR SEQ

No Yes Ensure MVG-8132A and MVG-8132B, CHG PP C TO LP A DISCH, are closed.

STEP STANDARD:

Ensures MVG-8132A and MVG-8132B, CHG PP C TO LP A DISCH, indicate CLOSED.

COMMENTS:

SAT _____

UNSAT _____

STEP: 10

CUES:

CR SEQ

No Yes Ensure MVG-8801A, HI HEAD to COLD LEG INJECTION, is closed.

STEP STANDARD:

MVG-8801A, HI HEAD TO COLD LEG INJ indicates CLOSED.

COMMENTS:

SAT _____

UNSAT _____

STEP: 11

CUES:

Examiner Note: If 8801B is closed with "B" Charging Pump running, this deadheads the pump and constitutes failure of the JPM.

CR SEQ

Yes Yes Close MVG-8801B, HI HEAD TO COLD LEG INJECTION valve.

STEP STANDARD:

Takes control switch for MVG-8801B, HI HEAD TO COLD LEG INJ, to the closed position, checks red light OFF and green light ON.

COMMENTS:

SAT _____

UNSAT _____

STEP: 12

CUES:

Examiner Note: Candidate must energize power lockout to change the position of MVG-8886

CR SEQ

Yes Yes Open MVG-8886, CHG LP B TO HOT LEGS.

STEP STANDARD:

MVG-8886, CHG LP B TO HOT LEGS, indicates OPEN.

COMMENTS:

SAT _____

UNSAT _____

STEP: 13

CUES:

Booth Operator: If called to check out the "B" charging pump for a start report the pump is ready for start and that suction pressure is 54 psig.

CR SEQ

Yes Yes Start "B" CHG/SI pump.

STEP STANDARD:

Places CHG/SI Pump 'B' control switch to START and verifies CHG/SI Pump 'B' indicates ON with normal running amps.

COMMENTS:

SAT

UNSAT _____

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPS-002A

DESCRIPTION: 2011 NRC Sim d RO: TRANSFER TO HOT LEG RECIRCULATION

IC SET: 10

INSTRUCTIONS:

(323 for 2011)

1. Activate

MAL-RCS005A RCS Loop 'A' DBA LOCA

2. RUN

3. Perform actions of EOP-1.0 and 2.0

4. FREEZE

5. Ensure RHR Sump Level >415', then activate LOA-AUX115 SEVERITY=0.17 (17% in RWST)

6. RUN

7. Transfer Cold Leg Injection to Cold Leg Recirculation IAW EOP-2.2.

8. To shift CCW to fast speed during EOP-2.2:

LOA-CCW050 SELECT=FAST SPEED 'A' CCW Pump Speed Switch to fast
or
LOA-CCW052 SELECT=FAST SPEED 'C' CCW Pump Speed Switch to fast

9. Swap C Charging pump to B Train

LOA CVC045 Charging pump C disconnect switch SELECT= TRAIN B.

10. FREEZE

11. When student is ready:

RUN

COMMENTS:

Charging Pumps must be stopped before opening Hot Leg High Head Valves (8884/8886) to prevent pump runoff.

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: JPSF-007

2011 NRC Sim e RO: STEAM GENERATOR TUBE
RUPTURE (DEPRESSURIZE RCS TO <
RUPTURED S/G PRESSURE)

APPROVAL: RJ APPROVAL DATE: 7/30/2011

REV NO: 15

CANDIDATE: _____

EXAMINER: _____

THIS JPM IS APPROVED

TASK:

000-038-05-01

RESPOND TO STEAM GENERATOR TUBE RUPTURE

TASK STANDARD:

RCS pressure is reduced to less than ruptured S/G pressure with PZR level > 10% or PZR level > 76% or RCS subcooling < 52.5°F. The use of applicable Human Performance Tools (3-way communications, self checking, peer checking, phonetic alphabet, etc) and industrial safety practices meets expectations. This JPM is related to PRA event OAP2 " Depressurize RCS to stop leakage into ruptured S/G"

TERMINATING CUE: RCS depressurization complete when task standard met and PCV-444C & D are closed.

PREFERRED EVALUATION LOCATION**PREFERRED EVALUATION METHOD**

SIMULATOR

PERFORM

REFERENCES:

EOP-4.0

STEAM GENERATOR TUBE RUPTURE

INDEX NO.	K/A NO.		RO	SRO
000038A104	EA1.04	PZR spray, to reduce coolant system pressure	4.3	4.1

TOOLS: EOP-4.0

EVALUATION TIME 10 **TIME CRITICAL** No **10CFR55:** 45(a)6

TIME START: _____ TIME FINISH: _____ PERFORMANCE TIME: _____

PERFORMANCE RATING: SAT: _____ UNSAT: _____

EXAMINER: __________
SIGNATURE_____
DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: A Steam Generator Tube Rupture is in progress. S/G "C" has been isolated per EOP-4.0. An operator initiated cooldown has been performed according to EOP-4.0, through Step 21.

INITIATING CUES: Control Room Supervisor directs operator to depressurize the RCS using PZR Spray, per EOP-4.0, Step 22.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: A Steam Generator Tube Rupture is in progress. S/G "C" has been isolated per EOP-4.0. An operator initiated cooldown has been performed according to EOP-4.0, through Step 21.

INITIATING CUES: Control Room Supervisor directs operator to depressurize the RCS using PZR Spray, per EOP-4.0, Step 22.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

STEP: 1

CUES:

Examiner Note: Give examinee 1-2 minutes to familiarize himself with his control board indications and his place in the procedure.

CR SEQ

Yes Yes Depressurize the RCS using normal spray valves PCV-444C and 444D.

STEP STANDARD:

Places PZR Spray PVC-444C & 444D controllers in MANUAL and increases output to 100% demand. Verifies red light ON and green light OFF for both PCV-444C & D.

COMMENTS:

SAT

UNSAT _____

STEP: 2

CUES:

Examiner Note: Using the MCB indicators it is most likely that will terminate on RCS pressure < Ruptured ('C') S/G pressure and PZR level > 10%, but if using IPCS values it is more likely that will terminate on PZR level >76. Both termination criteria occur at about the same time and terminating on either one is satisfactory.

CR SEQ

No Yes Use maximum available spray until any termination criteria is met; RCS pressure < Ruptured ('C') S/G pressure and PZR level > 10%; or PZR level >76%; or RCS subcooling <52.5°F.

STEP STANDARD:

Recognizes from MCB indication that RCS pressure is less than 'C' S/G pressure with PZR level >10% or PZR level >76%, or RCS subcooling <52.5°F.

COMMENTS:

SAT _____

UNSAT

STEP: 3

CUES:

Examiner Note: The critical part of this step is closing PCV-444C.

CR SEQ

Yes Yes Stop RCS depressurization.

STEP STANDARD:

Decreases PCV-444C & 444D controller output demand to zero. Notes that PCV-444D did not go closed.

COMMENTS:

SAT _____

UNSAT _____

STEP: 4

CUES:

Examiner Note: It is expected for pressure to continue to decrease slowly after 'A' RCP is stopped and so it is critical to trip two (2) RCP's.

CR SEQ

Yes Yes Identify failure of PCV-444D to close and secures 'A' RCP.

STEP STANDARD:

'A' RCP tripped to stop depressurization. Also stops either 'B' RCP or 'C' RCP if pressure continues to decrease.

COMMENTS:

SAT _____

UNSAT _____

STEP: 5

CUES:

CR SEQ

No Yes Close PVT-8145, PZR SPRAY FR CVCS.

STEP STANDARD:

Verifies PVT-8145 green light ON and red light OFF.

COMMENTS:

SAT _____

UNSAT _____

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPSF-007

DESCRIPTION: 2011 NRC Sim e RO: STEAM GENERATOR TUBE RUPTURE
(DEPRESSURIZE RCS TO < RUPTURED S/G PRESSURE)

IC SET: 10

INSTRUCTIONS:

(324 for 2011)

1. Activate

MAL-RCS002C SEVERITY=450 RAMP=30 (S/G Tube Rupture on 'C' S/G)

2. RUN

3. Carry out actions of AOP-112.2 until SI occurs.

4. Manual SI and perform actions of EOP-1.0 & EOP-4.0 up through step 3g.

5. Throttle EFW to 'C' S/G when level > 40%.

6. FREEZE

7. Activate

LOA-MSS033 SELECT=OPEN (RACK OUT BKR FOR MVG-2802B (STM SUPPLY TO TDEFP))

8. RUN

9. Perform actions of steps 3h-21 of EOP-4.0.

10. FREEZE

11. When student is ready:

RUN

12. After spray valve is manually full open by the student Activate: (event in place, but is not reliable).

MAL-PRS003B SEVERITY=100 RAMP=10 (PCV-444D STUCK OPEN)
Use conditional X05i049m > 0.9

COMMENTS:

This JPM can be run from the same snap as JPS007 with the addition of MAL-PRS003B = 100%

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: JPS-042

2011 NRC Sim f RO: IDENTIFY AND ISOLATE RCS
LEAK TO CCW SYSTEM

APPROVAL: DOW APPROVAL DATE: 7/3/2007

REV NO: 9

CANDIDATE: _____

EXAMINER: _____

THIS JPM IS APPROVED

TASK:

344-001-03-02

ANALYZE INDICATIONS TO DETERMINE THAT ABNORMAL PLANT
EVENT IS IN PROGRESS***TASK STANDARD:***

Intersystem leakage stopped by isolating letdown per ARP-019-XCP-644, pt 1-3.

TERMINATING CUE: Letdown Isolated***PREFERRED EVALUATION LOCATION******PREFERRED EVALUATION METHOD***

SIMULATOR

PERFORM

REFERENCES: ARP-019-XCP-644 RADIATION MONITORING PANEL

<i>INDEX NO.</i>	<i>K/A NO.</i>		<i>RO</i>	<i>SRO</i>
008000A204	A2.04	PRMS alarm	3.3	3.5

TOOLS: ARP-019-XCP-644-1-3, CC LOOP "A" RM-L2A HI RAD
SOP-102, CHEMICAL AND VOLUME CONTROL SYSTEM***EVALUATION TIME*** 20 ***TIME CRITICAL*** No ***10CFR55:*** 45(a)7

TIME START: _____ TIME FINISH: _____ PERFORMANCE TIME: _____

PERFORMANCE RATING: SAT: _____ UNSAT: _____***EXAMINER:*** _____
SIGNATURE DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is operating at 100% power with all systems in Automatic.

INITIATING CUES: CRS directs NROATC to respond to RM-L2A HI RAD annunciator.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is operating at 100% power with all systems in Automatic.

INITIATING CUES: CRS directs NROATC to respond to RM-L2A HI RAD annunciator.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS**STEP:** 1**CUES:**

Evaluator Note: If at any time the candidate indicates that they will transition to AOP-101.1, LOSS OF REACTOR COOLANT NOT REQUIRING SI, cue the candidate that the actions of AOP-101.1 will be performed by another operator.

CR SEQ

No Yes Verify automatic action has occurred.

STEP STANDARD:

Verifies PVV-7096, CC SURGE TK VLV, is closed.

COMMENTS:**SAT** _____**UNSAT****STEP:** 2**CUES:****CR SEQ**

No No Verify high radiation via COMPONENT COOLING LIQUID MONITORS on XCP-644

STEP STANDARD:

Identifies COMPONENT COOLING LIQUID MONITORS RML-2A RADIATION MONITORS meters and R/R-5 trending up and are above high alarm setpoint on XCP-644.

COMMENTS:**SAT** _____**UNSAT** _____**STEP:** 3**CUES:**

Booth Operator: When called to survey the CCW system, respond that there are elevated readings downstream of TCV-144 and that all other points are at normal radiation levels.

CR SEQ

No Yes Notify Health Physics personnel to survey CCW system.

STEP STANDARD:

Instruct Health Physics personnel to check radiation levels in CCW system in the areas of letdown heat exchanger, RCS and PZR sample coolers, RCP Thermal Barrier lines, Excess Letdown Heat Exchanger for abnormal radiation levels.

COMMENTS:**SAT** _____**UNSAT** _____

STEP: 4

CUES:

Booth Operator: When called to sample CCW, respond that samples will be taken.

Evaluator Note: The sample analysis will take longer than the length of the JPM and so no results will be reported.

CR SEQ

No Yes Notify Chemistry to sample CCW.

STEP STANDARD:

Notifies Chemistry to sample CCW system.

COMMENTS:

SAT _____

UNSAT _____

STEP: 5

CUES:

Evaluator Note: The candidate may not need to investigate flow if the leak location is determined to be the letdown heat exchanger.

CR SEQ

No No Monitor CCW flow and temperatures on M2CC

STEP STANDARD:

Checks CCW flows and CCW temperatures from RCP A, RCP B, RCP C thermal barrier by depressing the appropriate pushbutton point readouts on M2CC and verifies points TM-7140 and FM-7138 for RCP A, TM-7160 and FM-7158 for RCP B and TM-7180 and RM-7178 for RCP C read in the normal range for thermal barrier return to CCW

COMMENTS:

SAT _____

UNSAT _____

STEP: 6

CUES:

CR SEQ

No Yes Isolate the source of in leakage when confirmed by sample analysis or a radiological survey.

STEP STANDARD:

NROATC announces leak is in letdown heat exchanger from MCB and reactor makeup system indications and survey results.

COMMENTS:

SAT _____

UNSAT _____

STEP: 7

CUES:

When examinee determines leak is in the letdown heat exchanger, the CRS directs the NROATC to perform the ARP actions to isolate the leakage from the letdown heat exchanger.

Cue candidate that Pre-Job Brief can be waived, and the RCDT is aligned for normal operation.

Examiner Note: 1.3 is met because the ARP requires excess letdown. Note 2 is met because simulator is below 2898MWt.

CR SEQ

No Yes Places excess letdown in service per SOP-102.

STEP STANDARD:

Checks initial conditions and procedure "Note 2.0" to place excess letdown in service.

"1.1 A Pre-Job Brief has been conducted per OAP-100.3, Human Performance Tools.

1.2 The RCDT is aligned for normal operation per SOP-108, Liquid Waste Processing System.

1.3 RCS heatup is in progress or increased Letdown is required.

NOTE 2.0: Due to the heat loss generated not being an input to the calorimetric thermal power calculation, Core Power should be maintained at less than or equal to 2898 MWt prior to and during Excess Letdown operations."

COMMENTS:

SAT _____

UNSAT _____

STEP: 8

CUES:

CR SEQ

No Yes Verify flow on FI-7106, XS LTDN HX FLOW.

STEP STANDARD:

Verifies flow on FI-7106, XS LTDN HX FLOW.

COMMENTS:

SAT _____

UNSAT _____

STEP: 9

CUES:

CR SEQ

No Yes Ensure HCV-137, XS LTDN HX, is closed.

STEP STANDARD:

Verifies controller is fully turned counter clockwise.

COMMENTS:

SAT _____

UNSAT _____

STEP: 10

CUES:

Examiner Note: This step is designated as requiring a peer check.

CR SEQ

No Yes Places PVM-8143, XS LTDN TO VCT OR RCDT to the RCDT position.

STEP STANDARD:

Takes PVM-8143 to the RCDT position.

COMMENTS:

SAT

UNSAT _____

STEP: 11

CUES:

CR SEQ

No Yes If required, reset Phase A Isolation by depressing the following:
a. RESET PHASE A - TRAIN A CNTMT ISOL
b. RESET PHASE A - TRAIN B CNTMT ISOL

STEP STANDARD:

Identifies that Phase A is not actuated.

COMMENTS:

SAT _____

UNSAT _____

STEP: 12

CUES:

CR SEQ

No Yes Ensure MVG-9583, FROM XS LTDN HX, is open.

STEP STANDARD:

Verifies MVG-9583, FROM XS LTDN HX, is open.

COMMENTS:

SAT _____

UNSAT _____

STEP: 13

CUES:

CR SEQ

No Yes Open PVT-8153, XS LTDN ISOL.

STEP STANDARD:

Takes PVT-8153, XS LTDN ISOL, to open.

COMMENTS:

SAT

UNSAT _____

STEP: 14

CUES:

CR SEQ

No Yes Open PVT-8154, XS LTDN ISOL.

STEP STANDARD:

Takes PVT-8154, XS LTDN ISOL, to open.

COMMENTS:

SAT _____

UNSAT _____

STEP: 15

CUES:

Procedure Note 2.8: "When sending Excess Letdown to the RCDT, RCDT level and pump operation should be monitored locally at XPN007, WASTE PROCESSING/BORON RECYCLE CONT PNL (AB-412)"

Booth Operator: When called to monitor RCDT level and pump operation respond that you are at the panel. If called later report that the RCDT Pump is operating as required to control level.

CR SEQ

STEP STANDARD:

No No Establish Excess Letdown flow as follows:
a. Slowly throttle open HCV-137, XS LTDN HX.
b. Monitor TI-139, XS LETDOWN HX OUT TEMP °F, to maintain less than 165 °F.

Slowly throttles open HCV-137 and monitors TI-139.

COMMENTS:

SAT _____

UNSAT _____

STEP: 16

CUES:

Procedure Note 2.9: "The design flowrate for the Excess Letdown Heat Exchanger is 25 gpm. Flushing for ten minutes at this flowrate will result in an 18% change in VCT level and is equivalent to 70% of RCDT volume."

Cue candidate that 10 minutes have elapsed.

CR SEQ

STEP STANDARD:

No Yes Flush Excess Letdown to the RCDT for ten minutes.

Determines that excess letdown must be flushed for 10 minutes.

COMMENTS:

SAT _____

UNSAT _____

STEP: 17

CUES:

CR SEQ

No Yes When flush is complete and Excess
Letdown flow is to diverted to the VCT, open
the following:
a. MVT-8100, SEAL WTR RTN ISOL.

STEP STANDARD:

Verifies MVT-8100, SEAL WTR RTN
ISOL, is open.

COMMENTS:

SAT _____

UNSAT _____

STEP: 18

CUES:

CR SEQ

No Yes Open MVT-8112, SEAL WTR RTN ISOL.

STEP STANDARD:

Verifies MVT-8112, SEAL WTR RTN
ISOL, is open.

COMMENTS:

SAT _____

UNSAT _____

STEP: 19

CUES:

Procedure Note 2.11: "Excess Letdown should normally be directed to the VCT. If required,
Excess Letdown may be aligned to the RCDT."

Examiner Note: This step is designated as requiring a peer check.

CR SEQ

No Yes Place PVM-8143, XS LTDN TO VCT OR
RCDT, to VCT.

STEP STANDARD:

Takes switch for PVM-8143, XS LTDN
TO VCT OR RCDT, to VCT.

COMMENTS:

SAT _____

UNSAT _____

STEP: 25

CUES:

CR SEQ

No Yes Monitors FR-154A, RCP SL LKOFF HI RANGE and FR-154B, RCP SL LKOFF LO RANGE.

STEP STANDARD:

Ensures flow between 0.2 gpm and 5.0 gpm.

COMMENTS:

SAT _____

UNSAT _____

STEP: 26

CUES:

Isolation of letdown flow path by closing LCV-456, LCV-460, PVT-8152 or all 8149 valves is sufficient to accomplish task.

CR SEQ

Yes Yes Closes PVT-8149A (B, C), LCV-460, LCV-459 and PVT-8152.

STEP STANDARD:

PVT-8149 A (B,C) LTDN ORIFICE A (B,C) ISOL and LCV-459, LCV-460 and PVT-8152 LTDN LINE ISOL are taken to close.

COMMENTS:

SAT _____

UNSAT _____

STEP: 27

CUES:

Evaluator Note: Candidate may place LO PRESS LTDN PCV-145 A/M station in MANUAL and reduce the output to zero as well.

CR SEQ

No Yes Close PCV-145, LO PRESS LTDN.

STEP STANDARD:

Verifies that PCV-145 is closed.

COMMENTS:

SAT _____

UNSAT _____

STEP: 28

CUES:

CR SEQ

No Yes Close FCV-122, CHG FLOW.

STEP STANDARD:

Places CHG FLOW FCV-122 A/M station in MANUAL and reduces output to zero.

COMMENTS:

SAT _____

UNSAT _____

STEP: 29

CUES:

Evaluator Note: HCV-186 does not have to be adjusted, but candidate may call to align air to HCV-186 so that future adjustments may be made.

Booth Operator: If called to align air to HCV-186, INJ FLOW, use the LOA Resets to do so.

CR SEQ

No Yes Adjusts HCV-186, INJ FLOW, to maintain 6-13 gpm per pump

STEP STANDARD:

Determines that HCV-186, INJ FLOW, potentiometer does not need to be adjusted to keep RCP A/B/C INJ FLOW GPM (IFI-130A/127A/124A) between 6 and 13 gpm.

COMMENTS:

SAT

UNSAT _____

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPS-042

DESCRIPTION: 2011 NRC Sim f RO: IDENTIFY AND ISOLATE RCS LEAK TO CCW SYSTEM

IC SET:

INSTRUCTIONS:

(319 for 2011)

1. MAL-CCW001 Severity=30 Ramp=7 minutes. (RCS to CCW leak in letdown HEX)
Set to Event Trigger #1.
2. RUN: Activate Trigger #1.
3. Ensure power is <2898 MWt.
4. When the student is ready go to run.

COMMENTS:

Based on the Initiating cue, the trigger is activated before going to run. The cue reads as it does to steer the examinee away from wanting to respond to the RCS leak by wanting to enter AOP-101.1, LOSS OF REACTOR COOLANT NOT REQUIRING SI, but a separate cue is included to ensure the student does not go to AOP-101.1.

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: JPS-149A

2011 NRC Sim g RO: RESPONSE TO STEAM
GENERATOR OVERPRESSURE IAW EOP-15.3

APPROVAL: RJ APPROVAL DATE: 7/30/2011

REV NO: 4

CANDIDATE: _____

EXAMINER: _____

THIS JPM IS APPROVED

TASK:

311-006-06-01 RESPONSE TO LOSS OF SECONDARY HEAT SINK

TASK STANDARD:

S/G pressures has been lowered to <1170 psig

TERMINATING CUE: S/G pressures are returned to normal.***PREFERRED EVALUATION LOCATION******PREFERRED EVALUATION METHOD***

SIMULATOR

PERFORM

REFERENCES: EOP-15.3 RESPONSE TO LOSS OF NORMAL STEAM RELE
CAPABILITIES

<i>INDEX NO.</i>	<i>K/A NO.</i>		<i>RO</i>	<i>SRO</i>
0410002120	2.1.20	Ability to interpret and execute procedure steps.	4.6	4.6

TOOLS: EOP-15.3***EVALUATION TIME*** 10 ***TIME CRITICAL*** NO ***10CFR55:*** 55.45.b.6

TIME START: _____ TIME FINISH: _____ PERFORMANCE TIME: _____

PERFORMANCE RATING: SAT: _____ UNSAT: _____**EXAMINER:** _____
SIGNATURE DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant has tripped due to a inadvertent main steam line isolation. Only the Turbine Driven Emergency Feedwater Pump started.
A yellow path exists for a transition to EOP-15.3, RESPONSE TO LOSS OF NORMAL STEAM RELEASE CAPABILITIES.

INITIATING CUES: The CRS directs you to implement EOP-15.3.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant has tripped due to a inadvertent main steam line isolation.
Only the Turbine Driven Emergency Feedwater Pump started.
A yellow path exists for a transition to EOP-15.3, RESPONSE TO
LOSS OF NORMAL STEAM RELEASE CAPABILITIES.

INITIATING CUES: The CRS directs you to implement EOP-15.3.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

STEP: 1

CUES:

CR SEQ

No	Yes	CAUTION If SG Narrow Range level increases to GREATER THAN 90% [83%], steam should NOT be released from that SG until an evaluation is performed for SG overfill conditions, to prevent damage to steamline piping and valves.
----	-----	---

NOTE
-Throughout this procedure, "AFFECTED" refers to any SG with pressure GREATER THAN 1170 psig.
- Conditions for implementing Emergency Plan Procedures should be evaluated using EPP-001, ACTIVATION AND IMPLEMENTATION OF EMERGENCY PLAN.

STEP STANDARD:

Reads caution and note.

COMMENTS:

SAT

UNSAT _____

STEP: 2

CUES:

Evaluator Note: simulator was snapped with the condenser available (and so it is not an alternate path JPM). If candidate delays actions so that C-9 is no longer bright the alternate action to release steam via the PORV may also be used to reduce pressure. Lowering pressure is the critical part of this JPM.

CR SEQ

No	Yes	Verify PERMISV C-9 status light is bright on XCP-6114 1-3.
----	-----	--

STEP STANDARD:

Operator locates and verifies C-9 is bright on XCP-6114 1-3.

COMMENTS:

SAT _____

UNSAT _____

STEP: 3

CUES:

Examiner Note: MS Isolation Bypass Valves, PVM-2869A(B)(C) require two hand operation to open. The common "B" train switch has to be held to open while the individual "A" train switches are operated.

Examiner Note: This step is not critical if PORVs are opened in manual to lower pressure. The critical step is to lower pressure.

CR SEQ

Yes Yes Verify the MS Isolation Valves, PVM-2801A(B)(C), are open.
OR
Open MS Isolation Bypass Valves:
1) Depress both MAIN STEAM ISOL VALVES RESET TRAIN A(B).
2) Open MS Isolation Bypass Valves, PVM-2869A(B)(C).

STEP STANDARD:

Determines that MS Isolation Valves, PVM-2801A(B)(C), are closed.
Depresses both MAIN STEAM ISOL VALVES RESET TRAIN A(B).
Opens MS Isolation Bypass Valves, PVM-2869A(B)(C) and verifies red light lit green light dim.

COMMENTS:

SAT _____

UNSAT _____

STEP: 4

CUES:

CR SEQ

No Yes Place the STM DUMP CNTRL Controller in MAN and closed.

STEP STANDARD:

Operator locates and places STM DUMP CNTRL Controller in MAN and closed.

COMMENTS:

SAT _____

UNSAT _____

STEP: 5

CUES:

NOTE: IC was snapped with controller already at 8.4.

CR SEQ

No Yes Ensure the STM DUMP CNTRL Controller is set to 8.4 (1090 psig).

STEP STANDARD:

STM DUMP CNTRL Controller is set to 8.4 (1090 psig).

COMMENTS:

SAT _____

UNSAT _____

STEP: 6

CUES:

CR SEQ

No Yes Place the STM DUMP MODE SELECT Switch in STM PRESS.

STEP STANDARD:

STM DUMP MODE SELECT Switch is in STM PRESS.

COMMENTS:

SAT _____

UNSAT _____

STEP: 7

CUES:

Examiner Note: This step is not critical if the PORVs are opened to lower pressure. The critical step in that case is to lower pressure.

CR SEQ

Yes Yes Place the STM DUMP CNTRL Controller in AUTO.

STEP STANDARD:

STM DUMP CNTRL Controller is in AUTO.

COMMENTS:

SAT _____

UNSAT _____

STEP: 8

CUES:

Examiner Note: Because steam line drains are open it is not expected that steam dumps will open immediately. The JPM should be ended as long as the main steam bypass valves are open and a yellow path no longer exists to EOP-15.3.

CR SEQ

No Yes Verify Condenser Steam Dumps are open.

STEP STANDARD:

Determines proper operation of steam dumps.

COMMENTS:

SAT _____

UNSAT _____

STEP: 9

CUES:

CR SEQ

No Yes Verify SG pressures are LESS THAN 1170
psig.

STEP STANDARD:

Determines that all steam generator
pressures are now <1170 psig.

COMMENTS:

SAT _____

UNSAT _____

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPS-149A

DESCRIPTION: 2011 NRC Sim g RO: RESPONSE TO STEAM GENERATOR
OVERPRESSURE IAW EOP-15.3

IC SET: 10

INSTRUCTIONS:

(330 for 2011)

Trigger 1:

MAL-PCS014 INDAVERTENT MS ISOLATION Delete in 1 second.

Use a inadvertent closure of all the mainsteam lines (at once to preclude a SI where it would be less likely to direct the completion of a yellow path). Delete in 1 second to allow opening of main steam isolation bypass valves.

OVR-MB005B, PC-2000 STM DMP LINE A POT SIGNAL =10.0

OVR-MB006B, PC-2010 STM DMP LINE B POT SIGNAL =10.0

OVR-MB007B, PC-2020 STM DMP LINE C POT SIGNAL =10.0

Overrides Pots so that steamline porv's do not open enough to lower pressure.

BST-MS054, ILS02806A REL VLV MS = INHIBITED

BST-MS055, ILS02806B REL VLV MS = INHIBITED

BST-MS059, ILS02806F REL VLV MS = INHIBITED

BST-MS060, ILS02806G REL VLV MS = INHIBITED

BST-MS064, ILS02806K REL VLV MS = INHIBITED

BST-MS065, ILS02806L REL VLV MS = INHIBITED

Overrides steam line safeties to maintain pressure >1170 (with two on each line failed pressure drops to 1176 when remaining safeties lift.

PMP-EF001F, MOTOR DRIVEN EFW PMP A FAIL TO START

PMP-EF002F, MOTOR DRIVEN EFW PMP B FAIL TO START

Ensure that the snap is generated fast enough to ensure that C-9 remains bright.

FREEZE

When the candidate is ready go to RUN (DO NOT RUN for setup).

When snapping into IC set verify that all S/G PORV's are set to 8.4 exactly even though IC snap will say they should be at 10.0.

COMMENTS:

NOTE: PORV pots are overridden do not adjust MCB pots to snap into IC. Use override AFTER rods have stepped all the way out. All steam dump and PORV controllers should read 8.4.

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: JPSF-160

2011 NRC Sim h RO: Respond to electrical grid issues.

APPROVAL: RJ APPROVAL DATE: 7/30/2011

REV NO: 1

CANDIDATE: _____

EXAMINER: _____

THIS JPM IS APPROVED

TASK:

064-003-01-01 LOAD THE DIESEL GENERATOR

TASK STANDARD:

Determines that 1DB voltage is too low and starts the 'B' Diesel Generator. When the diesel generator is ready for load opens the normal incoming breaker for 1DB.

TERMINATING CUE: 1DB is being supplied power from the diesel.***PREFERRED EVALUATION LOCATION***

SIMULATOR

PREFERRED EVALUATION METHOD

PERFORM

REFERENCES:

<i>INDEX NO.</i>	<i>K/A NO.</i>		<i>RO</i>	<i>SRO</i>
0000772119	2.1.19	Ability to use plant computers to evaluate system or component status.	3.9	3.8
0000772120	2.1.20	Ability to interpret and execute procedure steps.	4.6	4.6

TOOLS: AOP-301.1, RESPONSE TO ELECTRICAL GRID ISSUES***EVALUATION TIME*** 10 ***TIME CRITICAL*** NO ***10CFR55:*** 55.45.b.3

TIME START: _____ TIME FINISH: _____ PERFORMANCE TIME: _____

PERFORMANCE RATING: SAT: _____ UNSAT: _____**EXAMINER:** _____
SIGNATURE DATE

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, 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.

SAFETY CONSIDERATIONS: None.

INITIAL CONDITION: 100% Power. A grid instability condition exists. The crew has entered AOP-301.1, RESPONSE TO ELECTRICAL GRID ISSUES, and has performed steps 1 and 2.

INITIATING CUES: The CRS directs you as the BOP to perform AOP-301.1, RESPONSE TO ELECTRICAL GRID ISSUES starting at step 3.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS: None.

INITIAL CONDITION: 100% Power. A grid instability condition exists. The crew has entered AOP-301.1, RESPONSE TO ELECTRICAL GRID ISSUES, and has performed steps 1 and 2.

INITIATING CUES: The CRS directs you as the BOP to perform AOP-301.1, RESPONSE TO ELECTRICAL GRID ISSUES starting at step 3.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

STEP: 1

CUES:

CR SEQ

No Yes Check that a Turbine Runback is NOT required.

STEP STANDARD:

Verifies that the following annunciators are NOT in alarm.
OP Delta T (XCP-615 2-2).
OT Delta T(XCP-615 3-2).

Verifies that the following status lights are dim.
PERMISV C-7A PB-447A.
PERMISV C-7B PB-447B.
OT DELTA T C-3 (XCP-6109 1-29).
OP DELTA T C-4 (XCP-6109 1-31).

COMMENTS:

SAT _____

UNSAT

STEP: 2

CUES:

CR SEQ

No Yes Monitor Main Turbine and Generator for proper operation.

STEP STANDARD:

Monitors turbine using AOP301 or TURBRG on IPCS

COMMENTS:

SAT _____

UNSAT _____

STEP: 3

CUES:

CR SEQ

No Yes Ensure Main Generator MVAR loading is within the limits of the Estimated Generator Capability Curve.

STEP STANDARD:

Determines that MVARs are ~305 and uses Attachment 2 or AOP301 on IPCS to determine that MVARs are within limits.

COMMENTS:

SAT

UNSAT _____

STEP: 4

CUES:

CR SEQ

No Yes Check if Bus 1DA voltage is greater than 6840 volts.

STEP STANDARD:

Finds 1DA voltage and determines that it is normal.

COMMENTS:

SAT _____

UNSAT _____

STEP: 5

CUES:

Examiner Note: This is when this JPM becomes alternate path.

CR SEQ

No Yes Check if Bus 1DB voltage is greater than 6840 volts.

STEP STANDARD:

Determines that voltage is less than 6840 volts.

COMMENTS:

SAT

UNSAT _____

STEP: 6

CUES:

CR SEQ

Yes Yes Ensure Diesel Generator 'B' has started in the Emergency Mode.

STEP STANDARD:

Depresses, DG 'B' Control, EMERG START pushbutton.

COMMENTS:

SAT

UNSAT _____

STEP: 7

CUES:

CR SEQ

No Yes Check if Annunciator XCP-640 3-2 is lit (DG A READY FOR LOAD).

STEP STANDARD:

Verifies that XCP-640 3-2 is lit.

COMMENTS:

SAT _____

UNSAT _____

STEP: 8

CUES:

CR SEQ

Yes Yes Ensure the normal and alternate feeder breakers to 1DB are open.

STEP STANDARD:

Opens BUS 1DB NORM FEED Breaker.

COMMENTS:

SAT _____

UNSAT _____

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: JPSF-160

DESCRIPTION: 2011 NRC Sim h RO: Respond to electrical grid issues.

IC SET: 10

INSTRUCTIONS:

(325 for 2011)

1. Insert malfunctions:

MAL-EPS006B, DIESEL GENERATOR B FAILURE Set= NO_AUTO_START

MAL-EPS020, DEGRADED GRID VOLTAGE Set=14

2. Insert overrides:

IND-DG018, V-1DB 1DB BUS VMTR METER SIGNAL Set =6465

IND-ES006, V-1A 1A BUS VOLTMR METER SIGNAL Set=6742.12

IND-ES007, V-1B 1B BUS VOLTMR METER SIGNAL Set=6768.1

IND-ES009, V-1C 1C BUS VOLTMR METER SIGNAL Set=6780

Note: the numbers do not truly indicate actual voltage reading on simulator so verify that 1DB is <6840 volts.

3. Lower MVAR to <325 MVARs.

4. Run until you get 230 V HI/LO volta alarm.

5. When canidate is ready go to run.

Trigger 2:

IND-DG018, V-1DB 1DB BUS VMTR METER SIGNAL Set = 6465 Delete in 1 sec.

X13I070T >0 I as in india, 0's are zeros.

COMMENTS: