2013 NRC Scenario 1

| Facility: | VC SU | MMER | Scenario No.: 1 | Op Test No.: NRC ILO 11-01 | | | | |
|-------------------|--|---|--|--|--|--|--|--|
| Exami : | ners | | Operators | :: <u>CRS:</u> RO: BOP: | | | | |
| Initial Condit | ions: | 100% MOL Alternate Sea "B" Train work Severe thund | Il Injection is OOS kweek erstorms have been r | eported in the area | | | | |
| Turno | ver: | Reduce powe oncoming shirt | er to < 90% to allow fo ft | r Turbine valve testing by the | | | | |
| Critica | l Task: | Isolate "A" S/0 Terminate SI (87% NR) | G PORV prior to step before SG level reacl | 6 EOP-4.0 (E-3) nes EOP SG level for steam line | | | | |
| Event No. | Malf. No. | Event Type* | | Event Description | | | | |
| 1 | N/A | N - BOP, CRS R – RO | Lower Power IAW C | GOP-4B for Turbine Valve Testing | | | | |
| 2 | PCS003 B | I - BOP, CRS TS – CRS | "B" SG Level Inst F | ailure LT-486 Fails HIGH | | | | |
| 3 | TUR012 A | I - RO, BOP, CRS TS -CRS | PT-446 (Controlling over 15 seconds | turbine first stage pressure transmitter) fails to 0 | | | | |
| 4 | TUR011 A | C – BOP | EHC Pump trips (Bl started) | J does not auto-start and must be manually | | | | |
| 5 | RCS002 A | C-RO, CRS TS-CRS | SGTL on "A" SG (Le increasing until ope level control) | eak is initially greater than TS leakage limits rator action is required to maintain Pressurizer | | | | |
| 6 | RCS002 A | M – ALL | "A" SG SGTR (a rar apparent and large | np increase in the SGTL until a SGTR is enough to cause a Safety Injection Actuation) | | | | |
| 7 | MS035O | C-BOP | SG "A" Pressure Tra opening of a Steam | ansmitter PT-2000 Fails HIGH resulting in the Generator PORV. | | | | |
| * | * (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor | | | | | | | |

The following notation is used in the ES-D-2 form "Time" column:

IOA designates Immediate Operator Action steps

* designates **Continuous Action** steps

The crew will assume the watch having been pre-briefed on the Initial Conditions, the plan for this shift and any related operating procedures.

EVENT 1: Lower Power to Conduct Turbine Valve Testing

The crew will lower power from 100% to less than 90% in accordance with GOP-4B, Power Operation MODE 1 – Descending.

EVENT 2: "B" SG Level Transmitter Fails HIGH

On cue from the Examiner, "B" SG level transmitter will fail HIGH, requiring manual control of the "B" SG Feedwater Regulating Valve to maintain/restore SG level to between 60% and 65% and prevent a reactor trip.

The crew will enter AOP-401.11, Steam Generator Level Control and Protection Channel Failure, and remove the channel from service.

The CRS will refer to Tech Specs 3.3-1, Item 13 (Action 6) and 3.3-3, Items 5, 6c (Action 24) to determine that the protection bistables for the failed channels must be placed in the TRIPPED condition with 72 hours.

EVENT 3: Turbine 1st Stage Pressure Transmitter Fails LOW

On cue from the Examiner, PT-446 (Selected turbine first stage pressure transmitter) will fail LOW. The failure causes a Tave - Tref mismatch resulting in rods inserting at the maximum speed.

The crew will enter AOP-401.7, Turbine First Stage Pressure Channel Failure.

The RO will place rod control in manual and maintain Tave within 1 degree of Tref. The RO will then select the operable 1st stage pressure channel for control. The RO may restore automatic rod control after the operable channel is selected.

The BOP will control "B" Steam Generator NR level and change the Steam Dump Mode to Steam Pressure.

EVENT 4: Running EHC pump trips on overload (Backup pump does not start in auto)

On cue from the Examiner, the running EHC pump will trip and the backup pump will not start in auto.

The BOP will recognize the condition from annunciator XCP-631 1-4, EHC PP A Motor Ovrld, or determine the cause of the event, and take corrective action by starting the backup EHC pump to prevent turbine stop valves from closing.

EVENT 5: "A" SGTL

On cue from the Examiner, a steam generator tube leak will begin. The tube leak on the S/G "A" will initiate and stabilize at 12 GPM. The crew will respond to indications of RCS inventory loss/rising secondary-side radiation and enter AOP-112.2, Steam Generator Tube Leak Not Requiring SI. The crew will estimate SGTL as greater than the TS limit and the CRS will enter TS 3.4.6.2.c. The leak will be ramped up to 50 GPM to require additional AOP actions by the crew. The RO will stabilize PZR level by raising charging and minimizing letdown. The CRS will direct a shutdown to HOT STANDBY in accordance with the requirements of AOP-112.2 since the shutdown rate specified by that procedure is greater than that specified by the TS.

EVENT 6: "A" SGTR

On cue from the Examiner, a steam generator tube rupture will occur. The crew will recognize the increase in tube leakage greater than the capacity of the charging pumps. The crew will trip the reactor/turbine and implement EOP-1.0 (E-0), Reactor Trip/Safety Injection Actuation. The crew will transition to EOP-4.0 (E-3), Steam Generator Tube Rupture. In EOP-4.0 (E-3), isolate the "A" S/G and cool down and depressurize the RCS to terminate break flow.

EVENT 7: "A" S/G Pressure Transmitter PT-2000 Fails HI

Event 7 is triggered automatically after the reactor trip. The BOP may identify the PT-2000 indicates 1300 psig and/or the "A" S/G Power Operated Relief Valve (PORV) indicates open. The operator will place the controller to manual and close the PORV.

If the failure is not identified the crew may transition to EOP 3.0 (E-2), Faulted Steam Generator Isolation, to isolate the S/G.

CRITICAL TASKS:

It is a critical task to close "A" S/G PORV prior to step 6 of EOP-4.0 (E-3) because this is a radioactive release to the environment.

It is critical to terminate Safety Injection prior to the "A" steam generator reaching the level of the steamline to preclude failure of the steam line. This level, including tolerances, is 87% NR in the EOP network.

TERMINATION:

The scenario can be terminated after the crew has closed the S/G PORV and Safety Injection has been terminated.

SIMULATOR SENARIO SETUP

Initial Conditions:

- 100% power MOL, IC set 320 is main snap.
- 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.
- Rod Position = 230 steps withdrawn
- Boron = 1000 ppm
- Xe= 2700 pcm
- Burnup = 10010 MWD/MTU = 226 EFPD
- 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).

VC Summer 2013 NRC Scenario 1 Simulator Setup (SNAP 320)

- 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:

Standard Simulator Setup

- PMP-LD003P XPP0138 LEAK DETECTION SUMP PMP LOSS OF POWER
- VLV-FW028W XVG01676-FW FW HDR RECIRC ISOL VLV LOSS OF POWER
- VLV-FW029W XVG01679-FW FW HTR RECIRC ISO VLV LOSS OF POWER
- VLV-CS052W XVT08141A-CS RCP A SEAL LEAKOFF VLV LOSS OF POWER
- VLV-CS054W XVT08141C-CS RCP C SEAL LEAKOFF VLV LOSS OF POWER
- VLV-CS053W XVT08141B-CS RCP B SEAL LEAKOFF VLV LOSS OF POWER

Scenario Related

P12 Overrides

- BST-RC068 LL TA P12 Fail to: INHIBITED Delay=0 Delete=0
- BST-RC075 LL TA P12 Fail to: INHIBITED Delay=0 Delete=0

EVENT 1: Lower Power IAW GOP-4B for Turbine Valve Testing

• NO Trigger

This is a Normal/Reactivity evolution.

EVENT 2: "B" SG Level Inst Failure LT-486 Fails HIGH

- TRIGGER 2
 - MAL-PCS003B: STEAM GENERATOR CONTROL FAILURE (CHANNEL 486) Final=100

It takes about 1 minute without operator action to cause trip without a ramp. Annunciators come in immediately and should not be a problem.

EVENT 3: PT-446 (Controlling Turbine 1st Stage Pressure Transmitter) Fails Low

- TRIGGER 3
 - MAL-TUR012A: TURBINE IMPULSE PRESSURE TRANSMITTER PT-446 FAILURE Ramp=15 sec, Final=0

It takes about 40 seconds to get to LO-LO limit and plant will trip at about 1 min 45 seconds.

Booth Operator: When called as I&C to place AMSAC in bypass. Reply that I&C will place AMSAC in bypass. Wait 5 minutes. Call the control room and report you are ready to BYPASS AMSAC (the control room will receive a trouble alarm when AMSAC is bypassed. Insert TRIGGER 10.

- TRIGGER 10
 - ANN-MI007 AMSAC GENERAL WARNING Final=ON

EVENT 4 : EHC Pump trips (BU does not auto-start and must be manually started)

- TRIGGER 4
 - MAL-TUR011A: LOSS OF EHC HYDRAULIC FLUID PUMP A Final=Active
 - PMP-EH002F: XPP0003-PP2 HFM PMP B FAIL TO START Final=Active

Trip occurs after 1 min 30 seconds if not mitigated.

EVENT 5: SGTL on "A" SG (Leak is initially greater than TS leakage limits increasing until operator action is required to maintain Pressurizer level control)

- TRIGGER 5
 - MAL-RCS002A: STEAM GENERATOR A TUBE LEAK Final =12

Booth Operator: XCP-646 2-1 will have HP do survey of steam lines; Report elevated readings on "A" steam line after 10 minutes. Chemistry sample of steam generators will show elevated on "A" activity after 30 minutes (frisker results if desired will take 10 min).

If asked to put condenser exhaust to AB exhaust report after 5 min that aligned to AB charcoal exhaust.

EVENT 6: "A" SG SGTR (a ramp increase in the SGTL until a SGTR is apparent and large enough to cause a Safety Injection Actuation)

- TRIGGER 6
 - MAL-RCS002A: STEAM GENERATOR A TUBE LEAK Ramp=2 min, Initial=12 Final=600

EVENT 7: SG "A" Pressure Transmitter PT-2000 Fails HIGH resulting in the opening of a Steam Generator PORV.

- EVENT 7: Power Indication N-42 < 10% "FNISPR(2)"<10
 - TRIGGER 7
 - XMT-MS035O: IPT02000 MS LINE A PRESS PI-2000 FAIL TO POSN Final=1300

| Op Test No | D.: NRC ILO 11- | 01 Scenario # 1 Event # 1 Page 7 of 37 | 1 | | | | | |
|---|---|---|--------|--|--|--|--|--|
| Event Des | Event Description: Lower Power IAW GOP-4B for Turbine Valve Testing | | | | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | | | |
| Booth Operator:: No triggers are required for Event 1 | | | | | | | | |
| Indication | s Available: N/A | | | | | | | |
| EVALUATOR NOTE: This is a Normal evolution – After it has been determined that the operators have demonstrated their competencies the next event can be triggered | | | | | | | | |
| | CRS | Implement GOP-4B, POWER OPERATION (MODE 1 - DESCENDING) to reduce power to 90% for Turbine Valve Testing. | GOP-4B | | | | | |

| Op Test No | D.: NRC ILO 11-01 Scenario # 1 Event # 1 Page 8 of 37 | |
|------------|--|-------|
| Event Desc | cription: Lower Power IAW GOP-4B for Turbine Valve Testing | |
| Time | Position Applicant's Actions or Behavior | |
| | | GOP-4 |
| | GENERAL NOTES | |
| A. | to perform steps in advance after thorough evaluation of plant conditions and impact by the Shift Supervisor or Control Room Supervisor. | |
| В. | Axial Flux Difference, ΔI , should be maintained within limits per V.C. Summer Curve Book, Figure I-4.1 during Reactor Power Operation above 50% per Tech Spec 3.2.1. | |
| C. | After any Thermal Power change of greater than 15% within any one hour, Attachment III.H. of GTP-702 must be completed. | |
| D. | If time allows, all load changes should be discussed with the Load Dispatcher prior to commencing the load change. | |
| E. | If Reactor Power is stabilized during this procedure for the purpose of raising power per GOP-4A, a Power Range Heat Balance shall be performed. | |
| | REACTOR CONTROL | |
| Α. | During operation with a positive Moderator Temperature Coefficient: | |
| | Power and temperature changes should be slow and will require constant operator attention. | |
| | All power and load changes should be performed in small increments. | |
| В. | Rod Control should be maintained in Automatic if any Pressurizer PORV is isolated. | |
| C. | If at any time, power decreases unexpectedly below 0.1% on any Power Range NI (computer indication available) OR below 1.0% on any Power Range NI control board indication (computer not available): | |
| | No positive reactivity will be added by rods or dilution. | |
| | A complete reactor shutdown shall be performed per GOP-5. | |
| | A controlled reactor startup may be commenced per GOP-3 once the event has been reviewed by Reactor Engineering. | |
| | TURBINE CONTROL | |
| A. | If during power descension plant stabilization is required, Use the EHC HMI: Control/Load screen, select HOLD. | |
| В. | To resume power descension select the recommended Load Ramp Rate | |
| C. | Turbine Load values are approximate and provided as initial starting points for load changes. When desired Reactor or Turbine parameters are achieved stabilize (if necessary) and proceed as directed. | |
| D. | The load limit "ramp rate" buttons only affect how fast the Load Limit Ref. moves to the new Load Limit Setpoint. Load reductions made using the limiter will always occur at 30% per minute. | |
| E. | The load limiter will reduce turbine load if it is set more than 2% below the current Load Reference value. Load will only be shed until the Load Reference value is once again within 2% of Load Limit Ref. | |
| | MSR CONTROL | |
| Α. | Do not exceed 50°F Δ T between the inlets to the Low Pressure Turbine. | |
| В. | When in Manual, do not exceed 25°F per half-hour temperature change rate for the tube side of the Moisture Separator/Reheater. | |

| 2013 NRC | Scenario 1 | Scenario Outline Form E | S-D-1 | | | | |
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| Op Test N | o.: NRC ILO 11- | 01 Scenario # 1 Event # 1 Page 9 of 37 | | | | | |
| Event Des | cription: Lower Po | wer IAW GOP-4B for Turbine Valve Testing | | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | | |
| | | CAUTION 3.1 through 3.12 | GOP-4B | | | | |
| a. The of G | rmal Power chan TP-702 Attachm | ges of greater than 15% in any one-hour period requires completion ent 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. | | | | | | | |
| | | NOTE 3.1 through 3.12 | GOP-4B | | | | |
| a. Step | 3.1 lowers Read | ctor Power from 100% to 90%. | | | | | |
| b. If the shou | e RCS will be ope uld be initiated pe | ened for maintenance during the shutdown, degassing of the RCS er SOP-102, Chemical And Volume Control System. | | | | | |
| c. The char | setpoint for IFK3 nges to maintain | 136, FLOW TO DEAERATOR, should be adjusted during power LI-3136, DEAER STOR TK NR LVL, between 2.5 and 5.0 feet. | | | | | |
| | CREW | Reduce Reactor Power to 90% as follows: | GOP-4B | | | | |
| | BOP | Using the EHC HMI, Control/Load screen, reduce load per SOP- 214 at a rate of 1% per minute or less. | GOP-4B | | | | |
| The Syster MVARs in | m Controller shou a five minute per | <u>NOTE 3.1.b</u> uld be notified prior to manually changing MVARs by more than 50 iod, unless the change is needed to prevent equipment damage. | GOP-4B | | | | |
| | BOP | As load decreases, adjust Megavars using GEN FIELD VOLT ADJ as requested by the System Controller and within the Estimated Generator Capability Curve (Enclosure A). | GOP-4B | | | | |
| | RO | Maintain Tavg within the control band by Control Rod motion or boron concentration changes.GOP-4B | GOP-4B | | | | |
| | PO | Borate or dilute per SOP-106, Reactor Makeup Water System, to maintain the following parameters: | GOP-4B | | | | |
| | NU | 1) ΔI within limits. 2) Control Rods above the Rod Insertion Limit. | | | | | |
| | BOP | Monitor Steam Generator Blowdown Condensate return temperature for proper operation as DA temperature is lowered. | GOP-4B | | | | |
| | BOP | Ensure MSR's are in Temp Ramp mode. | GOP-4B | | | | |
| | | | - | | | | |

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|--|---|---|--------|--|--|--|--|
| Event Description: Lower Power IAW GOP-4B for Turbine Valve Testing | | | | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | | |
| | BOP | Monitor MSR temperatures and Main Turbine vibration levels closely as Main Turbine load is reduced. | GOP-4B | | | | |
| To minimiz be limited t | <u>CAUTION 3.1.h</u> To minimize stress in the Low Pressure Turbines, Hot Reheat Steam temperature changes must be limited to 125°F/hr. | | | | | | |
| | BOP | BOP If necessary, manually control MSRs per SOP-204, Extraction Steam, Reheat Steam, Heater Vents And Drains, maintaining MSR temperatures on program | | | | | |
| | CREW | If desired, stabilize at 90% Reactor Power, otherwise proceed to Step 3.2. | GOP-4B | | | | |
| EVALUATOR NOTE: The next event may be triggered after a significant power change has been observed. | | | | | | | |

| Op Test No. | NRC ILO 11- | •01 Scenario # 1 Event # 2 Page 11 of 37 | |
|---|---|--|-------------|
| Event Descr | iption: "B" SG Le | evel Inst Failure LT-486 Fails HIGH | |
| Time | Position | Applicant's Actions or Behavior | |
| Booth Op | perator: Initia | ate Event 2 (TRIGGER 2) when directed. | |
| Indications XCP-624 2-5 XCP-624 2-7 | Available: 5, SG B LVL DE 1, SG B LVL HI | EV -HI | |
| | BOP | Enters ARP-001-XCP-624 2-5 SG B LVL DEV | XCP-624 2-5 |
| | | CORRECTIVE ACTIONS: | XCP-624 2-5 |
| | BOP | If required, restore Steam Generator B level to between 60% and 65% by performing either or both of the following: | XCP-624 2-5 |
| | | a. Manually control PVT-488, SG B FWF, as required. | |
| | | b. Manually control Feedwater Pump speed as follows: | |
| | | Place the Feedwater Pump MASTER SPEED CNTRL in MAN. | |
| | | Adjust the differential pressure between Feedwater Pump discharge header pressure and Main Steam header pressure, as required, to restore Steam Generator water level. | |
| | BOP | Evaluate SG B Narrow Range level indicators LI-484, LI-485, and LI-486: | XCP-624 2-5 |
| | | For decreasing level: | XCP-624 2-5 |
| | | At 45% Narrow Range level: (a) Manually control PVT-488, SG B FWF, as required. (b) Ensure feed flow is greater than steam flow by 200 kbh to 400 kbh. | |
| | | 2) At 40% Narrow Range level: (a) Trip the reactor. (b) Ensure both Motor Driven Emergency Feed pumps are in service to deliver full system flow. | |
| | | If FCV-488, B FCV, malfunctioned go to AOP-210.1, Feedwater Flow Control Valve Failure. [NO] | XCP-624 2-5 |

| Ор | Test No | D.: NRC ILO 1 | 1-01 Scenario # 1 Event # 2 Page 12 of 37 | |
|-----|--|----------------------|--|--------------------|
| Eve | ent Deso | cription: "B" SG | Level Inst Failure LT-486 Fails HIGH | |
| Ti | me | Position | Applicant's Actions or Behavior | |
| | | | If a Main Feedwater Pump has tripped or is malfunctioning go to AOP-210.3, Feedwater Pump Malfunction. [NO] | XCP-624 2-5 |
| | | CRS | If an instrument channel has failed, go to AOP-401.11, Steam Generator Level Control And Protection Channel Failure. | XCP-624 2-5 |
| | | CRS | Implement AOP-401.11, STEAM GENERATOR LEVEL CONTRO AND PROTECTION CHANNEL FAILURE | AOP-401.11 |
| IC | DA | BOP | Adjust the Feedwater Flow Control Valve as necessary to restore Narrow Range level in the AFFECTED SG to between 60% and 65%. | AOP-401.11 |
| | CRS Within 72 hours, place the failed channel protection bistables in a tripped condition: | | | |
| | | CRS | a. Identify the associated bistables for the failed channel. REFEI TO Attachment 1. | २ AOP-401.11 |
| | | | Excerpt from AOP-401.11 Attachment 1 | |
| | | | STEAM GENERATOR LEVEL PROTECTION CHANNELS | AOP-401.11 |
| | INSTRU | MENT ASSOCIATE | D BISTABLE LOCATION TRIP STATUS LIGHT TECH SPECS STPS | |
| | LT-48 | 6 LB-486A LB-486C | C3-730-BS-1 C3-730-BS-2 CHAN III SG B LB-486A CHAN III SG B LB-486C TABLE 3.3-1 ITEM 13 TABLE 3.3-3 ITEMS 5, 6.c 302.025 345.028 | |
| | | CRS | Refers to Technical Specification Table 3.3-1 and determines that the inoperable channel must be placed in a tripped condition within 72 hours. | TECH SPEC 3.3.1 |
| | | CRS | Refers to Technical Specification Table 3.3-3 and determines that the inoperable channel must be placed in a tripped condition within 72 hours. | TECH SPEC 3.3.2 |
| | | CRS | b. Record the following for each associated bistable on SOP-401, REACTOR PROTECTION AND CONTROL SYSTEM, Attachment I: Instrument. | SOP-401 |
| | | | Associated Bistable Bistable Location STPs | |
| | | CRS | Complete SOP-401 Attachment I. | SOP-401 |

| 2013 NRC Sc | enario 1 | Scenario Outline | | | Form ES-D-1 | | | | | |
|--|-----------------------------|--------------------|------------|----------------|-------------|-------|------|------|----|---|
| Op Test No.: | NRC ILO 11-01 | Scenario # | 1 | Event # | 2 F | Page | 13 | of | 37 |] |
| Event Descrip | tion: "B" SG Level Ir | nst Failure LT-486 | Fails HIGF | ł | | | | | | |
| Time | Position | | Applicant | s Actions or E | Behavio | r | | | | |
| Booth Operator: Acknowledge requests for assistance and inform the crew that support personnel will be assigned. | | | | | | | | | | |
| EVALUATOR The next eve | NOTE: nt may be initiate | d after Technica | al Specifi | cations ha | ave be | en ad | dres | sed. | | |

| Op Test No | D.: NRC ILO 11- | 01 Scenario # 1 Event # 3 Page 14 of 37 | | | | |
|---|---|--|-----------|--|--|--|
| Event Des | cription: PT-446 (C | Controlling turbine first stage pressure transmitter) fails to 0 over 15 | | | | |
| Time | Position | Applicant's Actions or Behavior | _ | | | |
| | | | | | | |
| Booth C | perator: Initia | te Event 3 (TRIGGER 3) when directed. | | | | |
| Indication | s available: | | | | | |
| Uncontrolle | ed Rod Motion | | | | | |
| XCP-615, 2-5, RCS TAVG-TREF HI/LO; | | | | | | |
| XCP-624-4 | -2, 5-2, 6-2; SG | A, B, C STM FLO HI | | | | |
| EVALUAT The crew of for AOP-4 control ste | ORS NOTE: could enter the 01.7, TURBINE I eam generator le | ARP but it is likely that they will recognize the entry condition FIRST STAGE PRESSURE CHANNEL FAILURE. The BOP will evel during this event as a result of the previous failure. | | | | |
| | CRS | Enters AOP-401.7, Turbine First Stage Pressure Channel Failure | AOP-401.7 | | | |
| ΙΟΑ | RO | Place Rod Control Bank Select Switch to MANUAL | AOP-401.7 | | | |
| | | Ensure TREF 1 ST STG PRESS switch is positioned to the operable channel: | AOP-401.7 | | | |
| | RO | P446, CH III. (FAILED) OR PT-447, CH IV | | | | |
| | RO | Adjust Control Rods until Tavg is within 1.0° F of Tref. | AOP-401.7 | | | |
| | BOP | Check if Main Turbine load is greater than 10% | AOP-401.7 | | | |
| | | Within one hour, verify the following permissives are dim: | AOP-401.7 | | | |
| | CRS | P-13, 1st STG PRESS P-7, REACTOR TRIP BLOCKED | | | | |
| EVALUATOR NOTE: Due to the windup (integral) characteristic of the Rod Control function, the crew may not immediately place rods back in automatic. | | | | | | |
| | RO | Restore automatic rod control. | AOP-401.7 | | | |
| | BOP | Place Steam Dump Mode Select Switch in STM PRESS. | AOP-401.7 | | | |

| Op Test N | o.: NRC ILO | 11 -01 S | Scenario # 1 | Event # 3 | Page 15 | of 37 |] |
|--|---|--|--|----------------------------------|--------------------------------|--------------------------|--------------------|
| Event Des | cription: PT-44 | 6 (Controlling | turbine first stage press | ure transmitter) | fails to 0 over | 15 | |
| Time | Position | | Applicant | s Actions or Beh | avior | | _ |
| Booth C |)perator: | | | | | | |
| AclWaUse | knowledge red iit 3 minutes v e TRIGGER 1 | quests for su when reques 0 to place A | ipport. ted to place AMSAC in MSAC in BYPASS | BYPASS the | en report comp | letion. | |
| | CRS | Notify I | &C to place AMSAC in | BYPASS. | | | AOP-401.7 |
| | CRS | Within tripped | 72 hours, place the fail condition: | led channel pi | rotection bista | bles in a | AOP-401.7 |
| | CRS | Identify Attachr | ^y the associated bistabl nent 1. | les for the faile | ed channel. R | EFER TO | AOP-401.7 |
| EVALUAT | OR NOTE: A | ttachment e | E FIRST STAGE PRESSURE PRO CHANNELS | TECTION | | | |
| INSTRUMEN | ASSOCIATED T BISTABLE | BISTABLE LOCATION | TRIP STATUS LIGHT | ТЕСН | SPECS | STPS | |
| PT-446 | FB-474A FB-484A FB-494A | C3-741-BS-1 C3-746-BS-1 C3-748-BS-1 | CHAN III LPA FB-474A CHAN III LPB FB-484A CHAN III LPC FB-494A | TABLE 3.3-1 I TABLE 3.3-3 I | TEMS 19.B, E TEM 4.d | 302.052 345.034 | |
| | CRS | Record REACT Attachr | I the following for each OR PROTECTION AN nent I: Instrument Associated Bistable. Bistable Location. STPs. | associated bi | stable on SOF SYSTEM, | P-401, | AOP-401.7 |
| CRS Refers to Technical Specification Table 3.3-1 and within one hour determines by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition. | | | | | Tech Spec 3.3.1 | | |
| | CRS | Refers the ino 72 hou | to Technical Specificat perable channel must l rs. | tion Table 3.3 be placed in a | -3 and determ tripped condi | ines that tion within | Tech Spec 3.3.2 |
| Booth Operator: Acknowledge requests for assistance and inform the crew that support personnel will be assigned. | | | | | | | |

| Op Test No | DI: NRC ILO 11 | 01 Scenario # 1 Event # 3 Page 16 of 37 | | | | |
|---|--------------------|--|-----------|--|--|--|
| Event Desc | cription: PT-446 (| Controlling turbine first stage pressure transmitter) fails to 0 over 15 | | | | |
| | second | | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | |
| | CRS | Notify I&C to place the failed channel protection bistables in a tripped condition within 72 hours: FB-474A FB-484A FB-494A | AOP-401.7 | | | |
| | CRS | • The | AOP-401.7 | | | |
| EVALUATOR NOTE: The next event may be initiated after I&C is called to trip the bistables. | | | | | | |

| Op Test No.: NRC ILO 11-01 | | 01 Scenario # 1 Event # 4 Page 17 of 37 | | | | | | |
|---|--|---|-------------|--|--|--|--|--|
| Event Des | cription: EHC Pum | p trips (BU does not auto-start and must be manually started) | | | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | | | |
| Booth C | Booth Operator: Initiate Event 4 (TRIGGER 4) when directed. | | | | | | | |
| Indication Control Sw XCP-631, XCP-631, | s available: itch Red and Gre 1-4, EHC PP A M 1-2, EHC FLUID | een lights IOTOR OVRLD PRESS LO | | | | | | |
| | BOP | Enters ARP-001-XCP-631 1-4 | XCP-631 1-4 | | | | | |
| | BOP | AUTOMATIC ACTIONS: 1. The pump may trip if the condition is not corrected. 2. If the pump trips, the standby pump starts at 1300 psig. | XCP-631 1-4 | | | | | |
| | | CORRECTIVE ACTIONS: | XCP-631 1-4 | | | | | |
| | BOP | If EHC PUMP A is still running, verify high amps. [NO] (EHC Pump A has tripped) | XCP-631 1-4 | | | | | |
| | BOP | Start EHC PUMP B and observe motor amps. | XCP-631 1-4 | | | | | |
| | BOP | If EHC PUMP A is still running with higher amps than EHC PUMP B, secure EHC PUMP A and continue to monitor EHC PUMP B [NO] (N/A A Pump tripped) | XCP-631 1-4 | | | | | |
| Booth C | perator: | | | | | | | |
| If ca | alled to investigat alled to investigat | te the EHC pump failure – report no fault is apparent. te the EHC system for leaks – report no EHC leaks. | | | | | | |
| | BOP | Dispatch an operator to check for EHC System leaks. | XCP-631 1-4 | | | | | |
| EVALUATOR NOTE: The failure of the backup EHC pump to auto-start results in EHC pressure continuing to decrease. The Low Pressure alarm will alert operators to the failure – if not previously discovered – however this alarm provides no additional operator actions | | | | | | | | |
| | BOP | Respond to alarm EHC FLUID PRESS LO (XCP-631, 1-2) | XCP-631 1-4 | | | | | |
| EVALUAT | OR NOTE: The I | next event may be initiated after the B EHC pump is started. | | | | | | |

| Op Test N | lo.: NRC ILO 11 | -01 Scenario # 1 Event # 5 Page 18 of 37 | |
|------------------------|---------------------------------------|---|----------------|
| Event Des | scription: SGTL on | "A" SG (Leak is initially greater than TS leakage limits increasing until | |
| Time | Position | Applicant's Actions or Behavior | |
| Booth C | Operator: Initia | ate Event 5 (TRIGGER 5) when directed. | |
| Indication XCP-646, | s available: 2-1, MN STM LI | NE RM-G19 HI RAD | |
| | BOP | Respond to alarm XCP-646, 2-1, MN STM LINE RM-G19 HI RAD | XCP-646 2-1 |
| | | CORRECTIVE ACTIONS: | XCP-646 2-1 |
| | BOP | Verify the alarm is valid and identify the Main Steam line affected by observing RM-G19A, B, and C and R/R-8. | XCP-646 2-1 |
| | CRS | Request Health Physics perform radiological surveys around the Main Steam lines. | XCP-646 2-1 |
| | CRS | Direct Chemistry to sample all Steam Generators for activity. | XCP-646 2-1 |
| | | Align the condenser exhaust to the Auxiliary Building Charcoal Exhaust as follows: | XCP-646 2-1 |
| | BOP | a. Open XVB00110-AR, MN&AUX COND VAC PP CHAR EXH DISCH VALVE (TB-436). | |
| | | b. Close XVB00109-AR, MN&AUX COND VAC PUMP ATMOS DISCH VALVE (TB-436). | |
| | BOP | Reduce all Steam Generator blowdown flows to minimum. | XCP-646 2-1 |
| | BOP | If in service, secure the Condensate Polishing System per SOP-203. | XCP-646 2-1 |
| | | SUPPLEMENTAL ACTIONS: | XCP-646 2-1 |
| | CRS | If the alarm is valid, refer to AOP-112.2. (YES) If the alarm is invalid, remove RM-G19A, B or C from service per SOP-124. [NO] Refer to Technical Specification 3.3.3.1. | |

| Op Test N | o.: NRC ILO 11 | -01 Scenario # 1 Event # 5 Page 19 of 37 | |
|-------------------------|--|--|-----------|
| Event Des | cription: SGTL on | "A" SG (Leak is initially greater than TS leakage limits increasing until | |
| Time | Position | Applicant's Actions or Behavior | |
| Booth C | Operator: | | |
| Acl | knowledge reque | est for HP to perform surveys around the Main Steam lines. and then report elevated background activity on 'A' SG. | |
| • Acl | o Wait 30 min Report in 10 | est for Chemistry to sample all SGs for activity. and then report elevated activity on 'A' SG. minutes if requested to use a frisker. | |
| • Acl | knowledge reque ○ Wait 5 min t Charcoal Ex | est to put condenser exhaust to AB exhaust. To report that the condenser exhaust is aligned to Auxiliary Building Anaust | |
| | CRS | Implement AOP-112.2, Steam Generator Tube Leak Not Requiring SI | AOP-112.2 |
| * | RO | Check if PZR level can be maintained: Open FCV-122, CHG FLOW, as necessary to maintain PZR level. Verify PZR level is at or trending to program level | AOP-112.2 |
| * | CRS/RO | Check if SI is required: Check if any of the following criteria are met: (NO) PZR level is decreasing with Charging maximized and Letdown isolated. OR PZR level is approaching 12%. OR PZR pressure is approaching 1870 psig. ALTERNATIVE ACTION GO TO step 3 | AOP-112.2 |
| * | RO | Verify VCT level is being maintained between 20% and 40%. | AOP-112.2 |

| 0 | p Test N | o.: NRC ILO 11 | -01 Scenario # 1 Event # 5 Page 20 of 37 | | | |
|---|--|--|---|-----------|--|--|
| E | vent Des | cription: SGTL on | "A" SG (Leak is initially greater than TS leakage limits increasing until | | | |
| | Time | Position | Applicant's Actions or Behavior | | | |
| IF Steam G been deter a. Estimat | | | IF Steam Generator primary to secondary tube leakage has not been determined, THEN perform the following: a. Estimate the RCS leak rate. refer to IPCS CHGNET . | AOP-112.2 | | |
| | c. Comply with the applicable Tech Spec 3.4.6.2 action statement. | | | | | |
| | CRS Refers to Technical Specification 3.4.6.2 and determines that leakage exceeding 150 gallons per day primary-to-secondary leakage through any one steam generator requires the unit be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours. | | | | | |
| В | ooth C |)perator: Ack | nowledge request to sample all SG secondary sides for activity. | | | |
| | | CRS | Notify Chemistry to sample all SG secondary sides for activity. | AOP-112.2 | | |
| | | | NOTE - Step 6 | AOP-112.2 | | |
| • | Rate o Genera | f plant shutdown ator primary to se | must be evaluated based on magnitude of RCS leak rate (Steam econdary tube leakage). | | | |
| Steam Generator primary to secondary tube leakage rate, and rate of increase, is represented by the following IPCS Computer points: a. UR1019, S/G LEAKAGE FROM RMA9 (in gpd). b. UR1019-R, S/G LEAKAGE FROM RMA9-RATE (in gpd/hr). | | | | | | |
| • | Conditi evalua PLAN. | ions for impleme ted using EPP-0 | nting Emergency Plan Procedures should be 01, ACTIVATION AND IMPLEMENTATION OF EMERGENCY | | | |
| • | Due to elevate critical. | N-16 gamma ra | diation effects, RM-G19A(B)(C), STMLN HI RNG GAMMA, will display should not be used for classification of EAL while the Reactor is | | | |

| Op Test N | o.: NRC ILO 11 | 01 Scenario # 1 Eve | nt # 5 Page 21 of 37 | | |
|---------------------|--|---|--|-------|--|
| Event Des | cription: SGTL on | A" SG (Leak is initially greater than TS I | eakage limits increasing until | | |
| | operator action is required to maintain Pressurizer level control) | | | | |
| Lime | Position | Applicant's Actio | ns or Behavior | | |
| | | IF RCS leak rate (Steam Generator leakage) is GREATER THAN OR E gpm), THEN initiate a plant shutdow GOP-4B, POWER OPERATION (M | primary to secondary tube AOP- QUAL TO 75 gpd (YES) (.05 <i>n</i> per the following table using ODE 1 DESCENDING). | 112.2 | |
| | | R | M-A9 | | |
| | | LEAKAGE | ACTION | | |
| | CRS | \geq 75 gpd AND increasing in Mode 3 within the n \geq 30 gpd/hr | 1 hour at 1% or 3% per minute, <u>AND</u> ext 2 hours (≤ 3 hours total). | | |
| | | ≥ 150 gpd Be in Mode 3 within 6 | hours at 1/2% or 1% per minute. | | |
| | | ≥ 75 gpd for > 1 hour <u>AND</u> increasing < 30 gpd/hr | hours at 1/2% or 1% per minute. | | |
| | | STEAM GENERATOR <u>OR</u> | BLOWDOWN ANALYSIS | | |
| | | LEAKAGE AC | TION | | |
| | | ≥ 75 gpd Be in Mode 3 within 6 | hours at 1/2% or 1% per minute. | | |
| | CRS | Determines that leakage is ≥ 150 gp Mode 3 within 6 hours at 1/2% or 1% | od and directs actions to be in AOP- % per minute. | 112.2 | |
| | CRS | Initiate a Reactor shutdown: REFER OPERATION (MODE 1 - DESCEND procedure. | AOP- DING) while continuing with this | 112.2 | |
| EVALUAT down the | OR NOTE: The unit IAW GOP- | next event may be initiated after th B POWER OPERATION (MODE 1 - | e decision is made to shut DESCENDING) | | |

| Op Test No | D.: NRC ILO 11- | 01 Scenario # 1 Event # 6 & 7 Page 22 of 37 | | | |
|--|---|--|----------------|--|--|
| Event Dese | cription: SGTL on " | A" SG (Leak is initially greater than TS leakage limits increasing until action is required to maintain Pressurizer level control) | | | |
| Time | Position | Applicant's Actions or Behavior | | | |
| Booth O | perator: Initia | te Event 6 (TRIGGER 6) when directed. | | | |
| Indication XCP-616 1 | Indications available: XCP-616 1-5, PZR LS HI/LO | | | | |
| EVALUAT minutes. | OR NOTE: The S | SG Tube Leak will increase to a 600 gpm Tube Rupture over 2 | | | |
| | RO | Responds to annunciator XCP-616 1-5, PZR LS HI/LO | XCP-616 1-5 | | |
| EVALUAT action IAW | OR NOTE: The (/ the continuous | CRS will recognize the change in plant conditions and direct s action step in AOP-112.2 to check if SI is required. | | | |
| | | CRS directs the RO to: | AOP-112.2 | | |
| | | • Trip the Reactor. | | | |
| | CRS | GO to EOP-1.0 REACTOR TRIP/SAFETY INJECTION | | | |
| | | When EOP-1.0 Immediate Actions are completed THEN actuate SI. | | | |
| RCP TRIP | CRITERIA | REFERENCE PAGE FOR EOP-1.0 | EOP-1.0 | | |
| a. IF Pł | nase B Containm | ent Isolation has actuated (XCP-612 4-2), THEN trip all RCPs. | | | |
| b. IF bo | oth of the followin | g conditions occur, THEN trip all RCPs: | | | |
| • SI f | low is indicated c | on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. | | | |
| AND RCS Wide Range pressure is LESS THAN 1418 psig. | | | | | |
| 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. | | | | | |
| MONITOR SPENT FUEL COOLING | | | | | |
| Periodia recover • Spe • Spe | cally check status y: ent Fuel Pool leve ent Fuel Pool tem | s of Spent Fuel Cooling by monitoring the following throughout event el. perature. | | | |

| Op Test No | D.: NRC ILO 11- | 01 Scenario # 1 Event # <u>6 & 7</u> Page <u>23</u> of <u>37</u> | | | |
|---|--|---|---------|--|--|
| Event Dese | Event Description: SGTL on "A" SG (Leak is initially greater than TS leakage limits increasing until | | | | |
| Time | Position | Applicant's Actions or Behavior | | | |
| | | NOTE | EOP-1.0 | | |
| | | NOTE | | | |
| • Steps 1 | through 5 are In | nmediate Operator Actions. | | | |
| The EC Condition | ons for implement | nting Emergency Plan Procedures should be evaluated using EPP- | | | |
| 001, A0 | CTIVATION AND | IMPLEMENTATION OF EMERGENCY PLAN. | | | |
| | | Verify Reactor Trip: | EOP-1.0 | | |
| ΙΟΑ | RO | • Trip the Reactor using either Reactor Trip Switch. | | | |
| | | Verify all Reactor Trip and Bypass Breakers are open (YES) | | | |
| | | Verify Reactor Power level is decreasing. (YES) | | | |
| | | Verify Turbine/Generator Trip: | EOP-1.0 | | |
| | | a. Verify all Turbine STM STOP VLVs are closed. | | | |
| ΙΟΑ | BOP | b. Ensure Generator Trip (after 30 second delay): 1) Ensure the GEN BKR is open. | | | |
| | | 2) Ensure the GEN FIELD BKR is open. | | | |
| | | 3) Ensure the EXC FIELD CNTRL is tripped. | | | |
| ΙΟΑ | BOP | Verify both ESF buses are energized. | EOP-1.0 | | |
| | | Check if SI is actuated: | EOP-1.0 | | |
| | | a. Check if either: | | | |
| | 50 | SI ACT status light is bright on XCP-6107 1-1. | | | |
| IOA | RO | OR | | | |
| | | • Any red first-out SL appunciator is lit on XCP-626 top row | | | |
| | | | | | |
| | | b. Actuate SI using either SI ACTUATION Switch | | | |

| Op Test No | D.: NRC ILO 11- | 01 Scenario # _ 1 Event # <u>6 & 7</u> Page <u>24</u> of <u>37</u> | | | |
|-----------------|---|---|---------|--|--|
| Event Dese | cription: SGTL on ' | "A" SG (Leak is initially greater than TS leakage limits increasing until | | | |
| Time | Time Position Applicant's Actions or Behavior | | | | |
| IOA | RO | Check if SI is required: a. Check if any of the following conditions exist: 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 psid. b. Actuate SI using either SI ACTUATION Switch. | EOP-1.0 | | |
| | | | | | |
| EVALUAT | OR NOTE: | | | | |
| • Atta • The | achment 3 is inc ere are no failure | cluded as a separate section at the end of this D-2. es associated with the Attachment 3 | | | |
| | CRS | Initiate ATTACHMENT 3, SI EQUIPMENT VERIFICATION. | 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 | EOP-1.0 | | |
| | RO | Check RCS temperature: With any RCP running, RCS Tavg is stable at OR trending to 557°F | EOP-1.0 | | |

| Op Test No | D.: NRC ILO 11- | 01 Scenario # 1 Event # <u>6 & 7</u> Page <u>25</u> of <u>37</u> | |
|---|---|---|---------|
| Event Dese | cription: SGTL on | A" SG (Leak is initially greater than TS leakage limits increasing until | |
| Time | Position | Applicant's Actions or Behavior | |
| | | Check PZR PORVs and Spray Valves: | EOP-1.0 |
| | | a. PZR PORVs are closed. | |
| | | b. PZR Spray Valves are closed. | |
| | RO | c. Verify power is available to at least one PZR PORV Block | |
| | | MVG-8000A, RELIEF 445 A ISOL. | |
| | | MVG-8000B, RELIEF 444 B ISOL. | |
| | | MVG-8000C, RELIEF 445 B ISOL. | |
| | | d. Verify at least one PZR PORV Block Valve is open. | |
| | Seal Injec | <u>NOTE - Step 11</u> tion flow should be maintained to all RCPs.EOP-1.0 | EOP-1.0 |
| | | Check if RCPs should be stopped: | EOP-1.0 |
| | | a. Check if either of the following criteria is met: | |
| | | Annunciator XCP-612 4-2 is lit (PHASE B ISOL). | |
| | RO | OR | |
| | | RCS pressure is LESS THAN 1418 psig AND SI flow is indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. | |
| EVALUAT may deter | OR NOTE: If the mine that a faul | SG PORV failure has not been previsouly detected, the crew ted generator exists and transition to EOP-3.0 first. | |
| | | Verify no SG is FAULTED: | EOP-1.0 |
| | BOP | No SG pressure is decreasing in an uncontrolled manner. No SG is completely depressurized. | |
| EVALUAT secondary | OR NOTE: The or plant radiation | crew will determine that a SGTR is in progress based on monitor readings and will go to EOP-4.0 SGTR | |
| If radiatior may contin EOP-4.0 S | n levels are not nue with EOP-1. GTR. | high enough to indicate a SGTR is in progress the candidates 0 until Step 21 when SG increasing NR level will direct them to | |

| Op Test No | D.: NRC ILO 11 | •01 Scenario # | 1 | Event # | 6&7 | Page | 26 | of | 37 | |
|------------|-------------------|--|--|----------------------------------|--|---|------------------------------|--------|-------|---------|
| Event Desc | cription: SGTL on | "A" SG (Leak is initially g | greater intain I | - than TS lea Pressurizer | akage lim level con | nits increated trol) | asing | until | | |
| Time | Position | | Applic | cant's Actions | or Behav | ior | | | | |
| | RO | Verify Secondary rat RUPTURED: • RM-G19A(B)(C) • RM-A9, CNDSR • RM-L3, STEAM MONITOR. • RM-L10, SG BL0 MONITOR. | diatior , STM EXH/ GENE OWDC | N HI RNO AUST GAS ERATOR B | G GAMN G GAMN G ATMOS LOWDC DISCHA | G tubes : IA. S MONI S MONI WN LIC RGE LIC | are N TOR ฉบเD ฉบเD | ОТ | | EOP-1.0 |
| | CRS | GO TO EOP-4.0, ST | ΓEAM | GENERAT | FOR TU | BE RUP | TUR | E, Ste | әр 1. | EOP-1.0 |

| С | Op Test No.: NRC ILO 11-01 Scenario # 1 Event # 6 & 7 Page 27 of 37 |] |
|---|---|---------|
| E | vent Description: SGTL on "A" SG (Leak is initially greater than TS leakage limits increasing until | |
| | Time Position Applicant's Actions or Behavior | |
| | REFERENCE PAGE FOR EOP-4.0 | EOP-4.0 |
| 1 | SI REINITIATION CRITERIA | |
| | IF either of the following conditions occurs, THEN start Charging Pumps and operate valves as necessary: | |
| | RCS subcooling on TI-499A(B), A(B) TEMP °F, can NOT be maintained GREATER THAN 52.5°F [67.5°F]. | |
| | OR | |
| | PZR level can NOT be maintained GREATER THAN 10% [28%]. | |
| | IF SI Reinitiation occurs after Step 27, THEN GO TO EOP-4.2, SGTR WITH LOSS OF REACTOR COOLANT: SUBCOOLED RECOVERY DESIRED, Step 1. | |
| 2 | SECONDARY INTEGRITY TRANSITION CRITERIA | |
| | IF any unisolated SG pressure is decreasing in an uncontrolled manner OR is completely depressurized, THEN GO TO EOP-3.0, FAULTED STEAM GENERATOR ISOLATION, Step 1, unless it is needed for RCS cooldown. | |
| 3 | COLD LEG RECIRCULATION TRANSITION CRITERION | |
| | IF RWST level decreases to LESS THAN 18%, THEN GO TO EOP-2.2, TRANSFER TO COLD LEG RECIRCULATION, Step 1. | |
| 4 | MULTIPLE TUBE RUPTURE CRITERIA | |
| | IF any INTACT SG level increases in an uncontrolled manner OR any INTACT SG has abnormal radiation, THEN stop any cooldown or depressurization in progress and RETURN TO EOP-4.0, STEAM GENERATOR TUBE RUPTURE, Step 1. | |
| 5 | 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 | |
| | <u>NOTE</u> : | |
| • | 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. | |

| Op Test No | o.: NRC ILO 11- | 01 Scenario # 1 Event # <u>6 & 7</u> Page <u>28</u> of <u>37</u> | |
|-----------------------------|--------------------------------------|---|---------|
| Event Dese | cription: SGTL on operator | A" SG (Leak is initially greater than TS leakage limits increasing until action is required to maintain Pressurizer level control) | |
| Time | Position | Applicant's Actions or Behavior | |
| | | Check if RCPs should be stopped: | EOP-4.0 |
| | | a. Check if either of the following criteria is met: | |
| | RO | Annunciator XCP-612 4-2 is lit (PHASE B ISOL). OR | |
| | | RCS pressure is LESS THAN 1418 psig AND SI flow is indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. (YES) | |
| | | CAUTION - Step 2 | EOP-4.0 |
| Radiation lotation lotation | evels may have i n obtaining samp | ncreased in steamlines. Proper radiological precautions must be les to minimize personnel exposure | |
| | | Identify the RUPTURED SG(s): | EOP-4.0 |
| | | Narrow Range level in any SG increasing in an uncontrolled manner. | |
| | | OR | |
| | | High Radiation on any of the following: | |
| | CREW | a. RM-G19A(B)(C), STMLN HI RNG GAMMA. b. Local hand held radiation monitor readings taken by Health Physics on the blowdown lines at the following penetrations: XRP0326, SG A Blowdown Line (AB-412 West Pen). XRP0224, SG B Blowdown Line (IB-412 East Pen). XRP0219, SG C Blowdown Line (IB-412 East Pen). | |
| | | OR | |
| | | As determined by Chemistry sample analysis for abnormal activity using a frisker. | |
| EVALUAT ACTIONS | OR NOTE: If the will be performe | Ruptured SG cannot be identified at this time the ALTERNATE | |

| Op Test No | o.: NRC ILO 11- | 01 Scenario # _ 1 Event # <u>6 & 7</u> Page <u>29</u> of <u>37</u> | |
|------------|---------------------|---|---------|
| Event Des | cription: SGTL on ' | "A" SG (Leak is initially greater than TS leakage limits increasing until | |
| Time | Position | Applicant's Actions or Behavior | |
| | | ALTERNATIVE ACTIONS | EOP-4.0 |
| | | Sample all SGs: | |
| | | a) Reset both SI RESET TRAIN A(B) Switches. | |
| | | IF either train of SI does NOT reset, THEN REFER TO SOP- 112, SAFETY INJECTION SYSTEM, OFF NORMAL Section, to manually reset relays. | |
| | BOP | b) Reset Containment Isolation: RESET PHASE A - TRAIN A(B) CNTMT ISOL. RESET PHASE B - TRAIN A(B) CNTMT ISOL. | |
| | | IF either train of Phase A or Phase B does NOT reset, THEN REFER TO SOP-112, SAFETY INJECTION SYSTEM, OFF NORMAL Section, to manually reset relays. | |
| | | c) Place SVX-9398A(B)(C), SG A(B)(C) SMPL ISOL, in AUTO. | |
| | | d) Notify Chemistry to sample all SG secondary sides, and screen samples for abnormal activity using a frisker. | |
| | | WHEN the RUPTURED SG(s) is identified, THEN COMPLETE Steps 3 through 10. Observe the CAUTION prior to Step 3. | |
| | | CONTINUE WITH Steps 11 through 17. | |
| | | Isolate flow from each RUPTURED SG: | EOP-4.0 |
| | | Place the Steamline PWR RELIEF 'A(B)(C) SETPT Controller(s) in MAN and closed. | |
| | | Adjust the PWR RELIEF A(B)(C) SETPT Controller(s) to 8.85 (1150 psig). | |
| | BOP | Place the Steamline Power 'Relief A(B)(C) Mode Switch(s) in PWR RLF. | |
| | | d. Place the PWR RELIEF A(B)(C) 'SETPT Controller(s) in AUTO. | |
| | | e. WHEN RCS Tavg is LESS THAN P-12 (552°F), THEN place both STM DUMP INTERLOCK Switches to BYP INTLK. | |
| | | f. Verify the Steamline PORV closed. (NO) | |

| Op Test No | DI: NRC ILO 11- | 01 Scenario # 1 Event # 6 & 7 Page 30 of 37 | | |
|---|---|---|---------|--|
| Event Description: SGTL on "A" SG (Leak is initially greater than TS leakage limits increasing until | | | | |
| Time | Time Position Strequired to maintain Pressurizer level control) | | | |
| RITICAL TASK | | ALTERNATIVE ACTION | EOP-4.0 | |
| | ВОР | WHEN RUPTURED SG pressure is LESS THAN 1150 psig, THEN verify the associated Steamline PORV is closed. | | |
| | | IF any RUPTURED SG Steamline PORV is open with pressure LESS THAN 1150 psig, THEN close the PORV. | | |
| | | IF any RUPTURED SG Steamline PORV can NOT be closed with pressure LESS THAN 1150 psig, THEN locally unlock and close its isolation valve: | | |
| Ö | | XVG02808A-MS, MS HEADER A POWER RELIEF VALVE ISOL VLV (AB-436 West Pen). | | |
| | | XVG02808B-MS, MS HEADER B POWER RELIEF VALVE ISOL VLV (IB-436). | | |
| | | XVG02808C-MS, MS HEADER C POWER RELIEF VALVE ISOL VLV (IB-436 East Pen). | | |
| CAUTION - Step 3.g | | | | |
| 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. | | | | |
| | NOTE - Step 3.g | | | |
| | If the TD EF | W Pump is tripped, it should be reset as time permits. | | |
| | BOP | IF SG B OR SG C is RUPTURED, THEN perform the following: … (NO) | EOP-4.0 | |
| | | Check level in each RUPTURED SG: | EOP-4.0 | |
| | | a. Verify Narrow Range level in each RUPTURED SG is GREATER THAN 40%. | | |
| | BOP | Stop EFW flow to "A" SG: | | |
| | | 1) Close FCV-3531, MD EFP TO SG A | | |
| | | 2) Close FCV-3536, TD EFP TO SG A | | |
| | | 3) Maintain Narrow Range level in each RUPTURED SG GREATER THAN 40%. | | |

| Op Test No | D.: NRC ILO 11- | 01 Scenario # 1 | Event # 6 & 7 | Page 31 of | 37 |
|--|---|---|------------------------------|------------------------|--------------|
| Event Description: SGTL on "A" SG (Leak is initially greater than TS leakage limits increasing until | | | | | |
| Time | operator Position | action is required to maintain Appl | licant's Actions or Beha | avior | |
| | | | on 5 | | |
| | | <u>CAUTION - 30</u> | <u>ep 5</u> | | |
| The major f isolated be is maintaine | The major flowpaths from each RUPTURED SG (MSIV, TD EFW Pump, and PORV) must be isolated before performing Step 5, to minimize radiological releases and ensure RCS subcooling is maintained. | | | | e oling |
| | BOP | Verify each RUPTURED psig. | SG pressure is GI | REATER THAN 460 | EOP-4.0 |
| | | Determine the required of from the table below: | core exit TC tempe | rature for RCS coold | down EOP-4.0 |
| | | LOWEST RUPTURED SG PRESS (PSIG) | CORE EXIT TC TEMP (°F) | CONTROLLER SETPOINT | |
| | | 1101-1200 | 494 [478] | 4.9 | |
| | CRS | 1001-1100 | 482 [466] | 4.4 | |
| | | 901-1000 | 469 [453] | 3.8 | |
| | | 801-900 | 455 [439] | 3.4 | |
| | | 701-800 | 439 [423] | 2.8 | |
| | | 601-700 | 421 [405] | 2.3 | |
| | | 460-600 | 392 [376] | 1.6 | |
| | RO | Check if any RCP is runr | ning. (NO) | | EOP-4.0 |
| | | ALTERNATE ACTION: | | | EOP-4.0 |
| | CRS | With no RCP running, RCS cooldown and depressurization may cause RUPTURED loop Tcold to falsely indicate a transition to EOP-16.0, RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK, is required. Disregard the RUPTURED loop Tcold indication prior to performing Step 34. | | | IY MAL |
| | NOTE - Step 8 | | | | EOP-4.0 |
| The RCP trip criteria does NOT apply after a controlled cooldown is initiated. Before the Low Steamline Pressure SI signal is blocked, Main Steam Isolation will occur if the Low Steam Pressure rate setpoint is exceeded. | | | | if the | |
| | BOP | Dump steam from each I | NTACT SG: | | EOP-4.0 |

| Op Test No | D.: NRC ILO 11- | 01 Scenario # 1 Event # <u>6 & 7</u> Page <u>32</u> of <u>37</u> | | |
|--|--|--|---------|--|
| Event Description: SGTL on "A" SG (Leak is initially greater than TS leakage limits increasing until | | | | |
| Time | operator Position | Applicant's Actions or Behavior | | |
| | | | | |
| | | a. WHEN RCS Tavg is LESS THAN P-12 (552°F), THEN: | EOF-4.0 | |
| | BOP | Place both STM DUMP INTERLOCK Switches to BYP | | |
| | | INTLK. Place both STMLN SLTRAIN A(B) Switches to BLOCK | | |
| | | | | |
| | BOP | b. Dump steam from each INTACT SG to the Condenser: | EOP-4.0 | |
| | BOP | 1) Verify PERMISV C-9 status light is bright on XCP-6114 1-3. | EOP-4.0 | |
| | | 2) Perform the following: | EOP-4.0 | |
| | | Verify the MS Isolation Valves, PVM-2801A(B)(C), are open for the INTACT SGs. | | |
| | | OR | | |
| | BOP | Open MS Isolation Bypass Valves: | | |
| | | a) Depress both MAIN STEAM ISOL VALVES RESET TRAIN A(B). | | |
| | | b) Open MS Isolation Bypass Valves, PVM-2869A(B)(C), for only the INTACT SGs. | | |
| | BOP | Place the STM DUMP CNTRL Controller in MAN and closed. | EOP-4.0 | |
| | BOP | Place the STM DUMP MODE SELECT Switch in STM PRESS. | | |
| | BOP | Adjust the STM DUMP CNTRL Controller to fully open the Bank 1 Steam Dump Valves. | EOP-4.0 | |
| | NOTE - Step 9 | | | |
| Steps 11 th | Steps 11 through 18 should be performed as time permits, while the cooldown is in progress. | | | |
| | RO | Verify core exit TC temperature is LESS THAN the value determined in Step 6. | EOP-4.0 | |
| NOTE - Step 10 | | | EOP-4.0 | |
| With no RC TC tempera | With no RCPs running, it may be necessary to manually open steam dumps to maintain desired TC temperature. | | | |

| Op Test No | D.: NRC ILO 11- | 01 Scenario # _ 1 Event # <u>6 & 7</u> Page <u>33</u> of <u>37</u> | | |
|--|--|---|---------|--|
| Event Description: SGTL on "A" SG (Leak is initially greater than TS leakage limits increasing until | | | | |
| Time | Time Position Position Applicant's Actions or Behavior | | | |
| | | Stop the RCS cooldown to the Condenser: | EOP-4.0 | |
| | вор | a. Adjust the STM DUMP CNTRL Controller to closed. | | |
| | | Adjust the setpoint to maintain core exit TC temperature per Step 6. | | |
| | | c. Place the STM DUMP CNTRL Controller in AUTO. | | |
| | | Check INTACT SG levels: | EOP-4.0 | |
| | BOP | a. Verify Narrow Range level in INTACT SGs is GREATER THAN 26% [41%]. | | |
| | | b. Control EFW flow to maintain Narrow Range level in INTACT SGs between 40% and 60%. | | |
| | RO | Check PZR PORVs and Block Valves: | EOP-4.0 | |
| | | a. Verify power is available to the PZR PORV Block Valves: | EOP-4.0 | |
| | RO | 1) MVG-8000A, RELIEF 445 A ISOL. | | |
| | KU | 2) MVG-8000B, RELIEF 444 B ISOL. | | |
| | | 3) MVG-8000C, RELIEF 445 B ISOL. | | |
| | | CAUTION - Step 12.b | EOP-4.0 | |
| If any PZR pressure de | If any PZR PORV opens because of high PZR pressure, Step 12.b should be repeated after pressure decreases to LESS THAN 2330 psig, to ensure the PORV recloses. | | | |
| | RO | b. Verify all PZR PORVs are closed. | EOP-4.0 | |
| | RO | c. Verify at least one PZR PORV Block Valve is open. | EOP-4.0 | |
| | BOP | Reset both SI RESET TRAIN A(B) Switches. | EOP-4.0 | |
| | | Reset Containment Isolation: | EOP-4.0 | |
| | BOP | • RESET PHASE A - TRAIN A(B) CNTMT ISOL. | | |
| | | • RESET PHASE B - TRAIN A(B) CNTMT ISOL. | | |

| Op Test No | D.: NRC ILO 11- | 01 Scenario # _ 1 Event # <u>6 & 7</u> Page <u>34</u> of <u>37</u> | | |
|--|--|--|---------|--|
| Event Description: SGTL on "A" SG (Leak is initially greater than TS leakage limits increasing until | | | | |
| Time | Time Position Strequired to maintain Pressurizer level control) | | | |
| | | Place both ESE LOADING SEQ A(B) RESETS to: | EOP-4.0 | |
| | | | | |
| | ВОР | a. NON-ESF LCKOUTS. | | |
| | | b. AUTO-START BLOCKS. | | |
| | | Establish Instrument Air to the RB: | EOP-4.0 | |
| | ВОР | 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. | | |
| | CAUTION - Step 17 | | | |
| RCS press LESS THA | RCS pressure should be monitored. If RCS pressure decreases in an uncontrolled manner to LESS THAN 325 psig, the RHR Pumps must be manually restarted to supply water to the RCS | | | |
| | | Check if RHR Pumps should be stopped: | EOP-4.0 | |
| | | a. Check if any RHR Pump is running with suction aligned to the RWST. | | |
| | DOP | b. Verify RCS pressure is GREATER THAN 325 psig. | | |
| | | c. Stop any RHR Pump which is running with suction aligned to the RWST and place in Standby. | | |
| | BOP | Verify core exit TC temperature is LESS THAN the value determined in Step 6. | EOP-4.0 | |
| | | Stop the RCS cooldown: | EOP-4.0 | |
| | BOP | a. Ensure Step 10 is completed. | | |
| | | b. Adjust steam dump setpoints as necessary to maintain desired core exit TC temperature. | | |
| | BOP | Verify each RUPTURED SG pressure is stable OR increasing. | EOP-4.0 | |

| Op Test No | D.: NRC ILO 11- | 01 Scenario # 1 Event # 6 & 7 Page 35 of 37 | |
|--|-----------------|--|---------|
| Event Description: SGTL on "A" SG (Leak is initially greater than TS leakage limits increasing until | | | |
| Time | Position | Applicant's Actions or Behavior | |
| | | NOTE - Step 21 | EOP-4.0 |
| Subcooling may have been temporarily lost during the RCS cooldown, but should quickly increase when the cooldown is complete. If subcooling increases sufficiently after stopping the cooldown, the transition to EOP-4.2, SGTR WITH LOSS OF REACTOR COOLANT: SUBCOOLED RECOVERY DESIRED, is NOT required. | | | |
| | RO | Verify RCS subcooling on TI-499A(B), A(B) TEMP !F, is GREATER THAN 72.5°F [87.5°F]. | EOP-4.0 |
| | RO | Depressurize the RCS using Normal PZR Spray at the maximum rate: | EOP-4.0 |
| | | a. Establish Normal PZR Spray: | EOP-4.0 |
| | | Using RCP A: | |
| | | | |
| | | 1 0 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 0 0 1 0 0 0 0 0 0 0 0 | |
| | RO | 2) Close PCV-444C, PZR SPRAY, if RCP C is NOT running. | |
| | | Using RCPs B and C: | |
| | | 1) Open PCV-444C, PZR SPRAY. | |
| | | 2) Close PCV-444D, PZR SPRAY, if RCP A is NOT running. | |
| | | b. Use maximum available spray until any one of the following criteria is met: | EOP-4.0 |
| | | PZR level is GREATER THAN 76% [69%]. | |
| | | OR | |
| | RO | RCS subcooling on TI-499A(B), A(B) TEMP °F, is LESS THAN 52.5°F [67.5°F]. | |
| | | OR | |
| | | RCS pressure is LESS THAN RUPTURED SG(s) pressure AND PZR level is GREATER THAN 10% [28%]. | |

| Op Test No | D.: NRC ILO 11- | 01 Scenario # _ 1 Event # <u>6 & 7</u> Page <u>36</u> of <u>37</u> | |
|--|-----------------|--|---------|
| Event Description: SGTL on "A" SG (Leak is initially greater than TS leakage limits increasing until | | | |
| Time | Position | Applicant's Actions or Behavior | |
| | | c. Stop RCS depressurization: | EOP-4.0 |
| | RO | 1) Close both PCV-444C(D), PZR SPRAY. | |
| | | 2) Close PVT-8145, PZR SPRAY FR CVCS. | |
| | CRS | d. GO TO Step 25. Observe the CAUTION prior to Step 25. | EOP-4.0 |
| | | CAUTION - Step 23 | EOP-4.0 |
| When using a PZR PORV to depressurize the RCS, the PRT Rupture Disc may rupture resulting in Adverse Containment Conditions. Cycling of the PZR PORV should be minimized to reduce the discharge to the PRT and to minimize the potential for PORV failure. | | | |
| NOTE - Step 23 | | | |
| If no RCP is running, the Reactor Vessel Head Upper Plenum may void during depressurization resulting in a rapidly increasing PZR level. | | | |
| | | Depressurize the RCS using one PZR PORV: | EOP-4.0 |
| | | a. Verify at least one PZR PORV is available. | |
| | | b. Open one PZR PORV until any one of the following criteria is met: | |
| | | PZR level is GREATER THAN 76% [69%]. | |
| | RO | OR | |
| | | RCS subcooling on TI-499A(B), A(B) TEMP °F, is LESS THAN 52.5°F [67.5°F]. | |
| | | OR | |
| | | RCS pressure is LESS THAN RUPTURED SG(s) pressure AND PZR level is GREATER THAN 10% [28%]. | |
| | | c. Close the PZR PORV. | |
| | RO | Verify RCS pressure is increasing. | EOP-4.0 |
Scenario Outline

| Op Test No | D.: NRC ILO 11- | 01 Scenario # 1 Event # <u>6 & 7</u> Page <u>37</u> of <u>37</u> | | | | | | | |
|-----------------------|--|--|---------|--|--|--|--|--|--|
| Event Desc | cription: SGTL on " | A" SG (Leak is initially greater than TS leakage limits increasing until action is required to maintain Pressurizer level control) | | | | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | | | | |
| | CAUTION - Step 25 | | | | | | | | |
| When SI te RUPTURE | When SI termination criteria are met, SI must be terminated to prevent overfilling the RUPTURED SG(s). | | | | | | | | |
| | | Check if SI flow should be terminated: | EOP-4.0 | | | | | | |
| | | a. RCS subcooling on TI-499A(B), A(B) TEMP °F, is GREATER THAN 52.5°F [67.5°F]. | | | | | | | |
| | | b. Secondary Heat Sink is adequate: | | | | | | | |
| | RO | Total EFW flow available to INTACT SGs is GREATER THAN 450 gpm. | | | | | | | |
| | | OR | | | | | | | |
| | | Narrow Range SG level is GREATER THAN 26% [41%] in at least one INTACT SG. | | | | | | | |
| | | c. RCS pressure is stable OR increasing. | | | | | | | |
| | | d. PZR level is GREATER THAN 10% [28%]. | | | | | | | |
| :RITICAL TASK | RO | Stop all but one Charging Pump and place in Standby. | EOP-4.0 | | | | | | |
| 0 | | | | | | | | | |
| EVALUATO | OR NOTE: The s | scenario may be terminated after SI flow is terminated. | | | | | | | |

2013 NRC Scenario 2

Scenario Outline

| Facility: | VC | SUMMER | Scenario No.: 2 Op Test No.: NRC ILO 11-01 | | | | | |
|--|------------------|--|--|--|--|--|--|--|
| Exami | iners: | | Operators: CRS: | | | | | |
| | | | RO: | | | | | |
| | | | BOP | | | | | |
| Initial • 40% MOL Conditions: • Alternate \$ • "B" Train v • Severe the | | | Seal Injection is OOS. workweek. understorms have been reported in the area. | | | | | |
| Turnov | ver: | 40% MOL Chemistry The A and | - – Increase power to 48% (power limit 0.5%/minute). y is in spec for power accession. d B MFP are running - B MFP was recently started. | | | | | |
| Critica | l Task: | Establish on core c Trip the 2 37% WR | SI by opening MVG-8801 (A or B) prior to an Orange path ooling. remaining RCPs <1418 WR RCS Pressure and before RVLIS. | | | | | |
| Event No. | Malf. No. | Event Type | Event Description | | | | | |
| 1 | N/A | N - BOP, CRS R – RO | Increase power IAW GOP-4A (Step3.13b). | | | | | |
| 2 | NIS003D | I – RO, BOP, CRS TS – CRS | PRNIS Channel N-44 Fails HIGH. | | | | | |
| 3 | FWM14D | C – BOP, CRS | Feedwater Pump Master Speed Controller Fails LOW. | | | | | |
| 4 | EF017O | TS- CRS | Emergency Feedwater Pump suction pressure transmitter PT- 3635 Fails LOW. | | | | | |
| 5 | CVC004A | C – RO, CRS TS – CRS | Progressive failure of #1 Seal requires; tripping the unit, stopping the "A" RCP, and isolating seal leakoff. | | | | | |
| 6 | RCS006A | M – ALL | SBLOCA | | | | | |
| 7 | SI003P SI004P | С-ВОР | MVG -8801A, MVG -8801B fail to open on the SI signal. | | | | | |
| 8 | PCS015A | 7 C-BOP | DG load sequencer fails to complete (Train "A" step 7) XPP-45A, Service Water Booster Pump fails to start. | | | | | |
| | | * (N)ormal, (F | R)eactivity, (I)nstrument, (C)omponent, (M)ajor | | | | | |

The following notation is used in the ES-D-2 form "Time" column:

IOA designates Immediate Operator Action steps

* designates **Continuous Action** steps

The crew will assume the watch having been pre-briefed on the Initial Conditions, the plan for this shift and any related operating procedures.

The turbine startup has been stabilized at 39% and GOP-4A, Power Operation (Mode 1 - Ascending) has been completed to Step 3.12.k.

EVENT 1: Increase Power

Power has been stabilized at 40% power and a second Main Feedwater Pump has been placed in service by the off-going crew. The turnover directs the crew to increase power to 48% in accordance with GOP-4A continuing at step 3.13b. (0.5%/minute)

EVENT 2: PRNIS Channel N-44 Fails HIGH

On cue from the Examiner, PRNIS Channel N-44 fails High. The RO will respond to alarms and uncontrolled rod motion by performing the immediate actions of AOP-401.1, Power Range Channel Failure; placing rod control in MANUAL. The crew should restore Tave if necessary. The BOP will remove the channel from service and the CRS will enter Technical Specification 3.3.1.

EVENT 3: Feedwater Pump Master Speed Controller Fails LOW

On cue from the Examiner, the Feedwater Pump Master Speed Controller will fail low causing main feed pump speed to decrease. The BOP will respond to alarms and lowering SG level by controlling FWP Speed IAW AOP-210.3, Feedwater Pump Malfunction and/or Main Control Board Annunciators, SG A(B)(C) STF>FWF Mismatch (XCP-624 4-3(5-3)(6-3)) or SG A (B) (C) LVL DEV XCP-624 1-5(2-5)(3-5).

EVENT 4: Emergency Feedwater Pump Suction Pressure Transmitter PT-3635 Fails LOW

On cue from the Examiner PT-3635 fails Low. The RO will respond to the alarm. The CRS will diagnose the problem as the failure of PT-3635. He will refer to Tech Specs and determine the failed channel must be placed in Bypass and restored to service within 72 hours.

EVENT 5: RCP Seal Leakage

On cue from the Examiner, a progressive failure of #1 Seal on RCP "A" will begin. The crew will respond to alarms/indication and enter AOP-101.2, Reactor Coolant Pump Seal Failure.

As leakoff increases – temperatures will increase "significantly" requiring the crew to trip the reactor, stop RCP "A" and close the leakoff isolation valve within 3 – 5 minutes. The crew will trip the reactor and transition to EOP-1.0 (E-0), Reactor Trip / Safety Injection Actuation.

EVENT 6: Small-Break LOCA

After EOP-1.0 (E-0) the crew will enter EOP 1.1 (ES-0.1), Reactor Trip Recovery. A LOCA will be initiated from the RCP seal package. When SI actuates automatically or manually (PZR level can't be maintained > 8% or loss of adequate subcooling) the crew will transition back to EOP-1.0 (E-0).

After the Safety Injection Actuation MVG- 8801A and MVG-8801B will fail to open causing a complete loss of the high head injection function. The "A" SW Booster Pumps will also fail to start. The crew will perform the alternative actions of manually opening MVG- 8801 A and B and manually starting the "A" Service Water Booster Pump.

The crew will implement EOP-2.0 (E-1), Loss of Reactor or Secondary Coolant. When RCS pressure is less than 1418 psig and SI flow is indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM then ALL running RCPs will be stopped.

CRITICAL TASKS:

It is critical that high head Safety Injection be established prior to an Orange path on core cooling to prevent a degraded core cooling condition.

It is critical that the two remaining RCPs be secured after RCS pressure lowers to less than 1418 psig and high head injection is established to lower the rate of inventory loss. They must be tripped before WR RVLIS level indicates 37% (50% void fraction for 2 RCPs). At this level significant core uncover would occur upon tripping the RCPs.

TERMINATION:

The scenario will terminate when EOP-2.0 (E-1) is complete and the crew transitions to EOP-2.1 (ES-1.2), Post-LOCA Cooldown and Depressurization or at the discretion of the Examiner.

VC Summer 2013 NRC Scenario 2 Simulator Setup

Initial Conditions:

- IC-13, 40% (IC-322 for 2013)
- Reactivity Management Plan/Turnover sheet for IC Set
- Boron Concentration = 1298 ppm
- Xe = -1409 pcm
- Burnup = 10008 MWD/MTU = 226 EFPD
- 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).

VC Summer 2013 NRC Scenario 2 Simulator Setup (SNAP 322)

- 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:

Standard Simulator Setup

- PMP-LD003P XPP0138 LEAK DETECTION SUMP PMP LOSS OF POWER
- VLV-FW028W XVG01676-FW FW HDR RECIRC ISOL VLV LOSS OF POWER
- VLV-FW029W XVG01679-FW FW HTR RECIRC ISO VLV LOSS OF POWER
- VLV-CS052W XVT08141A-CS RCP A SEAL LEAKOFF VLV LOSS OF POWER
- VLV-CS054W XVT08141C-CS RCP C SEAL LEAKOFF VLV LOSS OF POWER
- VLV-CS053W XVT08141B-CS RCP B SEAL LEAKOFF VLV LOSS OF POWER

Scenario Related

- VLV-SI003P XVG08801A-SI HI HEAD INJ FAIL POSITION Delay=0, Ramp=0, Final=0
- VLV-SI004P XVG08801B-SI HI HEAD INJ FAIL POSITION Delay=0, Ramp=0, Final=0
- MAL-PCS015A7 DG LOAD SEQUENCER FAILS TO COMPLETE (TRAIN A STEP 7) Delay=0, Ramp=0, Final=0

EVENT 1: Increase power IAW GOP-4A

NORMAL - No malfunctions

EVENT 2: PRNIS Channel N-44 fails HIGH

- TRIGGER 2
 - MAL-NIS003D, POWER RANGE CHANNEL 44 FAILURE Delay=0, Ramp=0, Final=200.
 - XCP-620 1:1 immediate leads to AOP.
 - Booth Operator: When called as I&C to record detector currents wait 5 min and report that currents have been recorded.

EVENT 3: Feedwater Pump Master Speed Controller fails LOW

- TRIGGER 3
 - FWM014D, FWP MASTER (SC-509A) AUTO CONTROL FAILURE Delay=0, Ramp=00:00:45, Final =20.

EVENT 4: Emergency Feedwater Pump suction pressure transmitter PT-3635 fails LOW

- TRIGGER 4
 - XMT-EF017O IPT03635 EFP SUC PRESS CH IV FAIL TO POSN Delay=0, Delete=0, Ramp=00:01:00, FINAL=0

EVENT 5: Progressive failure of #1 Seal requires tripping the unit, stopping the "A" RCP and isolating seal leakoff

- TRIGGER 5
 - MAL-CVC004A, RCP 1 NUMBER 1 SEAL FAILURE Delay=0, Ramp=00:10:00, Initial=10, Final=68.

Local Operator Action - Booth Operator: When called to install fuse in XCP-6109 for XVT-8141A-FU-CS75 use Trigger 10 (has 5 min delay built in).

- TRIGGER 10
 - VLV-CS052W, XVT08141A-CS RCP A SEAL LEAKOFF VLV LOSS OF POWER Delay=00:05:00, Ramp=0, Delete=00:00:01, Final=Active

EVENT 6: SBLOCA

- TRIGGER 6
 - MAL-CVC004A, RCP 1 NUMBER 1 SEAL FAILURE Delay=0, Ramp=00:00:00, Final=100.
 - MAL-RCS006A REAC TOR COOLANT SYSTEM LEAK COLD LEG (LOOP 1) Delay=0, Ramp=0, Final=600.

EVENT 7: MVG -8801A and MVG-8801 fail to open on the SI signal

- EVENT 7 X031085O==1 Triggered when MVG08801A Control Switch is taken to OPEN
 - o TRIGGER 7
 - VLV-SI003P XVG08801A-SI HI HEAD INJ FAIL POSITION Delay=0, Ramp=0, Final=0, Delete in : 00:00:01
- EVENT 8 X031086O==1 Triggered when MVG08801 Control Switch is taken to OPEN
 - TRIGGER 8
 - VLV-SI004P XVG08801B-SI HI HEAD INJ FAIL POSITION Delay=0, Ramp=0, Final=0, Delete in : 00:00:01

EVENT 8: DG Load Sequencer Fails To Complete (Train "A" Step 7) XPP-45A, Service Water Booster Pump Fails To Start.

• No action necessary – Failure is installed in the scenario pre-load.

| 2013 NRC Sc | enario 2 | 2 | Ор | erator Act | ions | | | | Foi | m ES-D-2 | 2 |
|---------------------------|-------------------------------|--|--|---|---|-------------------|--|--------------------|----------|----------|-------|
| Op Test No.: | NRC IL | _O 11-01 | Scenario # | 2 | Event # | 1 | Page | 7 | of | 43 | |
| Event Descrip | tion: INC | REASE PO | – WER TO 48% | | | | | | | | |
| Time | Positio | n | | Applica | nt's Actions or | Behav | vior | | | | |
| Booth Ope | erator: | No trigger | is required. | | | | | | | | |
| Indications a | vailable | e: N/A | | | | | | | | | |
| EVALUATOR The turnover | NOTE: instruc | ts the crev | w in raise po | wer to 48% | % IAW GOP | -4a S | Step 3.1 | 3.b | | | |
| | | | GOP- 4A RE | FERENCE | E PAGE | | | | | G | OP-4A |
| | | | GENERA | L NOTES | | | | | | | |
| A. | Proced to perfo the Shi | lure steps sho orm steps in a ift Supervisor | ould normally be advance after tho or Control Room | performed in rough evalua Supervisor. | ation of plant co | oweve onditio | r, <mark>i</mark> t is acc ins and in | ceptabl npact b | e oy | | |
| В. | Axial F Book, F | lux Difference Figure I-4.1 d | e, ∆I, should be n uring Reactor Po | naintained wi wer Operatio | ithin limits per on above 50% | V.C. S per Te | ummer C ech Spec | Curve 3.2.1. | | | |
| C. | After a Attachr | ny Thermal P ment III.H. of | ower change of GTP-702 must b | greater than e completed | 15% within any | one h | nour, | | | | |
| D. | If time comme | allows, all loa encing the loa | d changes shoul id change. | d be discuss | ed with the Sys | stem (| Controller | prior to | D | | |
| | | | REACTOR | CONTROL | | | | | | | |
| Α. | During | operation wit | h a positive Mod | erator Tempe | erature Coeffic | ient: | | | | | |
| | 1) | Power and t operator atte | emperature char ention. | nges should l | be slow and wi | ll requ | ire consta | ant | | | |
| | 2) | T _{avg} should increased in | be maintained wi preparation for | thin 0.5°F of Turbine start | T _{ref} unless T _{avg} up. | , is bei | ng | | | | |
| | 3) | All power ar | nd load changes | should be pe | erformed in sma | all incr | ements. | | | | |
| В. | Reacto in GOF need n | or Power incre P Appendix A. ot be continue | eases should be i The recommen ous. | made in acco ded rate of p | ordance with th oower increase | e guid is 1/2 | lelines es % per mii | tablish nute ar | ed nd | | |
| C. | Rod Co | ontrol should | be maintained in | Automatic if | any Pressurize | er POF | RV is isola | ated. | | | |
| | | | TURBINE | CONTROL | | | | | | | |
| A. | lf durin Turbine | g load chang e HMI: Contro | es, plant stabiliza bl/Load screen, s | ation is requir elect HOLD. | red, under the | | | | | | |
| B. | To resu | ume power as | scension select t | he recomme | nded Load Rar | np Ra | te. | | | | |
| C. | Turbine change necess | e Load values es. When des sary) and proc | are approximate sired Reactor or ceed as directed. | e and provide Turbine para | ed as initial sta meters are ach | rting p nieved | oints for l stabilize | oad (if | | | |
| | | | MSR CC | DNTROL | | | | | | | |
| Α. | Do not | exceed 50°F | ΔT between the | inlets to the | Low Pressure | Turbin | Ie. | | | | |
| B. | When i side of | in Manual, do the Moisture | not exceed 25°F Separator/Rehea | ⁻ per half-hou ater. | ur temperature | chang | ge rate fo | r the tu | be | | |

2013 NRC Scenario 2 **Operator Actions** Form ES-D-2 Op Test No.: NRC ILO 11-01 2 Scenario # Event # 1 Page 8 of 43 Event Description: INCREASE POWER TO 48% Time Position Applicant's Actions or Behavior GOP-04A NOTE 3.10 through 3.18 IFK3136, FLOW TO DEAERATOR, AUTO setpoint should be adjusted during power changes to maintain LI-3136, DEAER STOR TK NR LVL, between 2.5 feet and 5.0 feet as LCV 3235, DEAR START UP DRAIN CNTRL, is closed. BOP Raise Turbine load to attain 48% Reactor Power as follows: GOP-4A GOP-4A BOP Select Ramp Rate and enter the recommended Load Ramp 1) Rate. Raise Turbine Load by one of the following methods: GOP-4A 2) Slowly Raise Turbine load automatically as follows a. preferred method): (1) Select the Load pushbutton (a dialog box opens). (2) Enter 39.5.% (3) Confirm setpoint. (4) Verify proper plant response. Manually by pushing and holding the Raise Pushbutton on b. the MCB to increase Turbine load in increments of less than or equal to 2% (20 MWe) (utilizes previously selected ramp rate) Under Manual Adj momentarily select Raise to increase C. Turbine load in increments of 0.1-0.2% to a total of 2% (20 MWe). (one cycle utilizes 10%/min ramp rate and returns to previously selected ramp rate.) When Turbine Load is greater than 40% (385 MWe), verify C20. 1st GOP-4A BOP STG PRESS, de-energizes to dim. GOP-4A BOP Monitor the following for proper operation: Stator Water Cooling. 1) 2) Hydrogen Seal Oil. **Booth Operator:** Acknowledge requests to align the 2A and 2B FW Heater Drains. This valve is not modeled. GOP-4A Between 400 MWe and 450 MWe, open the following valves to BOP align the 2A and 2B Heaters to the DA (TB-412):

| Op Test N | o.: NRC ILO 11- | 01 Scenario # _ 2 Event # _1 Page _9 of _43 |] | | | |
|--|-------------------------------------|---|--------|--|--|--|
| Event Des | cription: INCREAS | E POWER TO 48% | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | |
| | | 1) XVG02075-HD, HP FW HEATER 2A DRAIN TO DEAER HDR ISOLATION. | | | | |
| | | 2) XVG02074-HD, HP FW HEATER 2B DRAIN TO DEAER HDR ISOLATION. | | | | |
| | BOP | Secure the Condensate Polishing per SOP-203, Condensate Polishing System. | GOP-4A | | | |
| | BOP | Borate or dilute per SOP-106, Reactor Makeup Water System, to maintain the following parameters (Refer to SOP-401): | GOP-4A | | | |
| | | 1) ΔI within limits. | | | | |
| | | 2) Control Rods above the Rod Insertion Limit. | | | | |
| Above 40% drains to th | 6 Turbine load M ne #1 Feedwater | <u>NOTE 3.13.h</u> SR 4th pass drains to the Condenser close and the MSR 4th pass Heaters open. | GOP-4A | | | |
| | BOP | Using the DCS Computer Graphic Screens 101 and 102, verify MSR 4th pass drain valves have repositioned: | GOP-4A | | | |
| | | 1) XVT-2071A indicates closed. | | | | |
| | | 2) XVT-2071B indicates closed. | | | | |
| | | 3) XVT-02068A indicates open. | | | | |
| | | 4) XVT-02068B indicates open. | | | | |
| EVALUATOR NOTE: The next event may be triggered after a significant power change (5%) has been observed. | | | | | | |

| Op Test N | lo.: NRC ILO 1 | 1-01 Scenario # _ 2 Event # 2 Page _ 10 of _ 43 |] |
|--|--|--|-------------|
| Event Des | scription: PRNIS (| Channel N-44 Fails High | |
| Time | Position | Applicant's Actions or Behavior | |
| Booth C | Operator: Init | iate Event 2 (TRIGGER 2) when directed. | |
| Indication XCP-620- XCP-620- XCP-620- XCP-621- XCP-621- XCP-621- | ns Available: 1-1, PR HI SET 1-4, PR CHAN I 2-2, PR FLUX H 1-1, CRB INSR 1-2, CRB INSR 1-4, PR FLUX H | PT FLUX HI DEV II RATE SINGLE CHAN ALERT I LMT LO-LO I LMT LO II ROD STP | |
| | RO | Responds to multiple Annunciators | |
| EVALUAT The crew | OR NOTE: may directly in | nplement AOP-401.10, POWER RANGE CHANNEL FAILURE | |
| | RO | Enters ARP-001- XCP-620-1-1, PR HI SETPT FLUX HI | XCP-620 1-1 |
| | | CORRECTIVE ACTIONS: | XCP-620 1-1 |
| | RO | 1. Check for a failed instrument on the Main Control Board Power Range channels. | XCP-620 1-1 |
| | | 2. If the reactor trips, implement EOP-1.0, Reactor Trip/Safety Injection Actuation. | XCP-620 1-1 |
| | | 3. Verify that Control Rods are not being withdrawn by observing the RODS OUT light on the Main Control Board. | XCP-620 1-1 |
| | | SUPPLEMENTAL ACTIONS: | XCP-620 1-1 |
| | RO | Refer to AOP-401.10, Power Range Failure. | XCP-620 1-1 |
| | CRS | Enters AOP-401.10, POWER RANGE CHANNEL FAILURE | AOP-401.10 |
| ΙΟΑ | RO | Verify normal indication on Power Range Channel N-44. (NO) | AOP-401.10 |
| | | Place the ROD CNTRL BANK SEL Switch in MAN. | |
| ΙΟΑ | RO | Stabilize any plant transients in progress. | AOP-401.10 |
| * | CREW | Maintain stable plant conditions. | AOP-401.10 |
| | CRS | Verify no testing is in progress on the operable Power Range channels. | AOP-401.10 |

| Op Test N | lo.: NRC ILO 1 | I-01 Scenario # 2 Event # 2 Page 11 of 43 | | | | |
|---|--|--|------------|--|--|--|
| Event Des | scription: PRNIS (| Channel N-44 Fails High | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | |
| | BOP | Place ROD STOP BYPASS Switch (on the MISCELLANEOUS CONTROL AND INDICATION PANEL) for the failed Power Range channel in BYPASS. | AOP-401.10 | | | |
| | RO | Verify the appropriate Rod Stop Bypass status light is bright: For N-44, B2 OP ROD STOP BYP (XCP-6111 4-4). | AOP-401.10 | | | |
| | RO | Adjust Control Rods to maintain Tavg within 1.0 °F of Tref. | AOP-401.10 | | | |
| Booth C | Operator: | | | | | |
| AcknoWait oNotify | wledge request ne minute THEN the CRS when c | to record detector information. I go to the floor to record the detector information. detector collection has been completed. | | | | |
| | CRS | Notify the I&C Department to record detector currents and status lights on POWER RANGE A and POWER RANGE B drawers. | AOP-401.10 | | | |
| | | CAUTION – Step 9 | AOP-401.10 | | | |
| The empty flow throug | / fuse holders sh gh the blown fus | nould NOT be reinstalled as this will allow a small amount of current e indicator. | | | | |
| EVALUAT The follow | OR NOTE: ving are expect | ed alarms when the fuses are pulled in the next step: | | | | |
| • XCF | P-620-1-1, PR H | I SETPT FLUX HI | | | | |
| XCF XCF | P-620-1-2, PR L P-620-1-5 PR L | O SETPT FLUX HI P DET ELUX HI DEV AUTO DEFEAT | | | | |
| XCF | P-620-1-6, PR L | OW DET FLUX HI DEV AUTO DEFEAT | | | | |
| XCP-620-2-1, PR DET VOLT LOSS XCP-620-2-2, PR FLUX HI RATE SINGLE CHAN ALERT | | | | | | |
| | | Deenergize the failed Power Range channel: | AOP-401.10 | | | |
| | BOP | a. Remove the CONTROL POWER fuses from the POWER RANGE A drawer. | | | | |
| | | Remove the INSTR POWER fuses from the POWER RANGE B drawer. | | | | |

| 2013 NRC | Scenario 2 | Opera | ator Act | ions | | | | Fo | rm ES | -D-2 |
|---|--|---|---|---|---|--|-----------------------------|---------------------|----------------------|------------|
| | | | | | | | | | | |
| Op Test No | D.: NRC ILO 11- | 01 Scenario # | 2 | Event # | 2 | Page | 12 | of | 43 | |
| Event Desc | cription: PRNIS Ch | annel N-44 Fails High | | | | | | | | |
| Time Position Applicant's Actions or Behavior | | | | | | | | | |] |
| EVALUATO The follow • XCP • XCP • XCP | OR NOTE: ing alarms shou -620-1-4, PR CH -620-1-5, PR UP -620-1-6, PR LO | uld clear during the AN DEV DET FLUX HI DEV A W DET FLUX HI DEV | next ste AUTO D / AUTO | ep: EFEAT DEFEAT | | | | | | |
| | BOP | Align the Power Rar a. Place the following position: 1) COMPARATICOMPARATICOMPARATIC 2) UPPER SECCOMPARATION 3) LOWER SECOMPARATION | nge cha ng switc TOR CH TOR AN CTION S TOR dra CTION TOR dra | nnel compa ches to the f IANNEL DE ID RATE dr Switch (on th awer). | rator ailed FEA awer he DI the D | circuits Power T Switc). ETECT ETECT | : Rang h (on OR Cl | e cha the URR | annel ENT RENT | AOP-401.10 |
| | RO | Ensure NR-45 is sel | lected to | o the approp | oriate | operab | le cha | anne | ls. | AOP-401.10 |
| | RO | Check if Reactor po | wer is L | ESS THAN | 75% | • | | | | AOP-401.10 |
| | RO | Check if Reactor po | wer is L | ESS THAN | 50% | • | | | | AOP-401.10 |
| | CRS | Within 72 hours, pla tripped condition: | ice the f | ailed chann | el pro | otection | bistal | bles i | in a | AOP-401.10 |
| | CRS | a. Identify the assoc TO Attachment 1 | ciated b | istables for t | the fa | ailed cha | annel. | REF | ER | AOP-401.10 |
| | CRS | b. Record the follow REACTOR PRO Attachment I: Instrument Associated Bi Bistable Loca STPs. | ving for TECTIO istable. tion. | each associ | ated | bistable | e on S TEM, | iOP-4 | 401, | AOP-401.10 |

| 2013 NRC | Scenario 2 | Operator Actions Form ES- | D-2 |
|-------------------------------------|---|---|--------------------|
| Op Test No | D.: NRC ILO 11- | 01 Scenario # <u>2</u> Event # <u>2</u> Page <u>13</u> of <u>43</u> | |
| Event Desc | cription: PRNIS Ch | nannel N-44 Fails High | |
| Time | Position | Applicant's Actions or Behavior | |
| Booth O | perator: | | |
| AcknRepo | nowledge request ort that I&C will a | ts for support. ssign a crew to place the bistables in trip. | |
| | CRS | c. Notify the I&C Department to place the identified bistables in trip. | AOP-401.10 |
| | CRS | Refer to Tech Spec 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION | AOP-401.10 |
| EVALUAT tripped co | OR NOTE: The (ndition within 7 | CRS will determine that the failed channel must be placed in the 2 hours. The following Tech Spec excerpts are for reference. | |
| | CRS | 3.3.1 As a minimum, the reactor trip system instrumentation channels and interlocks of Table 3.3-1 shall be OPERABLE with RESPONSE TIMES as shown in Table 3.3-2. <u>APPLICABILITY</u> : As shown in Table 3.3-1. <u>ACTION</u> : As shown in Table 3.3-1. | TECH SPEC 3.3.1 |
| | CRS | TABLE 3.3-1 REACTOR TRIP SYSTEM INSTRUMENTATION MINIMUM TOTAL NO. CHANNELS CHANNELS APPLICABLE FUNCTIONAL UNIT OF CHANNELS TO TRIP OPERABLE MODES 3. Power Range, Neutron Flux 4 2 3 1, 2 2 [#] | TECH SPEC 3.3.1 |
| | CRS | ACTION 2 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied: a. The inoperable channel is placed in the tripped condition within 72 hours. 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. # The provisions of Specification 3.0.4 are not applicable. | TECH SPEC 3.3.1 |
| | CRS | Determine and correct the cause of the Power Range channel failure. | AOP-401.10 |

| 2013 NRC Scenario 2 | | Oper | Operator Actions | | | | |
|--|---------------------|----------------------|------------------|---------------------------|----------|--|--|
| Op Test No | D.: NRC ILO 11-0 | Scenario # | 2 | Event # 2 Page | 14 of 43 | | |
| Event Desc | cription: PRNIS Cha | nnel N-44 Fails High | | | | | |
| Time | Position | | Applic | ant's Actions or Behavior | | | |
| EVALUATOR NOTE: The next event may be initiated after the Technical Specifications and required actions have been addressed. | | | | | | | |

| Op Test No | o.: NRC ILO 11- | 01 Scenario # _ 2 Event # _3 Page _ 15 of _ 43 | |
|--|--|--|-------------|
| Event Des | cription: Feedwate | er Pump Master Speed Controller Fails LOW | |
| Time | Position | Applicant's Actions or Behavior | |
| Booth C | perator Instru | uctions: Initiate Event 3 (TRIGGER 3) when directed. | |
| Indication 624-1-5, S 624-2-5, S 624-3-5, S | s Available: G A LVL DEV G B LVL DEV G C LVL DEV | | |
| | RO | Responds to multiple annunciators | |
| | | CORRECTIVE ACTIONS: | XCP 624 1-5 |
| | | If required, restore Steam Generator A level to between 60% and 65% by performing either or both of the following: | XCP 624 1-5 |
| | | a. Manually control PVT-478, SG A FWF, as required. | |
| | | b. Manually control Feedwater Pump speed as follows: | |
| | BOP | 1) Place the Feedwater Pump MASTER SPEED CNTRL in MAN. | |
| | | Adjust the differential pressure between Feedwater Pump discharge header pressure and Main Steam header pressure, as required, to restore Steam Generator water level. | |
| | BOP | 2. Evaluate SG A Narrow Range level indicators LI-474, LI-475, and LI-476: | XCP 624 1-5 |
| | | b. For decreasing level: | |
| | | 1) At 45% Narrow Range level: | |
| | | (a) Manually control PVT-478, SG A FWF, as required. | |
| | | (b) Ensure feed flow is greater than steam flow by 200 kbh to 400 kbh. | |
| | | 2) At 40% Narrow Range level: | |
| | | (a) Trip the reactor. | |
| | | (b) Ensure both Motor Driven Emergency Feed pumps are in service to deliver full system flow. | |

| Op Test No | D.: NRC ILO 11 | •01 Scenario # 2 Event # 3 Page 16 of 43 | | | | | |
|------------|-------------------|--|-------------|--|--|--|--|
| Event Dese | cription: Feedwat | er Pump Master Speed Controller Fails LOW | | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | | |
| | BOP | 3. Determines if FCV-478, A FCV, malfunctioned go to AOP-210.1, Feedwater Flow Control Valve Failure. | XCP 624 1-5 | | | | |
| | BOP | 4. If a Main Feedwater Pump has tripped or is malfunctioning go to AOP-210.3, Feedwater Pump Malfunction. | XCP 624 1-5 | | | | |
| | BOP | 5. If an instrument channel has failed, go to AOP-401.11, Steam Generator Level Control And Protection Channel Failure. | XCP 624 1-5 | | | | |
| | CRS | Implement AOP-210.3, Feedwater Pump Malfunction. | AOP-210.3 | | | | |
| ΙΟΑ | BOP | Verify at least one Feedwater Pump is running. | AOP-210.3 | | | | |
| | BOP | Check if a Feedwater Pump trip occurred. (NO) | AOP-210.3 | | | | |
| | | ALTERNATE ACTION: | | | | | |
| | | Manually control Feedwater Pump speed using MCB M/A Stations: | | | | | |
| ΙΟΑ | | a) Place the Feedwater Pump MASTER SPEED CNTRL in MAN. b) Adjust Feedwater Pump speed to maintain pump discharge header pressure 150 to 250 psi GREATER THAN Main Steam header pressure on: | | | | | |
| | | PI-508, FW PP DISCH HDR PRESS PSIG. PI-464C, MS HDR PRESS PSIG. | | | | | |
| | | c) Adjust PUMP A(B)(C) SPEED CNTRL (MCB M/A Stations) setpoint potentiometers, as necessary to balance all operating Feedwater Pumps speed to within 120 rpm of each other. | | | | | |
| | | REFER TO the table below to determine the Reactor Power limit based on available Feedwater System capacity: | AOP-210.3 | | | | |
| | BOP | FEEDWATERREACTORPUMPS AVAILABLEPOWER LIMIT2 MFW PUMPS91%1 MFW PUMP48% | | | | | |
| | BOP | Verify two Feedwater Pumps are running. | AOP-210.3 | | | | |
| | BOP | Reduce Reactor Power at 1%/min to the limit determined in Step 4. REFER TO GOP-4B, POWER OPERATION (MODE 1- DESCENDING). | | | | | |
| | BOP | Verify the high pressure and low pressure stop valves close on the AFFECTED Feedwater Pump (GRAPHIC 310 SCREEN). | AOP-210.3 | | | | |

| Op Test No | D.: NRC ILO 11 | •01 Scenario # 2 Event # 3 Page 17 of 43 | | | | | | |
|--|--|---|-----------|--|--|--|--|--|
| Event Description: Feedwater Pump Master Speed Controller Fails LOW | | | | | | | | |
| Time | ime Position Applicant's Actions or Behavior | | | | | | | |
| | BOP | Verify proper operation of the AFFECTED Feedwater Pump Turning Gear: | AOP-210.3 | | | | | |
| | | a. Check if the Feedwater Pump Turbine is stopped. (NO) | | | | | | |
| | | ALTERNATIVE ACTION | | | | | | |
| | | WHEN the Feedwater Pump Turbine is stopped, THEN COMPLETE Step 8. | | | | | | |
| | | b. Ensure the Feedwater Pump Turning Gear is engaged and running. | | | | | | |
| | BOP | Determine and correct the cause of the Feedwater Pump trip. | AOP-210.3 | | | | | |
| | BOP | Ensure all operating Feedwater Pump speed controller(s) (MCB M/A Stations) are in AUTO. REFER TO SOP-210, FEEDWATER SYSTEM. | AOP-210.3 | | | | | |
| | BOP | Restore the plant to the pre-event Reactor Power level, as directed by the Shift Supervisor. | AOP-210.3 | | | | | |
| | CRS | RETURN TO the Procedure and Step in effect. | AOP-210.3 | | | | | |
| Booth Operator: Acknowledge all requests for support. | | | | | | | | |
| EVALUATOR NOTE: When the BOP has restored control of SG levels the CRS will exit this procedure. The CRS may elect to maintain power pending repairs or continue with the power increase. The next event may be triggered when the plant has been stabilized following the failure. | | | | | | | | |

| 2013 NRC | Scenario 2 | Operator Actions Form ES | -D-2 | | | | | | |
|-------------------------------------|---|--|-------------|--|--|--|--|--|--|
| | | | ٦ | | | | | | |
| Op Test No | D.: NRC ILO 11- | 01 Scenario # <u>2</u> Event # <u>4</u> Page <u>18</u> of <u>43</u> | | | | | | | |
| Event Desc | cription: Emergenc | y Feedwater Pump suction pressure transmitter PT-3635 Fails LOW | | | | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | | | | |
| Booth O | perator: Initia | te Event 4 (TRIGGER 4) when directed. | | | | | | | |
| Indications | Indications Available: ARP-001-XCP-621, 3-5 EFP SUCT HDR PRESS LO XFER TO SW | | | | | | | | |
| | RO | Responds to annunciator XCP-621, 3-5 EFP SUCT HDR PRESS LO XFER TO SW. | XCP-621 3-5 | | | | | | |
| | | CORRECTIVE ACTIONS: | XCP-621 3-5 | | | | | | |
| | | Verify the low suction pressure condition exists by checking level on LI-3621A (3631A), CST LEVEL FEET. (NO) | | | | | | | |
| | RO | Refer to SOP-211 for operation using Service Water for Emergency Feedwater. | | | | | | | |
| | | Ensure Emergency Feedwater supply transfers to Service Water when required by decreasing level. (NO) | | | | | | | |
| | | SUPPLEMENTAL ACTIONS: | XCP-621 3-5 | | | | | | |
| | CRS | Determine the cause of the low suction pressure and correct as soon as possible. | | | | | | | |
| | | If the alarm is due to an instrument failure, bypass the associated bistable per SOP-401 Attachment I. | | | | | | | |
| Booth O | perator: Ackr | nowledge requests for support. | | | | | | | |
| | CRS | Request support for I&C to place the associated bistable in bypass. | XCP-621 3-5 | | | | | | |
| EVALUAT The follow and must l | OR NOTE: ing excerpts are be restored to s | e for reference. The failed channel must be placed in Bypass ervice with 72 hours. | | | | | | | |

| Op Test No.: | NRC ILO 11-0 | 01 S | cenar | io # | 2 | Eve | nt # _ 4 | P | age | 19 of 43 | |
|-------------------------|--|---|--|--|--|--|--|--|--------------------|----------|--------------------------|
| Event Descri | iption: Emergency | y Feedwa | iter Pi | ump su | ction pre | essure trai | nsmitte | r PT-3 | 635 Fa | ils LOW | |
| Time | Position | | | | Applic | ant's Actio | ns or Be | havior | | | |
| Excerpt from | Excerpt from SOP-401 Attachment 1 | | | | | | | | SOP-401 | | |
| TRIPPED BISTABLE STATUS | | | | | | | | | | | |
| | INST | RUMENT | | BIST | TABLE | BISTA | ABLE LOCA | TION | _ | | |
| | | | | | | | | | | | |
| | APPLICABLE STPS | STP # USE TRIP BIST | ED TO ABLE | TRIP | STATUS HT ON | TRIPPED | BY | VERIFIE | D BY | | |
| | RESTORATION | | | | | | | | | | |
| | APPLICABLE STP(S) COMPLETED | STP # USE RESTORE B | ED TO ISTABLE | TRIP | STATUS HT OFF | RESTORED |) BY | VERIFIE | D BY | | |
| | | | | | | | | | | | |
| | | | | REV | VIEWED BY: | SHIFT SUP | ERVISOR | / DATE | <u> </u> | | |
| Excerpt from | n SOP-401 Enclo | osure B | | | | | | | | | SOP-401 |
| | | INST | RUMEN | T FAILURE | REFERENC | E MANUAL | | | | | |
| | SYSTEM FUNCTION INST | | | BISTABLE | TRIP ST | ATUS LIGHT | TECH S | PECS | STPS | | |
| | EFP SUCTION P PRESSURE | 2T-3635 PE | 3-3635 | C4-445-BS-1 | CHAN IV EFP | SUCT PRESS LO | TABLE 3.3- | 3 ITEM 6.h | 396.010 396.014 | | |
| Excerpt from | n Technical Spe | cificatior | n Tab |)le 3.3- <u>TABLE 3</u> | 3 .3-3 (Conti | nued) | | | | | Tech Spec Table 3.3-3 |
| | | ENGINEER | ED SAFET | TY FEATURE | ACTUATION | SYSTEM INSTRU | MENTATION | | | | |
| | FUNCTIONAL UNIT 6. EMERGENCY FEEDWA | TER | TOTAL OF. CHA | L NO. Annels | CHANNELS TO TRIP | CHANNELS | APP | ICABLE 10DES | ACTION | | |
| | h. Suction Tran Low Pressure | sfer on | 4 | | 2 | 3 | 1, | 2, 3 | 16 | | |
| | ACTION 16 | With the n Channels, bypass an the inoper | umber o , operation nd the Mi rable cha | of OPERAB on may cor inimum Cha annel to OP | LE channels ntinue provid annels OPE PERABLE st | s one less than led the inoperal RABLE require atus within 72 h | the Total N ble channe ment is me nours other | lumber o l is place t. Restor wise; | f din re | | |
| | | Be i in C | n at leas OLD SH | St HOT STA | ANDBY withi within the fo | in the next 6 ho blowing 30 hou | urs <u>and</u> rs. | | | | |
| | | One for s | e additior surveillar | nal channel nce testing | l may be byp per Specific | bassed for up to ation 4.3.2.1. | o 12 hours | | | | |
| EVALUATO Technical S | R NOTE: The n | ext eve | nt ma | ay be i | nitiateo | d after th | e CRS | has | refere | nced the | |

| Op Test N | o.: NRC ILO 11- | 01 Scenario # 2 Event # 5 Page 20 of 43 | | | |
|---|---|--|-------------|--|--|
| Event Des | cription: Progressi isolating | ve failure of #1 Seal requires tripping the unit, stopping the "A" RCP and seal leakoff | | | |
| Time | Position | Applicant's Actions or Behavior | | | |
| Booth C | perator: Initia | te Event 5 (TRIGGER 5) when directed. | | | |
| Indication XCP-603, XCP-617, 2 Seal leako | s available: 1-1, RCP A CCW 2-1, RCP A #1 S ff flow on RCP " <i>A</i> | / TEMP HI L LKOFF FLO HI/LO A" rising to off-scale high | | | |
| | RO | Responds to alarm XCP-617 2-1, RCP A #1 SL LKOFF FLO HI/LO. | | | |
| EVALUAT seal failur | OR NOTE: The e. | crew may directly enter AOP-101-2 due to the diagnosis of RCP | | | |
| | | PROBABLE CAUSE: 1. High flow - Degradation of Reactor Coolant Pump A #1 Seal. 2. Low flow due to either of the following: Failure of Reactor Coolant Pump A #2 Seal. Low RCS pressure. Degradation of Reactor Coolant Pump A #1 Seal. a. d. PVT-8141A, A SEAL LKOFF, not fully open. | XCP-617 2-1 | | |
| | | AUTOMATIC ACTIONS: 1. None. | XCP-617 2-1 | | |
| | RO | CORRECTIVE ACTIONS: Monitor #1 Seal leakoff flow on FR-154B, RCP SL LKOFF LO RANGE, and FR-154A, RCP SL LKOFF HI RANGE. If alarm is due to low flow, ensure PVT-8141A, A SEAL LKOFF, is open. 3. Go to AOP-101.2, Reactor Coolant Pump Seal Failure, unless normal RCS depressurization is in progress. | XCP-617 2-1 | | |
| | RO | Determines RCP A #1 Seal Leakoff is rising rapidly | XCP-617 2-1 | | |
| | CRS | Implement AOP-101.2, Reactor Coolant Pump Seal Failure | AOP-101.2 | | |
| CRS Implement AOP-101.2, Reactor Coolant Pump Seal Failure 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 Destination 2.4.0.2 in Mades 4.0.2 and 4. | | | | | |

| Op Test No | D.: NRC ILO 11- | 01 Scenario # <u>2</u> Event # <u>5</u> Page <u>21</u> of <u>43</u> | | | | | | |
|--------------------------|--|--|-----------|--|--|--|--|--|
| Event Des | cription: Progressivi isolating | ve failure of #1 Seal requires tripping the unit, stopping the "A" RCP and seal leakoff | | | | | | |
| Time | Position | Applicant's Actions or Behavior |] | | | | | |
| | 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: XVT-8141A-FU-CS75. | AOP-101.2 | | | | | |
| Booth O | Booth Operator: Use LOA Resets page to install fuses for PVT-8141A-FU-CS75 | | | | | | | |
| | 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-101.2 | | | | | |
| | 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-101.2 | | | | | |
| * | CRS | Check the following conditions for the affected Reactor Coolant Pump on the IPCS: Bearing water temperature (LOWER SEAL WTR BRG T) on T0417A is LESS THAN 225°F and NOT significantly increasing. | AOP-101.2 | | | | | |
| | | AND #1 seal leakoff temperature (SEAL WTR OUT TEMP) on T0181A is LESS THAN 235°F and NOT significantly increasing. | | | | | | |
| | CRS | ALTERNATIVE ACTION: GO TO STEP 6 | _ | | | | | |
| When PVT | -8141A, A SEAL | NOTE - Step 6 LKOFF, is closed, the #1 seal ΔP indication will be unreliable | AOP-101.2 | | | | | |
| | Crew | Check if Reactor power is GREATER THAN 38% (Reactor Permissive P-8, REACTOR TRIP BLOCKED, is dim). | AOP-101.2 | | | | | |
| | | NOTE - Step 7 | AOP-101.2 | | | | | |
| EOP-1.0, F continuing | REACTOR TRIP/ with this procedu | SAFETY INJECTION ACTUATION, should be performed while ire. | | | | | | |
| | RO | Trip the Reactor. | AOP-101.2 | | | | | |
| | RO | Stop the affected Reactor Coolant Pump. | AOP-101.2 | | | | | |
| When PVT | -8141A, A SEAL | NOTE - Step 9 LKOFF, is closed, the #1 seal ΔP indication will be unreliable. | AOP-101.2 | | | | | |

| Op Test N | o.: NRC ILO 11- | 01 Scenario # _ 2 Event # 5 Page _ 22 of _ 43 | |
|-----------|----------------------------------|--|-----------|
| Event Des | cription: Progressi isolating | ve failure of #1 Seal requires tripping the unit, stopping the "A" RCP and seal leakoff | |
| Time | Position | Applicant's Actions or Behavior | |
| Booth C | perator: Ackr | nowledge requests to adjust seal water flow. | |
| | | Perform the following for the affected Reactor Coolant Pump: | AOP-101.2 |
| | | a. Close PVT-8141A(B)(C), A(B)(C) SEAL LKOFF, between three to five minutes. | |
| | RO | b. Increase seal injection flow to 13 gpm to the affected Reactor Coolant Pump by locally unlocking and throttling one of the following: | |
| | | XVN08369A-CS, RCP A SEAL SUPPLY THROTTLE VALVE (AB-412 West Pen). | |
| | CRS | Return to Procedure and Step in effect. | AOP-101.2 |
| | CRS | Enters EOP-1.0, REACTOR TRIP/SAFETY INJECTION ACTUATION | EOP-1.0 |

| Op Test No | o.: NRC ILO 11- | 01 Scenario # _ 2 Event # 5 Page _ 23 of _ 43 | 1 | | | | | |
|--|---|--|---------|--|--|--|--|--|
| Event Des | cription: Progressiv | ve failure of #1 Seal requires tripping the unit, stopping the "A" RCP and | | | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | | | |
| | | REFERENCE PAGE FOR EOP-1.0 | EOP-1.0 | | | | | |
| 1 | 1 <u>RCP TRIP CRITERIA</u> | | | | | | | |
| | a. <u>IF</u> Phase B Containment Isolation has actuated (XCP-612 4-2), <u>THEN</u> trip <u>all</u> RCPs. | | | | | | | |
| | b. <u>IF both</u> of the following conditions occur, <u>THEN</u> trip <u>all</u> RCPs: | | | | | | | |
| | • SI flow GPM. | is indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW | | | | | | |
| | | AND | | | | | | |
| | • RCS Wide | Range pressure is LESS THAN 1418 psig. | | | | | | |
| | | | | | | | | |
| 2 | REDUCING CONT | ROL ROOM EMERGENCY VENTILATION | | | | | | |
| | Reduce Contro operation wit CONTROL BUILD | nl Room Emergency Ventilation to <u>one</u> train in Thin 30 minutes of actuation. REFER TO SOP-505. DING VENTILATION SYSTEM. | | | | | | |
| 3 | MONITOR SPENT | FUEL COOLING | | | | | | |
| | Periodically following thr | check status of Spent Fuel Cooling by monitoring the oughout event recovery: | | | | | | |
| | Spent FuelSpent Fuel | Pool level. Pool temperature. | | | | | | |
| | | | | | | | | |
| . Ctor | o 1 through 5 are | NOTE | EOP-1.0 | | | | | |
| • Step | s i thiough 5 are | a minediate Operator Actions. | | | | | | |
| • The | EOP REFEREN | CE PAGE should be monitored throughout the use of this procedure. | | | | | | |
| Conditions for implementing Emergency Plan Procedures should be evaluated using EPP- 001, ACTIVATION AND IMPLEMENTATION OF EMERGENCY PLAN. | | | | | | | | |
| | | Verify Reactor Trip: | EOP-1.0 | | | | | |
| ΙΟΑ | RO | 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. | | | | | | |

| Op Test No | D.: NRC ILO 11- | 01 Scenario # 2 Event # 5 Page 24 of 43 | | | | | |
|------------|---|--|---------|--|--|--|--|
| Event Desc | Event Description: Progressive failure of #1 Seal requires tripping the unit, stopping the "A" RCP and isolating seal leakoff | | | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | | |
| ΙΟΑ | BOP | Verify Turbine/Generator Trip: a. Verify all Turbine STM Stop VLVs are closed. b. Ensure Generator Trip (after 30 second delay): Ensure the GEN BKR is open. Ensure the GEN FIELD BKR is open. Ensure the EXC FIELD CNTRL is tripped. | EOP-1.0 | | | | |
| ΙΟΑ | BOP | Verify both ESF buses are energized. | EOP-1.0 | | | | |
| | CRS | Go to Step 5. | EOP-1.0 | | | | |
| ΙΟΑ | RO | Check if SI is required: Check if any of the following conditions exist: 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 psid. | EOP-1.0 | | | | |
| EVALUATO | OR NOTE: It is a and RCS pressu | a Critical Step for the RCPs to be tripped when SI flow is ure is less than 1418 psig. | | | | | |
| | CRS | Go to EOP-1.1, REACTOR TRIP RECOVERY. | EOP-1.0 | | | | |

| Op Test N | o.: NRC ILO 11 | -01 Scenario # | 2 Ever | nt # <u>5</u> Page <u>25</u> of | 43 | | |
|---|--|--|--|-----------------------------------|---------|--|--|
| Event Des | Event Description: Progressive failure of #1 Seal requires tripping the unit, stopping the "A" RCP and isolating seal leakoff | | | | | | |
| Time | Time Position Applicant's Actions or Behavior | | | | | | |
| | | REFERENCE P | AGE FOR EOP-1 | .1 | EOP-1.1 | | |
| | | RIA | | | | | |
| 1 01701 | | | | | | | |
| IF eithe RE | er of the following | g conditions occurs, AFETY INJECTION | THEN actuate SI ACTUATION, Ste | and GO TO EOP-1.0, p 1: | | | |
| • PZR OR | t level can NOT t | be maintained GRE | TER THAN 8%. | | | | |
| RCS belo | S subcooling on T w: | ГІ-499А(В), А(В) ТЕ | MP "F, is LESS TI | HAN the value listed in the | table | | |
| | | RCS | RCS |] | | | |
| | | PRESSURE | SUBCOOLING | | | | |
| | | (psig) | (°F) | | | | |
| | | 1576-3075 | 42.5 | | | | |
| | | 876-1575 | 45 | | | | |
| | | 576-875 | 47.5 | - | | | |
| | | 476-575 | 50 | | | | |
| | | 375-475 | 52.5 | | | | |
| | | CAL | JTION: | | EOP-1.1 | | |
| | | | | | | | |
| If SI actuation occurs during this procedure, EOP-1.0, REACTOR TRIP/SAFETY INJECTION ACTUATION, should be performed to stabilize the plant. | | | | | | | |
| | | N | OTE: | | EOP-1.1 | | |
| Main Turbine vibration should be monitored during coastdown. | | | | | | | |
| • The EOP REFERENCE PAGE should be monitored throughout the use of this procedure. | | | | | | | |
| CREW Announce plant conditions over the page system. | | | | | | | |
| ΕΛ ΤΙΙΤΑΤ | | 1 | | | | | |
| The next of are only a | event (SBLOCA) |) may be cued after the effect of the nex | r EOP1.1 is imple kt event is obser | emented. The following st ved. | teps | | |
| y v | | | | | | | |

| Op Test No | o.: NRC ILO 11- | 01 Scenario # 2 Event # 5 Page 26 of 43 | | | | |
|--------------------------------------|---|--|---------|--|--|--|
| Event Dese | cription: Progressivi isolating | ve failure of #1 Seal requires tripping the unit, stopping the "A" RCP and seal leakoff | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | |
| | CREW | Check FW status: | EOP-1.1 | | | |
| | RO | a. Check if RCS Tavg is LESS THAN 564 °F. | EOP-1.1 | | | |
| | | b. Verify FW Isolation: | EOP-1.1 | | | |
| | | Ensure the FW Flow Control Valves, FCV-478(488)(498), are closed. | | | | |
| | BOP | 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. | | | | |
| | | c. Ensure EFW Pumps are running: | EOP-1.1 | | | |
| | | 1) Ensure both MD EFW Pumps are running. | | | | |
| | | Verify the TD EFW Pump is running if necessary to maintain SG levels. (NOT required) | | | | |
| | | d. Verify total EFW flow is GREATER THAN 450 gpm. | EOP-1.1 | | | |
| | | e. Trip <u>all</u> Main FW Pumps. | EOP-1.1 | | | |
| | | Check RCS temperature: | EOP-1.1 | | | |
| * | RO | With any RCP running, RCS Tavg is stable at OR trending to 557°F. | | | | |
| If a transition the steps of allows. | <u>NOTE - Step 4</u> 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. | | | | | |
| | RO | Verify all Control Rods are fully inserted. | EOP-1.1 | | | |

| Op Test No | o.: NRC ILO 11- | 01 Scenario # 2 Event # 5 Page 27 of 43 | |
|------------|---------------------------------|--|---------|
| Event Des | cription: Progressivi isolating | ve failure of #1 Seal requires tripping the unit, stopping the "A" RCP and seal leakoff | |
| Time | Position | Applicant's Actions or Behavior | |
| | | Check DA level control: a. Open LCV-3235, DEAER START UP DRAIN CNTRL, as | EOP-1.1 |
| | BOP | 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). | |
| | | Check PZR level control: | EOP-1.1 |
| | RO | a. Verify PZR level is GREATER THAN 17%. | |
| | | b. Verify Charging and Letdown are in service. | |
| | | c. Verify PZR level is trending to 25%. | |
| | | Check PZR pressure control: | EOP-1.1 |
| | | a. Verify PZR pressure is GREATER THAN 1850 psig. | |
| | | b. Verify PZR pressure is stable at OR trending to 2230 psig (2220 psig to 2250 psig). | |
| | | Check SG levels: | EOP-1.1 |
| * | BOP | a. Verify Narrow Range level in all SGs is GREATER THAN 26%. | |
| | | b. Control EFW flow to maintain Narrow Range SG level between 40% and 60%. | |
| | | Verify all AC buses are energized by offsite power: | EOP-1.1 |
| * | BOP | ESF AC buses.BOP AC buses. | |

| Op Test N | o.: NRC ILO 11- | 01 Scenario # _ 2 Event # 5 Page _ 28 of _ 43 | | |
|---|----------------------------------|---|---------|--|
| Event Des | cription: Progressi isolating | ve failure of #1 Seal requires tripping the unit, stopping the "A" RCP and seal leakoff | | |
| Time | Position | Applicant's Actions or Behavior | j | |
| | BOP | Transfer Condenser Steam Dumps to the Steam Pressure Mode: a. Verify PERMISV C-9 status light is bright on XCP-6114 1-3. b. WHEN RCS Tavg is LESS THAN P-12 (552"F), THEN place both STM DUMP INTERLOCK Switches to BYP INTLK. c. Perform the following: 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). d. Place the STM DUMP CNTRL Controller in MAN and closed. e. Ensure the STM DUMP CNTRL Controller is set to 8.4. | EOP-1.1 | |
| | | f. Place the STM DUMP MODE SELECT Switch in STM PRESS. | | |
| | | g. Place the STM DUMP CNTRL Controller in AUTO. | | |
| NOTE - Step 12 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. | | | | |
| | 5.0 | Verify RCP A is running. | EOP-1.1 | |
| | RO | NOTE: Crew determines the RCP A cannot be started. | | |
| | BOP | Shut down and stabilize the Secondary Plant. REFER TO AOP-214.1, TURBINE TRIP. | EOP-1.1 | |

| Op Test No | o.: NRC ILO 11 | 01 Scenario # 2 Event # 5 Page 29 of 43 | 1 |
|------------|----------------------------------|---|---------|
| Event Des | cription: Progressi isolating | ve failure of #1 Seal requires tripping the unit, stopping the "A" RCP and seal leakoff | |
| Time | Position | Applicant's Actions or Behavior | |
| | | Maintain stable plant conditions: a. Maintain PZR pressure at 2230 psig (2220 psig to 2250 psig). b. Maintain PZR level at 25%. c. Maintain Narrow Range SG levels between 40% and 60%. | EOP-1.1 |
| | RO | 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). | |
| | BOP | COMPLETE Attachment I of SAP-116, PLANT TRIP/SAFETY INJECTION PLANT RECOVERY. | EOP-1.1 |

| Op Test No | .: NRC ILO 11-0 | 01 Scenario # 2 Event # 6,7,8 Page 30 of 43 | |
|----------------------------|---|--|---------|
| Event Desc | cription: SBLOCA, | MVG -8801A, MVG -8801B fail to open on the SI signal, DG load | |
| Time | Position | A step 7) XPP-45A, Service Water Booster Pump fails to start. Applicant's Actions or Behavior | _ |
| Booth O | perator: Initiat | te Event 6 (TRIGGER 6) when directed. | |
| Indications Rapidly dec | s: creasing Pressuri | zer Pressure and Level | |
| EVALUATO initiate SI a | OR NOTE: When and implement E | the symptoms of the SBLOCA are observed the crew will EOP-1.0. | |
| | Crew | Respond to alarms and degrading RCS condition. | EOP-1.1 |
| | CRS | Direct SI Actuation. | EOP-1.1 |
| | CRS | Implement EOP-01 REACTOR TRIP/SAFETY INJECTION ACTUATION. | EOP-1.1 |
| | | REFERENCE PAGE FOR EOP-1.0 | EOP-1.0 |
| 1 | RCP TRIP CRIT | ERIA | |
| | a. <u>IF</u> Phase B <u>THEN</u> trip | Containment Isolation has actuated (XCP-612 4-2), <u>all</u> RCPs. | |
| | b. <u>IF</u> <u>both</u> of | the following conditions occur, <u>THEN</u> trip <u>all</u> RCPs: | |
| | • SI flow GPM. | is indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW | |
| | | AND | |
| | • RCS Wide | Range pressure is LESS THAN 1418 psig. | |
| 2 | REDUCING CONT | ROL ROOM EMERGENCY VENTILATION | |
| | Reduce Control Room Emergency Ventilation to <u>one</u> train in operation within 30 minutes of actuation. REFER TO SOP-505 , CONTROL BUILDING VENTILATION SYSTEM . | | |
| 3 | MONITOR SPENT | FUEL COOLING | |
| | Periodically following thr | check status of Spent Fuel Cooling by monitoring the oughout event recovery: | |
| | Spent FuelSpent Fuel | Pool level. Pool temperature. | |
| L | | | |

| Op Test No | .: NRC ILO 11-0 | D1 Scenario # 2 Event # 6,7,8 Page 31 of 43 | | |
|--|--|--|---------|--|
| Event Description: SBLOCA, MVG -8801A, MVG -8801B fail to open on the SI signal, DG load | | | | |
| Sequencer fails to complete (train "A" step 7) XPP-45A, Service Water Booster Pump fails to start. Time Position Applicant's Actions or Behavior | | | | |
| Note: Steps 1 through 5 are Immediate Operator Actions. The EOR REFERENCE RACE should be monitored throughout the use of this precedure. | | | EOP-1.0 | |
| • Cond 001, / | Conditions for implementing Emergency Plan Procedures should be evaluated using EPP- 001, ACTIVATION AND IMPLEMENTATION OF EMERGENCY PLAN. | | | |
| IOA | RO | Verify Reactor Trip: 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 | |
| ΙΟΑ | BOP | Verify Turbine/Generator Trip: a. Verify all Turbine STM Stop VLVs are closed. b. Ensure Generator Trip (after 30 second delay): Ensure the GEN BKR is open. Ensure the GEN FIELD BKR is open. Ensure the EXC FIELD CNTRL is tripped. | EOP-1.0 | |
| ΙΟΑ | BOP | Verify both ESF buses are energized. | EOP-1.0 | |
| ΙΟΑ | RO | Check if SI is actuated: a. Check if either: 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. c. GO TO Step 6. | EOP-1.0 | |
| EVALUATOR NOTE: ATTACHMENT 3, SI EQUIPMENT VERIFICATION is attached after this section. Failure of MVG-8801A/B will be addressed in EOP-1.0 Attachment 3. | | | | |
| | BOP | Initiate ATTACHMENT 3, SI EQUIPMENT VERIFICATION. | EOP-1.0 | |
| | Crew | Announce plant conditions over the page system. | EOP-1.0 | |

2013 NRC Scenario 2

| Op Test No | .: NRC ILO 11-0 | 01 Scenario # _ 2 Event # _ 6,7,8 Page _ 32 of _ 43 | |
|-------------------------|--|--|---------|
| Event Desc sequencer | ription: SBLOCA, I fails to complete (t | MVG -8801A, MVG -8801B fail to open on the SI signal, DG load rain "A" step 7) XPP-45A, Service Water Booster Pump fails to start. | |
| Time | Position | Applicant's Actions or Behavior | |
| * | BOP | Verify RB pressure has remained LESS THAN 12 psig on PR-951, RB PSIG (P-951), red pen. | EOP-1.0 |
| * | RO | Check RCS temperature: With any RCP running, 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. | EOP-1.0 |
| | | Check PZR PORVs and Spray Valves: a. PZR PORVs are closed. b. PZR Spray Valves are closed. | EOP-1.0 |
| | RO | c. Verify power is available to at least one PZR PORV Block Valve: MVG-8000A, RELIEF 445 A ISOL. MVG-8000B, RELIEF 444 B ISOL. MVG-8000C, RELIEF 445 B ISOL. | |
| | | d. Verify at least one PZR PORV Block valve is open. | - |
| | RO | Check if RCPs should be stopped: a. Check if either of the following criteria is met: Annunciator XCP-612 4-2 is lit (PHASE B ISOL). OR RCS pressure is LESS THAN 1418 psig AND SI flow is indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. b. Stop all RCPs. | EOP-1.0 |
| | BOP | Verify no SG is FAULTED: No SG pressure is decreasing in an uncontrolled manner. No SG is completely depressurized. | EOP-1.0 |

| Op Test No | .: NRC ILO 11-0 | O1 Scenario # 2 Event # 6,7,8 Page 33 of 43 | |
|------------|-------------------|--|---------|
| Event Desc | cription: SBLOCA, | MVG -8801A, MVG -8801B fail to open on the SI signal, DG load | |
| Time | Position | rain A step 7) XPP-45A, Service Water Booster Pump fails to start. | |
| | | Verify Secondary radiation levels indicate SG tubes are NOT RUPTURED: | EOP-1.0 |
| | BOP | RM-G19A(B)(C), STMLN HI RNG GAMMA. RM-A9, CNDSR EXHAUST GAS ATMOS MONITOR. RM-L3, STEAM GENERATOR BLOWDOWN LIQUID MONITOR. RM-L10, SG BLOWDOWN CW DISCHARGE LIQUID | |
| | | MONITOR. | |
| | BOP | Check if the RCS is INTACT: a. RB radiation levels are normal on: • RM-G7, CNTMT HI RNG GAMMA. • RM-G18, CNTMT HI RNG GAMMA. • b. RB Sump levels are normal. c. RB pressure is LESS THAN 1.5 psig. d. The following annunciators are NOT lit: • XCP-606 2-2 (RBCU 1A/2A DRN FLO HI). • XCP-607 2-2 (RBCU 1B/2B DRN FLO HI). ALTERNATIVE ACTION | EOP-1.0 |
| | | GO TO EOP-2.0, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1. | |

| C | Op Test No.: NRC ILO 11-01 Scenario # 2 Event # 6,7,8 Page 34 of 43 | |
|----|--|-------|
| E | vent Description: SBLOCA, MVG -8801A, MVG -8801B fail to open on the SI signal, DG load | |
| 5 | Time Position Applicant's Actions or Behavior | |
| | REFERENCE PAGE FOR EOP-2.0 | EOP-2 |
| 1 | SI REINITIATION CRITERIA | |
| | | |
| | IF either of the following conditions occurs, THEN start Charging Pumps and operate valves as necessary: | |
| | RCS subcooling on TI-499A(B), A(B) TEMP °F, is LESS THAN 52.5°F [67.5°F]. PZR level can NOT be maintained GREATER THAN 10% [28%]. | |
| 2. | RCP TRIP CRITERIA | |
| | IF either of the following criteria is met, THEN trip all RCPs: | |
| | Annunciator XCP-612 4-2 is lit (PHASE B ISOL). | |
| | RCS pressure is LESS THAN 1418 psig AND SI flow is indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. | |
| 3. | SECONDARY INTEGRITY TRANSITION CRITERIA | |
| | IF any unisolated SG pressure is decreasing in an uncontrolled manner OR is completely depressurized, THEN GO TO EOP-3.0, FAULTED STEAM GENERATOR ISOLATION, Step 1. | |
| 4. | TUBE RUPTURE TRANSITION CRITERIA | |
| | IF any SG level increases in an uncontrolled manner OR if any SG has abnormal radiation, THEN start Charging Pumps and operate valves as necessary, and GO TO EOP-4.0, STEAM GENERATOR TUBE RUPTURE, Step 1. | |
| 5. | COLD LEG RECIRCULATION TRANSITION CRITERION | |
| | IF RWST level decreases to LESS THAN 18%, THEN GO TO EOP-2.2, TRANSFER TO COLD LEG RECIRCULATION, Step 1. | |
| 6. | LOSS OF EMERGENCY COOLANT RECIRCULATION TRANSITION CRITERION | |
| | IF Emergency Coolant Recirculation is established and subsequently lost, THEN GO TO EOP-2.4, LOSS OF EMERGENCY COOLANT RECIRCULATION, Step 1. | |
| 7. | 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 | |

| Op Test No | .: NRC ILO 11-0 | M Scenario # 2 Event # 6,7,8 Page 35 of 43 MVC 88014 MVC 88018 fail to open on the SL signal DC load | |
|---|------------------------------------|--|---------|
| sequencer f | fails to complete (t | rain "A" step 7) XPP-45A, Service Water Booster Pump fails to start. | |
| Time | Position | Applicant's Actions or Behavior | |
| | | NOTE | EOP-2.0 |
| The E | EOP REFERENC | E PAGE should be monitored throughout the use of this procedure. | |
| Seal | Injection flow sho | ould be maintained to all RCPs. | |
| • Cond 001, / | itions for implem ACTIVATION AN | enting Emergency Plan Procedures should be evaluated using EPP- ID IMPLEMENTATION OF EMERGENCY PLAN | |
| | RO | Check if RCPs should be stopped: | EOP-2.0 |
| | | a. Check if either of the following criteria is met: | EOP-2.0 |
| | | Annunciator XCP-612 4-2 is lit (PHASE B ISOL). OR | |
| | | RCS pressure is LESS THAN 1418 psig AND SI flow is indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. | |
| EVALUATOR NOTE: This is a Critical Task but it may have been performed earlier as a Reference Page requirement. | | | |
| CRITICAL TASK | RO | b. Stop all RCPs. | EOP-2.0 |
| | | Verify no SG is FAULTED: | EOP-2.0 |
| | BOP | No SG pressure is decreasing in an uncontrolled manner. | |
| | | No SG is completely depressurized. | |
| | | Check INTACT SG levels: | EOP-2.0 |
| * | BOP | a. Verify Narrow Range level in INTACT SGs is GREATER THAN 26% [41%]. | |
| | | Control EFW flow to maintain Narrow Range level in each INTACT SG between 40% and 60%. | |
| | BOP | Reset both SI RESET TRAIN A(B) Switches. | EOP-2.0 |
| Op Test No | .: NRC ILO 11-0 | O1 Scenario # 2 Event # 6,7,8 Page 36 of 43 | |
|---------------------------|--------------------|--|---------|
| Event Desc | ription: SBLOCA, I | MVG -8801A, MVG -8801B fail to open on the SI signal, DG load | |
| Time | Position | rain "A" step 7) XPP-45A, Service Water Booster Pump fails to start. | |
| | | Reset Containment Isolation: | FOP-2.0 |
| | | | 201 2.0 |
| | ВОР | RESET PHASE A - TRAIN A(B) CNTMT ISOL. | |
| | | RESET PHASE B - TRAIN A(B) CNTMT ISOL. | |
| | | Check if Secondary radiation levels are normal: | EOP-2.0 |
| | | a. Check radiation levels normal on: | EOP-2.0 |
| | | • RM-G19A(B)(C), STMLN HI RNG GAMMA. | |
| | BOP | • RM-A9, CNDSR EXHAUST GAS ATMOS MONITOR. | |
| | | RM-L3, STEAM GENERATOR BLOWDOWN LIQUID MONITOR. | |
| | | RM-L10, SG BLOWDOWN CW DISCHARGE LIQUID MONITOR. | |
| | BOP | b. Place SVX-9398A(B)(C), SG A(B)(C) SMPL ISOL, in AUTO. | EOP-2.0 |
| Booth O | perator: Ackno | owledge requests for support. | |
| | BOP | Notify Chemistry to sample all SG secondary sides, and screen samples for abnormal activity using a frisker. | EOP-2.0 |
| lf PZR level stabilize | is LESS THAN | <u>NOTE - Step 10.d</u> 10% [28%], the PZR should refill from SI flow after pressure is | EOP-2.0 |
| * | 50 | d. PZR level is GREATER THAN 10% [28%]. | EOP-2.0 |
| | RU | e. GO TO EOP-1.2, SAFETY INJECTION TERMINATION, Step 1. | |
| | | Check if RB Spray should be stopped: | EOP-2.0 |
| * | POD | a. Check if any RB Spray Pumps are running. | |
| | DUF | b. Verify RB pressure is LESS THAN 11 psig. | |
| | | c. Depress both RESET TRAIN A(B) RB SPRAY. | |

| Op Test No | .: NRC ILO 11-0 | 01 Scenario # _ 2 Event # _ 6,7,8 Page _ 37 of _ 43 | | | |
|--|--|--|---------|--|--|
| Event Desc | ription: SBLOCA, | MVG -8801A, MVG -8801B fail to open on the SI signal, DG load | | | |
| Time | Position | Applicant's Actions or Behavior | | | |
| RB S Anytin shoul | pray must run fo me RB Spray Pu ld be closed for c | <u>NOTE - Step 11.d</u> r a minimum of four hours. mps are stopped, MVG-3003A(B), SPRAY HDR ISOL LOOP A(B), containment isolation | EOP-2.0 | | |
| * | CRS | d. Consult with TSC personnel concerning RB Spray System operation. | EOP-2.0 | | |
| | | Check if RHR Pumps should be stopped: | EOP-2.0 | | |
| | | a. Check RCS pressure: | | | |
| | | 1) RCS pressure is GREATER THAN 325 psig. | | | |
| * | BOP | 2) RCS pressure is stable OR increasing. | | | |
| | | b. Check if any RHR Pump is running with suction aligned to the RWST. | | | |
| | | Stop any RHR Pump which is running with suction aligned to the RWST and place in Standby. | | | |
| | RO | Check if RCS pressure is stable OR decreasing. | EOP-2.0 | | |
| | BOP | Check if pressure in all SGs is stable OR increasing. | EOP-2.0 | | |
| The DGs prevent | <u>CAUTION - Step 15</u> The DGs should NOT be run at a minimum load or unloaded for extended periods of time, to prevent carbon fouling. | | | | |
| | | Check if DGs should be stopped: | EOP-2.0 | | |
| | BOP | a. Verify both ESF buses are energized by offsite power. | | | |
| | | b. Stop any unloaded DG. REFER TO SOP-306, EMERGENCY DIESEL GENERATOR. | | | |
| | | Verify equipment is available for Cold Leg Recirculation: | EOP-2.0 | | |
| | | a. Verify power is available for at least one RHR Pump: | | | |
| | BOP | 1) PUMP A. | | | |
| | | 2) PUMP B. | | | |
| | | b. Open both MVB-9503A(B), CC TO RHR HX A(B). | | | |

| Op Test No | D.: NRC ILO 11-0 | D1 Scenario # 2 Event # 6,7,8 Page 38 of 43 | |
|---|--|---|---------|
| Event Desc | cription: SBLOCA, | MVG -8801A, MVG -8801B fail to open on the SI signal, DG load | |
| Sequencer | fails to complete (t | rain "A" step 7) XPP-45A, Service Water Booster Pump fails to start. | |
| Time | 1 0311011 | | |
| If the shift i If CC align | swing CCW Pun it to fast speed, to W can NOT be s ment will be addr | applies to the charging pump should NOT be secured to prevent damage to the Charging Pump on that train. hifted to fast speed, this procedure should be continued. CCW essed in EOP-2.2, TRANSFER TO COLD LEG RECIRCULATION. | EOF-2.0 |
| | BOP | c. Shift the CCW Train to fast speed in the Active Loop. REFER TO SOP-118, COMPONENT COOLING WATER. | EOP-2.0 |
| | | d. Consult with TSC personnel to determine if equipment required for Cold Leg Recirculation is available. | |
| Presend breach i evaluate | ce of abnormally may be in progre ed using EPP-00 | <u>NOTE - Step 17</u> high levels of radioactivity in the AB indicates that a Containment ss. Conditions for upgrading the Emergency status should be 1, ACTIVATION AND IMPLEMENTATION OF EMERGENCY PLAN. | EOP-2.0 |
| | | Check the AB for evidence of ECCS leakage: | EOP-2.0 |
| | | a. Verify AB radiation levels are normal on: | |
| | BOP | RM-A3, MAIN PLANT VENT EXH ATMOS MONITOR: PARTICULATE, IODINE, GAS. RM-A13, PLANT VENT HI RANGE. RM-A11, AB VENT GAS ATMOS MONITOR. Local area monitors. | |
| | | b. Verify annunciator XCP-631 6-1 is NOT lit (AB SMP LVL HI). | |
| | | c. Verify annunciators XCP-606 3-4 and XCP-607 3-4 are NOT lit (LD TRBL AB SMP/FLDRN LVL HI). | |
| | | Obtain necessary Chemistry samples: | EOP-2.0 |
| | | a. Ensure all RCS sample valves are in AUTO: | |
| | BOP | SVX-9364B and SVX-9365B, RCS LP B SMPL ISOL. SVX-9364C and SVX-9365C, RCS LP C SMPL ISOL. | |
| | | b. Notify Chemistry to sample the following: | |
| | | RCS.All SGs for isotopic activity. | |

| Op Test No | .: NRC ILO 11-0 | 01 Scenario # _ 2 Event # _ 6,7,8 Page _ 39 of _ 43 | | | |
|--|--|--|---------|--|--|
| Event Desc sequencer | ription: SBLOCA, fails to complete (t | MVG -8801A, MVG -8801B fail to open on the SI signal, DG load rain "A" step 7) XPP-45A, Service Water Booster Pump fails to start. | | | |
| Time | Position | Applicant's Actions or Behavior | | | |
| | BOP | Shut down and stabilize the Secondary Plant. REFER TO AOP-214.1, TURBINE TRIP. | EOP-2.0 | | |
| | BOP | Check if RCS cooldown and depressurization is required: a. RCS pressure is GREATER THAN 325 psig. b. GO TO EOP-2.1, POST-LOCA COOLDOWN AND DEPRESSURIZATION, Step 1. | EOP-2.0 | | |
| EVALUATOR NOTE: This scenario may be terminated when the actions of EOP-2.0 are completed and the decision is made to transition to EOP-2.1, POST-LOCA COOLDOWN AND DEPRESSURIZATION | | | | | |

Operator Actions

Form ES-D-2

| Op Test No | D.: NRC ILO 11- | 01 Scenario # <u>2</u> Event # <u>6, 7, 8</u> Page <u>40</u> of <u>43</u> |] |
|-----------------------|----------------------------------|---|-------------------------|
| Event Des | cription: EOP-1.0 | Attachment 3 | |
| Time | Position | Applicant's Actions or Behavior | |
| EVALATO has been i | RS NOTE: This initiated and is r | attachment is to verify equipment status after Safety Injection run concurrently with the main body of EOP-1.0. | |
| | | Ensure EFW Pumps are running: | EOP-1.0 Attachment 3 |
| | BOP | a. Ensure both MD EFW Pumps are running. | |
| | | b. Verify the TD EFW Pump is running if necessary to maintain SG levels. | |
| | | Ensure the following EFW valves are open: | EOP-1.0 Attachment 3 |
| | BOP | FCV-3531(3541)(3551), MD EFP TO SG A(B)(C). FCV-3536(3546)(3556), TD EFP TO SG A(B)(C). MVG-2802A(B), MS LOOP B(C) TO TD EFP. | |
| | BOP | Verify total EFW flow is GREATER THAN 450 gpm. | EOP-1.0 Attachment 3 |
| | | Ensure FW Isolation: | EOP-1.0 Attachment 3 |
| | | a. Ensure the following are closed: | |
| | | • FW Flow Control, FCV-478(488)(498). | |
| | BOP | FW Isolation, PVG-1611A(B)(C). FW Flow Control Bypass, ECV-3321(3331)(3341) | |
| | | SG Blowdown, PVG-503A(B)(C). | |
| | | SG Sample, SVX-9398A(B)(C). | |
| | | b. Ensure all Main FW Pumps are tripped. | |
| | | Ensure SI Pumps are running: | EOP-1.0 Attachment 3 |
| | BOP | Two Charging Pumps are running.Both RHR Pumps are running. | |
| | BOP | Ensure two RBCU Fans are running in slow speed (one per train). | EOP-1.0 Attachment 3 |

Operator Actions

Form ES-D-2

| Op Test No | o.: NRC ILO 11- | 01 Scenario # 2 Event # 6, 7, 8 Page 41 of 43 | | | | | |
|------------|---|---|-------------------------|--|--|--|--|
| Event Des | Event Description: EOP-1.0 Attachment 3 | | | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | | |
| | | Verify Service Water to the RBCUs: | EOP-1.0 Attachment 3 | | | | |
| | | a. Ensure two Service Water Pumps are running. | | | | | |
| | BOP | b. Verify both Service Water Booster Pumps A(B) are running. | | | | | |
| | | c. Verify GREATER THAN 2000 gpm flow for each train on: | | | | | |
| | | FI-4466, SWBP A DISCH FLOW GPM.FI-4496, SWBP B DISCH FLOW GPM. | | | | | |
| | BOP | Verify two CCW Pumps are running. | EOP-1.0 Attachment 3 | | | | |
| | BOP | Ensure two Chilled Water Pumps and Chillers are running. | EOP-1.0 Attachment 3 | | | | |
| | BOP | Verify both trains of Control Room Ventilation are running in Emergency Mode. | EOP-1.0 Attachment 3 | | | | |
| | | Check if Main Steamlines should be isolated: | EOP-1.0 Attachment 3 | | | | |
| | | a. Check if any of the following conditions are met: | | | | | |
| | | RB pressure GREATER THAN 6.35 psig. OR | | | | | |
| | BOP | Steamline pressure LESS THAN 675 psig. OR | | | | | |
| | | Steamline flow GREATER THAN 1.6 MPPH AND Tavg LESS THAN 552°F. | | | | | |
| | | b. Ensure all the following are closed: | | | | | |
| | | MS Isolation Valves, PVM-2801A(B)(C). MS Isolation Bypass Valves, PVM-2869A(B)(C). | | | | | |
| | | Ensure Excess Letdown Isolation Valves are closed: | EOP-1.0 Attachment 3 | | | | |
| | BOP | PVT-8153, XS LTDN ISOL. PVT-8154, XS LTDN ISOL. | | | | | |

Operator Actions

Form ES-D-2

| Op Test No | o.: NRC ILO 11- | 01 Scenario # _ 2 Event # _6, 7, 8 Page _ 42 of _ 43 | |
|------------------------------------|---|--|-------------------------|
| Event Des | cription: EOP-1.0 | Attachment 3 | |
| Time | Position | Applicant's Actions or Behavior | |
| | BOP | Verify ESF monitor lights indicate 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. | EOP-1.0 Attachment 3 |
| | | Verify proper SI alignment: | EOP-1.0 Attachment 3 |
| | BOP | a. Verify SI valve alignment by verifying SAFETY INJECTION/PHASE A ISOL monitor lights are bright on XCP- 6104. | |
| EVALUAT Valves MV Manually o | OR NOTE: /G-8801A(B), HI opening one of t | HEAD TO COLD LEG INJ have failed to open on SI. these valves is a critical step. | |
| | BOP | Verify proper SI alignment: | EOP-1.0 |
| | | ALTERNATIVE ACTION | Allachiment 3 |
| | | a. Ensure proper SI valve alignment: | |
| CAL | | 1) Open MVG-8801A(B), HI HEAD TO COLD LEG INJ. | |
| STE | | 2) Close MVG-8107 and MVG-8108, CHG LINE ISOL. | |
| Ū | | 3) Open LCV-115B(D), RWST TO CHG PP SUCT. | |
| | | 4) Close LCV-115C(E), VCT OUTLET ISOL. | |
| | | 5) Open MVG-8809A(B), RWST TO RHR PP A(B). | |
| | | 6) Open MVG-8888A(B), RHR LP A(B) TO COLD LEGS. | |
| | BOP | b. Verify all SAFETY INJECTION monitor lights are dim on XCP- 6106. | EOP-1.0 Attachment 3 |
| | BOP | c. Verify SI flow on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM | EOP-1.0 Attachment 3 |
| | BOP | d. Check if RCS pressure is LESS THAN 325 psig. | EOP-1.0 Attachment 3 |
| | BOP | e. Verify RHR flow on: | EOP-1.0 Attachment 3 |
| | | FI-605A, RHR DISCHARGE PUMP A FLOW GPM. AND | |
| | | • FI-605B, RHR DISCHARGE PUMP B FLOW GPM. | |

| 2013 NRC S | cenario 2 | Operator Actions | | | | | Form ES-D-2 | | | |
|-----------------------|--|------------------|-----|-----------------|-------------|-------|-------------|----|----|--|
| Op Test No.: | NRC ILO 11-01 | Scenario # | 2 | Event # | 6, 7, 8 | Page | 43 | of | 43 | |
| Event Descri | ption: EOP-1.0 Atta | chment 3 | | | | | | | | |
| Time | Position | | Арр | olicant's Actio | ons or Beha | avior | | | | |
| EVALUATO END OF EO | EVALUATOR NOTE: END OF EOP-1.0 ATTACHMENT 3 | | | | | | | | | |

2013 NRC Scenario 3

Scenario Outline

| Facility: | VC S | UMMER | Scenario No.: | 3 | | Op Test No.: | NRC ILO 11-01 |
|---------------------|-------------|--|--|-------------------|---------------------|--------------------------------------|---------------------------------|
| Examiı | ners: | | Opera | itors: | CRS: | | |
| | | | | - | RO: | | |
| | | | | - | BOP: | | |
| Initial Conditions: | | 80% BOL. Alternate Seal Injection is OOS. Severe thunderstorms have been reported in the area. "B" Train workweek. 'B' RB Spray Pump is OOS (60 hrs into 72 hr Action Statement). A power reduction has been started to place the Unit in Mode 3 within the next 8 hours due to the RB Spray Tech Spec. | | | | | |
| Turnov | /er: | The plant has After turnov | as been stabilized a | t 80%. dow | powei npowe | r for turnover. r to Mode 3 IA' | W GOP-4B |
| | | Power Ope | ration (Mode 1 - De | scend | ing) St | ep 3.2. | |
| Critical Task: | | Establish power to 1DB – prior to RVLIS below the top of the core (61% NR). Restore EFW flow before Feed and Bleed criteria are met (any 2 S/G | | | | | |
| | | less than 12 | 2% WR Level). | | | | |
| Event | Malf. No. | Event | E | Event | Descri | ption | |
| NO. | | Type* | | | | | |
| 1 | N/A | N-BOP, CRS R-RO | Lower Power IAW G Descending) | OP-4 | B, Powe | er Operation (Mo | ode 1 - |
| 2 | CCW004 | I – RO, CRS | CCW To Letdown H | eat Ex | change | er TCV-144 Cont | roller Fails LOW |
| 3 | MSS009A | I- BOP, CRS TS – CRS | Steam Generator St | eam F | low Tra | Insmitter FT-474 | ⊧ fails HIGH. |
| 4 | FWM002A | C – BOP, CRS | "A" Condensate Pun and "C" Condensate | np trip Pump | (A and | B running) - Ide | ntify problem |
| 5 | EPS166 | C –RO, CRS TS –CRS | 1DA Feeder Breake action is required to | r trips restor | open ar e CCW. | nd 'A' CCW Purr . (10 min or trip | np trips. Prompt RCPs/Plant) |
| 6 | EPS019B | M – ALL | Aux Transformer OC lockout. Restore pov | B-889 ver thr | 92 trips u ALT F | open and "B" EI FEED to 1DB | OG overspeed |
| 7 | MSS017A | C-BOP | Failure of TDEFW p | ump to | o auto-s | tart (Will manua | lly start) |
| * | (N)ormal, (| (R)eactivity, (I |)nstrument, (C)on | ipone | nt, (N | /I)ajor | |

The following notation is used in the ES-D-2 form "Time" column:

IOA designates Immediate Operator Action steps

* designates **Continuous Action** steps

The crew will assume the watch having been pre-briefed on the Initial Conditions, the plan for this shift and any related operating procedures.

EVENT 1: Normal downpower

The crew will continue a downpower IAW GOP-4B Power Operation (Mode 1 - Descending) using GOP-4B step 3.2.

EVENT 2: TCV-144 Controller Fails Low

On a cue from the Examiner, Letdown temperature controller (TCV-144) fails low causing TCV-144 to close reducing CCW flow to the Letdown Heat Exchanger. Actual letdown temperature will increase. The DEMIN FLOW DIVERT TEMP HI alarm will annunciate and TCV-143 will divert letdown flow directly to the VCT from the demineralizer ion exchangers.

The RO will take control of TCV-144 in manual to adjust CCW flow, and restore normal letdown temperatures. Flow through TCV-143 can then be restored to the demineralizer in service, if desired.

EVENT 3: Controlling SG Steam Flow Fails High

On a cue from the Examiner, S/G Steam Flow Channel FT-474 fails High for "A" S/G. The "A" S/G Feed Reg Valve responds by increasing feed flow until actual S/G level increases.

The crew will enter AOP-401.3, Steam Flow - Feedwater Flow Protection Channel Failure and the BOP will swap channels for SGWLCS and MFP speed Control as part of the immediate operator actions. The CRS will address LCO 3.3.1 and 3.3.2 (trip B/S within 72 hours).

EVENT 4 : Condensate Pump trips

On a cue from the Examiner, the "A" Condensate Pump trips ("B" Condensate Pump remains running). The crew will enter AOP-208.1, Condensate Pump Trip, and the BOP will start the idle Condensate Pump.

EVENT 5: 1DA Feeder Breaker trips open, the A Diesel Generator fails to Auto-Start, and <u>'A' CCW Pump trips. Prompt action is required to restore CCW. (10 min or trip</u> <u>RCPs/Plant)</u>

On a cue from the Examiner, the normal feeder breaker to the 1DA bus will trip open. The "A" Diesel Generator will Auto-Start and power the 1DA bus.

The "A" CCW pump will trip and not auto-start when power is restored. The operators must start the "C: CCW pump on the "A" Header to restore CCW to the RCPs within 10 minutes or trip the plant.

The CRS will refer to Technical Specifications 3.8.1.1

With one offsite circuit of 3.8.1.1.a inoperable:

1. Demonstrate the OPERABILITY of the remaining offsite A.C. sources by performing Surveillance Requirement 4.8.1.1.1 within 1 hour and at least once per 8 hours thereafter, and

2. If either EDG has not been successfully tested within the past 24 hours, demonstrate its OPERABILITY by performing Surveillance Requirement 4.8.1.1 .2.a.3 separately for each such EDG within 24 hours unless the diesel is already operating, and

3. Restore the offsite circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours- and COLD SHUTDOWN within the following 30 hours.

EVENT 6: Loss of 230KV power

Event 6 will trigger automatically if the operators trip the Reactor due to event 5 or on a cue from the Examiner. After CCW is restored Power will be lost to both 1DA and 1DB

- Breaker OCB-8892 will trip open.
- 1DB NORMAL FEEDER BREAKER
- 1DB EMERGENCY AUXILIARY TRANSFORMER
- Both Diesel Generators will overspeed
- RELAY 51BX-1DA 7.2 KV SWGR BUS 1DA OVERCURRENT
- Main Transformer Feed OCB 8902

The crew will enter EOP-6.0 (ECA-0.0), Loss Of All ESF AC Power, and restoration of 1DB from the 115KV ESF transformer by the alternate feed will be accomplished by referring to AOP-304.1, Loss Of Bus 1DA (1DB) With The Diesel Not Available.

EVENT 7: Failure of the TDEFW Pump to Auto-Start

The TDEFW pump will not auto-start but it can be started manually by opening PCV-2030.

CRITICAL TASKS:

It is a critical task to restore power to 1DB to restore inventory control before RVLIS lowers below the top of the core (61% NR) due to loss of RCS inventory through RCP seals.

It is a critical task that EFW flow be established prior to any 2 S/G less having less than 12% WR Level, Feed and Bleed criteria to prevent a loss of heat sink. This can be accomplished by starting the TDEFW pump, or the "B" MDEFW Pump after power is restored.

TERMINATION:

The scenario will be terminated after EFW flow is established, power is restored to 1DB and the appropriate recovery procedure is selected or at the discretion of the Examiner.

VC Summer 2013 NRC Scenario 3 Simulator Setup

Initial Conditions:

- IC-53, 80% Power MOL, (IC-324 for 2013) Boric acid added (30 gallons), feed pump stopped, FWBP still running).
- Reactivity Management Plan/Turnover sheet for IC Set
- Boron Concentration = 1150 ppm
- Xe = -2620 pcm
- Burnup = 4007 MWD/MTU = 90.5 EFPD
- 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.

VC Summer 2013 NRC Scenario 3 Simulator Setup (SNAP 324)

- 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:

Standard Simulator Setup

- PMP-LD003P XPP0138 LEAK DETECTION SUMP PMP LOSS OF POWER
- VLV-FW028W XVG01676-FW FW HDR RECIRC ISOL VLV LOSS OF POWER
- VLV-FW029W XVG01679-FW FW HTR RECIRC ISO VLV LOSS OF POWER
- VLV-CS052W XVT08141A-CS RCP A SEAL LEAKOFF VLV LOSS OF POWER
- VLV-CS054W XVT08141C-CS RCP C SEAL LEAKOFF VLV LOSS OF POWER
- VLV-CS053W XVT08141B-CS RCP B SEAL LEAKOFF VLV LOSS OF POWER

Scenario Related Pre-Load

 MAL-MSS017A PVG-2030-MS TDEFP AUTO START FAILURE Delay=0, Ramp=0, Final=Active

EVENT 1: Lower Power IAW GOP-4B, Power Operation

NORMAL – No malfunctions.

EVENT 2: CCW To Letdown Heat Exchanger TCV-144 Controller Fails Low

- TRIGGER 2:
 - MAL-CCW004, CCW TO LETDOWN HEAT EXCHANGER TCV-144 CONTROLLER FAILURE, Delay=0, Ramp=0, Final=0

XCP-603 1-5 is the alarm that comes in first then XCP-613, 1-2 then 613, 3-2. Crews may decide to reduce letdown to 45 gpm. Can open TCV-144 in manual and TI-144 still reads correctly.

EVENT 3: Steam Generator Steam Flow Transmitter (FT-474) fails high.

- TRIGGER 3:
 - MAL-MSS009A STEAMLINE FLOW (DP) TRANSMITTER 474 FAILS Delay=0, Ramp=0, Final=5e+006

Immediately get XCP-624 4-2 and 4-3 Level Dev XCP-624 1-5 comes in at ~1min Trip on high level occurs at ~2 min without operator action.

EVENT 4: "A" Condensate Pump trip (2 running) - Identify problem and start BU Pp

- TRIGGER 4:
 - MAL-FWM002A CONDENSATE PUMP A TRIP Delay=0, Ramp=0, Final =Active

Immediately get XCP-627 3-1.

EVENT 5: 1DA Feeder Breaker trips open and 'A' CCW Pump trips. Prompt action is required to restore CCW. (10 min or trip RCPs/Plant)

- TRIGGER 5
 - MAL-EPS005A LOSS OF ESF BUS 1DA (NORMAL FEED BREAKER) Delay=0 Delete=0
 - MAL-CCW007A CCW PUMP 1 TRIP Delay = 00:00:10, Delete = 00:00:00

EVENT 6: 8892 trips open with a "B" EDG overspeed lockout. Restore power thru ALT FEED to 1DB

EVENT 6 (JEHCTRIP">0) This Event will auto-insert if the Reactor is tripped in Event 5.

NOTE: If Event 6 is manually inserted then will start out without a reactor trip and the crew will have to insert the trip on direct entry to EOP-6.0.

- TRIGGER 6
 - MAL-EPS005C LOSS OF ESF BUS 1DB (NORMAL FEEDER BREAKER) Final=Active Delay = 0 Delete = 0
 - MAL-EPS003 LOSS OF EMERGENCY AUXILIARY TRANSFORMER Final=Active Delay = 0 Delete = 0
 - LOA-EPS166 RELAY 51BX-1DA 7.2 KV SWGR BUS 1DA OVERCURRENT USE LOA EPS-1 TO RESET Position to = TRIP Delay = 0 Delete = 0
 - OVR-TS001BD XCP-6070 SUB-STATION PANEL INSERT PI-2 8 Position to = TRUE Delay = 0 Delete = 0
 - MAL-EPS019A D/G A SPEED CONTROL FAILURE Delay=0, Ramp=0, Final=600
 - MAL-EPS019B D/G B SPEED CONTROL FAILURE Delay=0, Ramp=0, Final=600

• TRIGGER 10

EOP-6.0 step 13 b. Locally isolate the RCP seals

- b. Close the following, and record on ATTACHMENT 9, LOCALLY OPERATED ISOLATION VALVES:
 - XVT08100-CS, RC PUMP SEAL RETURN HDR ISOL VLV (ORC) (AB-412 West Pen)
 - XVG09606-CC, RB CC RETURN HEADER VALVE (AB-436 West Pen)
 - XVT08105-CS, SEAL INJECTION HEADER ISOLATION VALVE (AB-436)
 - VLV-CS042P
 XVT08100-CS RCP SEAL WTR ISO VLV FAIL POSITION, Final=0
 - VLV-CC015P XVG09606-CC COMP CLG RET FR REACTOR BLDG FAIL POSITION, Final=0
 - VLV-CS047P XVT08105-CS CHG PMP TO SEAL WTR INJ FAIL POSITION, Final=0
- TRIGGER 13

EOP-6.0 step13 Alternative Action c. Close all of the following and record on ATTACHMENT 9, LOCALLY OPERATED ISOLATION VALVES

XVT08102A-CS, RC PUMP A SEAL SUPPLY ISOL VALVE (ORC), (AB-412 West Pen) XVT08102B-CS, RC PUMP B SEAL SUPPLY ISOL VALVE (ORC), (AB-412 East Pen) XVT08102C-CS, RC PUMP C SEAL SUPPLY ISOL VALVE (ORC), (AB-412 East Pen)

- VLV-CS043P
 XVT08102A-CS RCP A SEAL WTR INJ FAIL POSITION
 Delay=2 min, Ramp=30 sec, Final=0
- VLV-CS044P
 XVT08102B-CS RCP B SEAL WTR INJ FAIL POSITION
 Delay=3min, Ramp= 30 sec, Final=0
- VLV-CS045P XVT08102C-CS RCP C SEAL WTR INJ FAIL POSITION Delay:4 min, Ramp=30 sec, Final=0

• TRIGGER 11

EOP-6.0 step 14

Locally isolate the condenser from the CST by closing the following (TB-412)...

XVG00650-CO,
XVT00652-CO,
XVB00653-CO,
XVT00655-CO,
XVT00655-CO,
XVB00631-CO,
XVT00633-CO,
XVT00633-CO,<

- LOA-CND033 CC-V 650 COND HOTWELL NORM MU ISOL VLV Delay=2 min, Ramp= 30 sec, Final=0
- LOA-CND034 CC-V 652 COND HOTWELL NORM MU BYPASS VLV Delay=3 min, Ramp=30 sec, Final=0
- LOA-CND035 CC-V 653 COND HOTWELL EMER MU ISOL VLV Delay=4 min, Ramp= 30 sec, Final=0
- LOA-CND036 CC-V 655 COND HOTWELL EMER MU BYASS VLV Delay=5 min, Ramp=30 sec, Final=0
- LOA-CND031 CC-V 631 CST FILL VLV ISOL VLV Delay=6 min, Ramp= 30 sec, Final=0
- LOA-CND032 CC-V 633 CST FILL VLV BYPASS VLV Delay=7 min, Ramp= 30 sec, Final=0
- TRIGGER 12

EOP-6.0 Step 19 Reduce DC loads as necessary to maintain battery voltage GREATER THAN 108 VDC.

ATTACHMENT 2 - LOCALLY DEENERGIZING DC LOADS

- LOA-TUR013 GEN MACHINE GAS PRESSURE REGULATOR SETPOINT Delay=2 min, Ramp=30, Final=0
- LOA-TUR012 GEN CASING VENT VALVE Delay=3 min, Ramp=30 sec, Final=0
- VLV-AR001P XVB00191-AR VAC BKR LO MN COND VLV FAIL POSITION Delay=4 min, Ramp=30 sec, Final=100

• TRIGGER 14 - ATTACHMENT 2 - LOCAL DEENERGIZING DC LOADS

Step 4 WHEN the conditions of Step 3 are met, THEN secure the associated Emergency Oil Pumps (TB-412):

WHEN the associated Main Feedwater Pump has stopped, THEN open DPN-2X 01(02)(03), BREAKER FOR FWP-A(B)(C) EBOP (XSX0002A(B)(C)).

WHEN Machine Gas Pressure is LESS THAN 5 psig, THEN open DPN-2X 04, EMERGENCY SEAL OIL PUMP XPT0001-PP3.

WHEN the Main Turbine has stopped, THEN open DPN-2X 05, BREAKER FOR EBOP (XSX0003).

- LOA-FWM052 FPT A EMERG OIL PUMP-RACK OUT Delay=00:40 sec, Final=OPEN
- LOA-FWM053 FPT B EMERG OIL PUMP-RACK OUT Delay=00:55 sec, Final=OPEN
- LOA-FWM054 FPT C EMERG OIL PUMP-RACK OUT Delay=01:15 sec, Final=OPEN
- LOA-TUR022 EBOP POWER SUPPLY BREAKER AT DPN2X Delay=00, Final=OPEN
- LOA-TUR020 GEN EMERGENCY SEAL OIL PUMP SWITCH POSITION Delay=02:30, Final=STOP
- TRIGGER 15

<u>DE-energize</u> Loading sequencer (prior to energizing bus)

- ANN-SG015 ESFLS PNL DOOR OPEN Delete=7 sec
- LOA-EPS138 LOAD SEQUENCER B:CONTROL POWER SWITCH Delay=5 sec, Final=OPEN
- TRIGGER 16

<u>RE-energize</u> Loading sequencer (after energize bus)

- ANN-SG015 ESFLS PNL DOOR OPEN Delete=7 sec
- LOA-EPS138 LOAD SEQUENCER B:CONTROL POWER SWITCH Delay=5 sec, Final=CLOSED

EVENT 7: Failure of TDEFW pump to auto-start (Will manually start)

This is a pre-existing failure.

| 201 | 3 NRC Scenario 1 Rev 1Operator ActionsForm ES-D-2 | |
|----------------|--|--------|
| | | - |
| Op | NRC ILO 11-01 Scenario # 3 Event # 2 Page 11 of 39 | |
| Eve | ent Description: Letdown Temperature Controller TCV-144 Fails LOW | |
| Tir | ne Position Applicant's Actions or Behavior | |
| Воо | th Operator: This is a normal evolution – no triggers are required | |
| | GENERAL NOTES | GOP-4B |
| A. B. C. | Procedure steps should normally be performed in sequence. However, it is acceptable to perform steps in advance after thorough evaluation of plant conditions and impact by the Shift Supervisor or Control Room Supervisor. Axial Flux Difference, ΔI, should be maintained within limits per V.C. Summer Curve Book, Figure I-4.1 during Reactor Power Operation above 50% per Tech Spec 3.2.1. After any Thermal Power change of greater than 15% within any one hour, Attachment III.H. of GTP-702 must be completed. | |
| E. | the load change. If Reactor Power is stabilized during this procedure for the purpose of raising power per GOP-4A, a Power Range Heat Balance shall be performed. | |
| | REACTOR CONTROL | |
| A. B. C. | During operation with a positive Moderator Temperature Coefficient: Power and temperature changes should be slow and will require constant operator attention. All power and load changes should be performed in small increments. Rod Control should be maintained in Automatic if any Pressurizer PORV is isolated. If at any time, power decreases unexpectedly below 0.1% on any Power Range NI (computer indication available) OR below 1.0% on any Power Range NI control board indication (computer not available): No positive reactivity will be added by rods or dilution. A complete reactor shutdown shall be performed per GOP-5. A controlled reactor startup may be commenced per GOP-3 once the event has been reviewed by Reactor Engineering. | |
| | TURBINE CONTROL | |
| A. | If during power descension plant stabilization is required, Use the EHC HMI: Control/Load screen, | |
| В. С. | select HOLD. To resume power descension select the recommended Load Ramp Rate Turbine Load values are approximate and provided as initial starting points for load changes. When desired Reactor or Turbine parameters are achieved stabilize (if necessary) and proceed as directed | |
| D. E. | The load limit "ramp rate" buttons only affect how fast the Load Limit Ref. moves to the new Load Limit Setpoint. Load reductions made using the limiter will always occur at 30% per minute. The load limiter will reduce turbine load if it is set more than 2% below the current Load Reference value. Load will only be shed until the Load Reference value is once again within 2% of Load Limit Ref. | |
| | MSR CONTROL | |
| А. В. | Do not exceed 50°F Δ T between the inlets to the Low Pressure Turbine. When in Manual, do not exceed 25°F per half-hour temperature change rate for the tube side of the Moisture Separator/Reheater. | |

| 2013 NF | RC Scenaric | 1 Rev 1Operator ActionsForm ES-D-2 | _ |
|----------------------|---|--|--------|
| Op Test N | lo.: NRC IL | O 11-01 Scenario # <u>3</u> Event # <u>2</u> Page <u>12</u> of <u>39</u> |] |
| Event De | escription: Le | tdown Temperature Controller TCV-144 Fails LOW | |
| Time | Position | Applicant's Actions or Behavior | |
| EVALUA 3.1 are ir | TOR NOTE | : The Scenario starts at step 3.2 of GOP-4b but the RO steps of Step ow as they are still applicable. | |
| | RO | Maintain Tavg within the control band by Control Rod motion or boron concentration changes. | GOP-4B |
| | BO | Borate or dilute per SOP-106, Reactor Makeup Water System, to maintain the following parameters: | GOP-4B |
| | ĸŬ | ΔI within limits. Control Rods above the Rod Insertion Limit. | |
| | | <u>NOTE 3.2</u> | GOP-4B |
| a. Ste | p 3.2 lowers | Reactor Power from 90% to 48%. | |
| b. Whi Exc con | ile the plant changers mu densate out | is being maneuvered, total condensate flow through the Blowdown Heat ist be maintained greater than 450 gpm, which should maintain let temperature at least 30°F below the DA temperature. | |
| | | Reduce Reactor Power to 48% as follows: | GOP-4B |
| | BOP | a. Using the EHC HMI, Control/Load screen, reduce load per SOP-214 at a rate of 1% per minute or less. | |
| | | NOTE 3.2.b | |
| The Syst MVARs i | em Controlle n a five minu | er should be notified prior to manually changing MVARs by more than 50 ute period, unless the change is needed to prevent equipment damage. | |
| | BOP | As load decreases, adjust Megavars using GEN FIELD VOLT ADJ as requested by the System Controller and within the Estimated Generator Capability curve (Enclosure A). | GOP-4B |
| | | c. When Reactor Power is between 60% and 80%, reduce to the following pumps in service per SOP-210, Feedwater System: | GOP-4B |
| | BOP | 1) Two Main Feedwater Pumps. | |
| | | 2) Three Feedwater Booster Pumps. | |
| When Po | ower has bee | en lowered to <75% the next event may be initiated. | |

| 2013 NF | RC Scenario | 1 Rev 1 Operator Actions Form ES-D-2 | - | | | |
|---|---|--|-------------|--|--|--|
| Op Test N | lo.: NRC IL | O 11-01 Scenario # <u>3</u> Event # <u>2</u> Page <u>13</u> of <u>39</u> | | | | |
| Event De | escription: Le | tdown Temperature Controller TCV-144 Fails LOW | | | | |
| Time | Position | Applicant's Actions or Behavior |] | | | |
| Booth Operator: Initiate Event 2 (TRIGGER 2) when directed. | | | | | | |
| Indicatio XCP-603 XCP-613 | ns availabl , 1-5, LTDN, , 1-2, DEMII | e: /SL WTR HX FLO LO TEMP HI N FLO DIVERT TEMP HI | | | | |
| | RO | Refer to Alarm Response Procedures | | | | |
| | | PROBABLE CAUSE:1. Imbalance between Charging and Letdown flows.2. Insufficient Component Cooling flow to Letdown Heat Exchanger. | XCP-613 1-2 | | | |
| | | AUTOMATIC ACTIONS <u>:</u> 1. TCV-143, LTDN TO VCT OR DEMIN, diverts Letdown flow around demineralizers to VCT. | XCP-613 1-2 | | | |
| EVALU/ The fail ARP bu | ATOR NOTE ure can be t the crew r | E: mitigated by taking manual control of the TCV in accordance with the may elect to isolate Letdown until they have diagnosed the failure. | | | | |
| | | CORRECTIVE ACTIONS | XCP-613 1-2 | | | |
| | RO | If necessary, reduce Letdown flow to minimum by ensuring the 45 gpm orifice is in service and both 60 gpm orifices are isolated. | | | | |
| | | 2. Verify proper operation of TCV-144, CC TO LTDN HX. (NO) | | | | |
| | | 3. If necessary, place TCV-144, CC TO LTDN HX, in MAN and increase flow. | | | | |
| | | SUPPLEMENTAL ACTIONS: | XCP-613 1-2 | | | |
| | RO | Balance Charging and Letdown flow as necessary to reduce Letdown temperature. | XCP-613 1-2 | | | |
| | | 2. If necessary, initiate Excess Letdown per SOP-102. | XCP-613 1-2 | | | |
| | | 3. When conditions allow, place TCV-143, LTDN TO VCT OR DEMIN, in DEMIN/AUTO. | XCP-613 1-2 | | | |
| Booth | Operator | : Acknowledge requests for I&C support | | | | |
| | CRS | Contact I&C for repairs | 1 | | | |

| 2013 NF | RC Scenario | 1 Rev 1Operator ActionsForm ES-D-2 | |
|-----------------------|----------------------|--|-----------|
| Op Test N Event De | lo.: NRC IL | O 11-01 Scenario # 3 Event # 2 Page 14 of 39 tdown Temperature Controller TCV-144 Fails LOW | |
| Time | Position | Applicant's Actions or Behavior | |
| EVALUA were iso | TOR NOTE | :The following steps are only applicable if Charging and Letdown g the event diagnosis. | |
| EVALUA establish | TOR NOTE Letdown. | : AOP-102.1, LOSS OF LETDOWN will be used, if necessary, to re- | |
| | RO | Check if PZR level is GREATER THAN 23% | AOP-102.1 |
| | RO | Attempt to place Letdown in service: | AOP-102.1 |
| | | a. Set PCV-145, LO PRESS LTDN, to 70%. | AOP-102.1 |
| | | b. Open TCV-144, CC TO LTDN HX. | AOP-102.1 |
| | | c. Place TCV-143, LTDN TO VCT OR DEMIN, in VCT position. | AOP-102.1 |
| | | d. Open PVT-8152, LTDN LINE ISOL. | AOP-102.1 |
| | | e. Open both LCV-459(460), LTDN LINE ISOL. | AOP-102.1 |
| | | f. Slowly adjust FCV-122, CHG FLOW, to obtain 60 gpm Charging flow. | AOP-102.1 |
| | | g. Open desired Orifice Isolation Valve(s) to obtain 60 gpm to 120 gpm: | AOP-102.1 |
| | | PVT-8149A, LTDN ORIFICE A ISOL (45 gpm). PVT-8149B, LTDN ORIFICE B ISOL (60 gpm). PVT-8149C, LTDN ORIFICE C ISOL (60 gpm). | |
| | | h. Adjust FCV-122, CHG FLOW, to maintain TI-140, REGEN HX OUT TEMP between 250°F and 350°F while maintaining PZR level. | AOP-102.1 |
| | | i. Adjust PCV-145, LO PRESS LTDN, to maintain PI-145, LO PRESS LTDN PRESS PSIG, between 300 psig and 400 psig. | AOP-102.1 |
| | | j. Place PCV-145, LO PRESS LTDN, in AUTO. | AOP-102.1 |
| | | k. Place TCV-144, CC TO LTDN HX, in AUTO (NO) | AOP-102.1 |
| | | I. Ensure Letdown temperature is stable. | AOP-102.1 |
| | | m. Place TCV-143, LTDN TO VCT OR DEMIN, in DEMIN/AUTO position. | AOP-102.1 |
| | | n. Verify 60 gpm to 120 gpm on FI-150, LO PRESS LTDN FLOW GPM. | AOP-102.1 |

| 2013 N | RC Scenario | 1 Rev 1 Operator Actions Form ES-D-2 | - | | | | |
|---|--------------|---|-----------|--|--|--|--|
| | | | | | | | |
| Op Test N | | OTT-OT Scenario # _3 Event # _2 Page _15 of _39 atdown Temperature Controller TCV 144 Faile LOW | | | | | |
| Time Desition Applicant's Actions or Pobavior | | | | | | | |
| TIME | rosition | NOTE-Step 3 | AOP-102.1 | | | | |
| At least 6 | gpm Seal I | njection flow must be maintained to each Reactor Coolant Pump. | | | | | |
| | RO | IF Normal Letdown is in service, THEN control Charging and Letdown to maintain PZR level at program level. | AOP-102.1 | | | | |
| | RO | Place FCV-122, CHG FLOW, in AUTO. REFER TO SOP-102, CHEMICAL AND VOLUME CONTROL SYSTEM. | AOP-102.1 | | | | |
| EVALUA used, if I | TOR NOTE | SOP-102, CHEMICAL AND VOLUME CONTROL SYSTEM will be to place FCV-122, CHG FLOW, in AUTO. | | | | | |
| | | Place the following in MAN: | SOP-102 | | | | |
| | RO | a. PZR LEVEL MASTER CONTROL. | | | | | |
| | | b. FCV-122, CHG FLOW. | | | | | |
| | | Adjust FCV-122, CHG FLOW, in MAN to establish Pressurizer level at or near programmed level. | SOP-102 | | | | |
| | | Establish automatic FCV-122, CHG FLOW, control as follows: | SOP-102 | | | | |
| | | 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 ✓) | | | | | |
| | | Adjust PZR LEVEL MASTER CONTROL in MAN, as necessary, to maintain Pressurizer level at or near programmed level. | SOP-102 | | | | |
| | | When Pressurizer level is within 1% of and trending to programmed level, place PZR LEVEL MASTER CONTROL in AUTO. (PEER ✓) | SOP-102 | | | | |
| | | 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-102 | | | | |
| | | Verify PZR pressure is stable at OR trending to 2235 psig (2220 psig to 2250 psig). | AOP-102.1 | | | | |
| | CRS | RETURN TO the Procedure and Step in effect. | AOP-102.1 | | | | |
| At discre | etion of the | Lead Examiner, proceed to the next event. | 1 | | | | |

| 2013 NF | RC Scenario | 3 Operator Actions Form ES-D-2 | | |
|--|---|--|-------------|--|
| Op Test N Event De | lo.: <u>NRC IL</u> escription: St | O 11-01 Scenario # <u>3</u> Event # <u>3</u> Page <u>16</u> of <u>39</u> eam Generator Steam Flow Transmitter FT-474 fails HIGH | | |
| Time | Position | Applicant's Actions or Behavior | | |
| Booth O | perator: Ini | tiate Event 3 (TRIGGER 3) when directed. | | |
| Indicatio XCP-624 XCP-624 | ns availabl , 5-4, SG B , 2-5, SG B | e: FWF>STF MISMATCH LVL DEV | | |
| | BOP | Refer to alarm response procedure. | | |
| | | CORRECTIVE ACTIONS: | | |
| | BOP | Evaluate feed flow indicators FI-486, FWF, and FI-487, FWF. | XCP-624 5-4 | |
| | BOP | If necessary, manually control feedwater to restore Steam Generator level to between 60% and 65%. | | |
| | | SUPPLEMENTAL ACTIONS: | | |
| | BOP | If an instrument channel failed, go to AOP-401.3, Steam Flow - Feedwater Flow Protection Channel Failure. | XCP-624 5-4 | |
| | CRS | Direct entry to AOP-401.3, Steam Flow-Feedwater flow Protection Channel Failure | | |
| Through | out this proc | <u>NOTE</u> edure, "AFFECTED" refers to any SG experiencing level control problems. | AOP-401.3 | |
| ΙΟΑ | BOP | Verify the failed channel is the controlling channel. | AOP-401.3 | |
| <u>NOTE - Step 2</u> FW AND STEAM CONTROL CHANNEL SEL Switches for a SG should be selected to the same direction (both to the left or both to the right). | | | | |
| | | Select the operable flow channel: | AOP-401.3 | |
| ΙΟΑ | BOP | Place FW CONTROL CHANNEL SEL Switch to the operable channel Place STEAM CONTROL CHANNEL SEL Switch to the operable channel. | | |
| CTRL+Al accompli | LT+S on eith sh a rapid lo | NOTE - Step 3 her EHC HMI is equivalent to 50 MWe, and is the preferred method to ad reduction. | AOP-401.3 | |
| ΙΟΑ | BOP | Verify turbine load is less than 950 MWe. | AOP-401.3 | |
| ΙΟΑ | BOP | Verify only ONE SG is affected. | AOP-401.3 | |

| 2013 N | RC Scenario | 03 | Operator Action | S | Form ES-I | D-2 |
|-----------|---|--|--|--|--|-----------------|
| Op Test N | No.: NRC IL | .0 11-01 Scena | rio # <u>3</u> | Event # 3 | Page <u>17</u> of <u>3</u> | 39 |
| Event De | escription: S | team Generator Stear | m Flow Transmitt | er FT-474 fails HI | GH | |
| Time | Position | | Applicant's | Actions or Behavior | - | |
| ΙΟΑ | BOP | Adjust the feedwa to the affected SC | ater flow control 3. | valve as necess | ary to restore feed f | low AOP-401.3 |
| ΙΟΑ | BOP | Check if FeedwatFeedwater heFeed flow is nAll operating F | er Pump Speed ader pressure > ormal for steam Feedwater Pum | l Control is opera Steam header flow and power p flows and spea | ating properly: pressure level eds are balanced | AOP-401.3 |
| | BOP | Verify narrow ran | ge levels in all S | SGs are between | 60% and 65%. | AOP-401.3 |
| | BOP Restore the affected SG Control systems to normal: Place the Feedwater Flow Control Valve in AUTO Place the Feedwater Speed Control System in AUTO. Control System in AUTO. Refer To SOP-210, Feedwater System. (Should have remained in AUTO) | | | | AOP-401.3 | |
| | CRS | Within 72 hours, p | place the failed | channel protectio | on bistables in a tripp | ped AOP-401.3 |
| | | a. Identify the ass Attachment 1. | ociated bistable | es for the failed c | hannel. REFER TO | AOP-401.3 |
| AOP-401 | .3 Attachmo | ent 1 Excerpt STEAM FLO | W - FEEDWATER FLOW CHANNELS | PROTECTION | | AOP-401.3 |
| | INSTRUMENT | ASSOCIATED BISTABLE BISTABLE LOCATION | TRIP STATUS LI | GHT TECH S | PECS STPS | |
| | FT-474 | FB-474A C3-741-BS-1 FB-478B C3-742-BS-1 | CHAN III LP A FB CHAN III SG A FB | -474A TABLE 3.3-1 -478B TABLE 3.3-3 | ITEM 14 302.028 ITEM 4.d 395.004 | |
| | CRS | Identifies FB-474 | A and FB-478B | as the affected E | Bistables | |
| | | b. Record the follo REACTOR PR | owing for each a OTECTION AN | associated bistat D CONTROL SY | ble on SOP-401, STEM, Attachment | AOP-401.3 I: |
| | | Instrument Associated Bistable Lo STPs. | t. d Bistable. ocation. | | | |

| 2013 N | RC Scenaric | 0.3 Operator Actions Form ES-D-2 | - | | | | |
|--|---|--|------------|--|--|--|--|
| | | | | | | | |
| Op Test N | Op Test No.: NRC ILO 11-01 Scenario # 3 Event # 3 Page 18 of 39 | | | | | | |
| Event De | escription: St | eam Generator Steam Flow Transmitter FT-474 fails HIGH | | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | | |
| | | Refers to Technical Specifications: | Tech Specs | | | | |
| | | Table 3.3-1 item 14 (Action 6 w/in 72 hrs) | | | | | |
| | CRS | The inoperable channel is placed in the tripped condition within 72 hours | | | | | |
| | | Table 3.3-3 item 4.d (Action 24 w/in 72 hrs) | | | | | |
| | | The inoperable channel is placed in the tripped condition within 72 hours. | | | | | |
| Booth Operator: Acknowledge requests for support in troubleshooting and placing channel in trip. | | | | | | | |
| | CRS | c. Notify the I&C Department to place the identified bistables in trip. | AOP-401.3 | | | | |
| | CRS | Determine and correct the cause of the channel failure. | AOP-401.3 | | | | |
| | CRS | Contact I&C for repairs. | | | | | |
| Booth Operator: If Shift Supervisor guidance is requested – direct continuing the downpower. | | | | | | | |
| | CRS | Restore the plant to the pre-event Reactor Power level, as directed by the Shift Supervisor. | AOP-401.3 | | | | |
| EVALUA The next been ide | TE NOTE: event may ntified. | be initiated after the applicable Technical Specification Actions have | | | | | |

| 2013 NRC | C Scenario 3 | Operator Actions Form | n ES-D-2 |
|--|---|---|---------------------|
| Op Test No. Event Desc Condensat | : NRC ILO 1 ⁴ cription: "A" Co te Pump | 1-01 Scenario # <u>3</u> Event # <u>4</u> Page <u>19</u> ndensate Pump Trip (A and B running) - Identify problem and start ⁴ | of <u>39</u> 'C" |
| Time | Position | Applicant's Actions or Behavior | |
| Booth O | perator: ent 4 (TRIGGE | R 4) when directed. | |
| Indication XCP-627-3 XCP-627-5 | s available: 3-2 CO PP A/I 5-4 CLOSED (| B/C OVRLD CYCLE COOLING TRBL | |
| | CREW | Implement ARP-001-XCP-627, 3-2 | |
| | | PROBABLE CAUSE: 1. Pump malfunction, binding, bearing wear, etc. 2. Pump malfunction, pump runout. 3. Single Phasing event, loss of current flow through one pl the electric power supply. | XCP-627 3- |
| | | AUTOMATIC ACTIONS: 1. If the condition persists, the pump will trip on overcurrent | XCP-627 3-: |
| | | <u>NOTE</u> This alarm has reflash capabilities. | XCP-627 3- |
| | | CORRECTIVE ACTIONS | XCP-627 3- |
| | BOP | 1. Determine which pump is overloaded. | XCP-627 3- |
| | BOP | 2. Determines single phasing event is not in progress. | XCP-627 3- |
| | | SUPPLEMENTAL ACTIONS: | XCP-627 3- |
| | BOP | Start the idle Condensate Pump per SOP-208, Condensate and stop the overloaded pump. | System, XCP-627 3- |
| | CRS | Direct the BOP to start the "C" Condensate Pump IAW SOP | -208 |
| | DOD | Ensure the discharge valve for the pump to be started is close | sed: SOP-208 |
| | BOD | c. XVB-614C, C DISCH ISOL. | |
| | 505 | Start one of the following: (PEER ✓) | SOP-208 |
| | BOb | c. XPP-0042C, CO PUMP C. | |
| | BOP | Open the associated pump discharge valve: (PEER ✓) | SOP-208 |

| 2013 NRC | C Scenario 3 | Operator Actions | Form ES-D-2 | |
|-------------------------------------|---|--|---------------------------------------|----|
| | | | | |
| Op Test No. | NRC ILO 11 | - 01 Scenario # <u>3</u> Event # <u>4</u> Page | e <u>20</u> of <u>39</u> | |
| Event Desc Condensat | cription: "A" Co e Pump | ndensate Pump Trip (A and B running) - Identify problem and | d start "C" | |
| Time | Position | Applicant's Actions or Behavior | | |
| | | c. XVB-614C, C DISCH ISOL. | | |
| Booth O Acknowled Report no o | perator: ge requests to obvious signs | o investigate the failure of the A Condensate Pump. of breaker or pump failure. | | |
| | CRS | Correct the cause of the overload condition as soon a | s possible XCP-627 3 | -2 |
| | CRS | If a Loss of Single Phase Event is verified to be in pro refer to SOP-304, 115KV/7.2KV Operations, Enclosur Single Phase Guidelines, for further guidance. | gress, then XCP-627 3 e F, Loss Of | -2 |
| EVALUAT | E NOTE: event may be | initiated after the C Condensate pump is running. | | |

| 2013 NRC | C Scenario 3 | Operator Actions Form ES-D-2 | - |
|------------------------|-------------------------------|--|-------------|
| | | |] |
| Op Test No. | | EVENT Scenario # <u>3</u> Event # <u>5</u> Page <u>21</u> of <u>39</u> | |
| Event Des | cription: 1DA F | eeder Breaker trips open and 'A' CCW Pump trips. | |
| Time | Position | Applicant's Actions or Behavior | |
| Booth C | perator: In | hitiate Event 5 (TRIGGER 5) when directed. | |
| Indication | s available: | | |
| XCP-636, \$ | 5-2 7KV ESF | CHAN A BKR TRIP | |
| XCP-601, XCP-602, 2 | 1-3, CCP A/C 2-3, RCP A/B/ | TRIP FAIL C THERM BAR & BRG FLO LO | |
| | | | |
| Multiple Ac | Iditional Alarm | s associated with the Loss of the 1DA bus. | |
| EVALUAT | OR NOTE: | | |
| The crew | will identify th | nat CCW has been lost and will implement action to restore CCW | |
| within <u>10 i</u> | <u>minutes</u> or th | e Reactor must be tripped and the RCP's stopped. | |
| If the Read | ctor is manua | Ily tripped then EVENT 6 is automatically triggered. | |
| | BOP | Implements XCP-636 5-2 7KV ESF CHAN A BKR TRIP | XCP-636 5-2 |
| | | AUTOMATIC ACTIONS: | XCP-636 5-2 |
| | | If XSW1DA 01, BUS 1DA NORMAL INCOMING BKR, tripped, Diesel Generator A will automatically start. | |
| | | CORRECTIVE ACTIONS: | XCP-636 5-2 |
| | BOP | 1. Using MCB indication, determine which breaker tripped. | XCP-636 5-2 |
| | BOP | 2. Verify appropriate automatic actions. | XCP-636 5-2 |
| | CREW | 3. Dispatch an operator to investigate the cause of the breaker trip. | XCP-636 5-2 |
| Booth C | perator: A | cknowledge requests for support. Report personnel will be dispatched. | |
| | CRS | 4. Request Electrical Maintenance to troubleshoot and correct the cause of the breaker trip. | XCP-636 5-2 |
| | CRS | SUPPLEMENTAL ACTIONS: Refer to Tech Specs 3.8.1 and 3.8.3 for LCO requirements. | XCP-636 5-2 |
| | CRS | With one offsite circuit of 3.8.1.1.a inoperable: | Tech Spec |
| | | 1. Demonstrate the OPERABILITY of the remaining offsite A.C. sources by performing Surveillance Requirement 4.8.1.1.1 within | |

| 2013 NRC | C Scenario 3 | Operator Actions Form ES- | D-2 | | |
|--|---|--|-----------------|--|--|
| Op Test No. Event Desc | : NRC ILO 11 | I-01 Scenario # <u>3</u> Event # <u>5</u> Page <u>22</u> of <u>3</u> eeder Breaker trips open and 'A' CCW Pump trips. | 39 | | |
| Time | Position | Applicant's Actions or Behavior | | | |
| Time | 1 USILIOT | 1 hour and at least once per 8 hours thereafter, and | | | |
| | | If either EDG has not been successfully tested within the past hours, demonstrate its OPERABILITY by performing Surveillar Requirement 4.8.1.1 .2.a.3 separately for each such EDG with 24 hours unless the diesel is already operating, and | 24 nce in | | |
| | | Restore the offsite circuit to OPERABLE status within 72 hours be in at least HOT STANDBY within the next 6 hours- and CO SHUTDOWN within the following 30 hours. | s or LD | | |
| EVALUAT start w | OR NOTE: A | fter power has restored to 1DA the failure of the 'A' CCW pumped. | o to | | |
| | RO | Implements XCP-601 1-3 CCP A/C TRIP FAIL | XCP-601 1-3 | | |
| | RO | CORRECTIVE ACTIONS: 1. Ensure the standby pump starts. | XCP-601 1-3 | | |
| | RO | Starts the 'C' CCW Pump on the A Header. | XCP-601 1-3 | | |
| EVALUAT The next e specificati stable pla | EVALUATOR NOTE: The next event may be triggered after CCW has been restored and Technical specifications have been addressed. Additional steps are included below to restore a stable plant configuration using SOP-306 after the Diesel Generator has loaded. | | | | |
| | | Verify A TRN BLACKOUT SEQ COMPLETE Status Light is lit. | SOP-306 | | |
| | RO | Ensure one Charging Pump is running. | SOP-306 | | |
| | RO | Ensure the following loads have started: | SOP-306 | | |
| | | a. RHR Pump A. | SOP-306 | | |
| | | b. One Train A Service Water Pump. | SOP-306 | | |
| | | c. One Train A HVAC Chilled Water Pump. | SOP-306 | | |
| | | d. One Train A CCW Pump. | SOP-306 | | |
| | | e. MD EFW Pump A. | SOP-306 | | |
| | | f. The Train A RBCU selected for emergency operation (slow speed). | SOP-306 | | |

| 2013 NRC | Scenario 3 | Operator Actions Form ES-D-2 | _ | | |
|--|--------------|---|---------|--|--|
| | | | | | |
| Op Test No. | : NRC ILO 1 | 1-01 Scenario # <u>3</u> Event # <u>5</u> Page <u>23</u> of <u>39</u> | | | |
| Event Description: 1DA Feeder Breaker trips open and 'A' CCW Pump trips. | | | | | |
| Time | Position | Applicant's Actions or Behavior | | | |
| | RO | g. Train A FHB Exhaust Fan. | SOP-306 | | |
| | | h. Service Water Booster Pump A. | SOP-306 | | |
| | | i. The Train A HVAC Chiller associated with the running Train A HVAC Chilled Water Pump. | SOP-306 | | |
| | RO | Verify greater than or equal to 2000 gpm flow on FI-4466, SWBP A DISCH FLOW. | SOP-306 | | |
| | RO | Perform the following per SOP-220: | SOP-306 | | |
| | | a. Ensure Instrument Air is supplied by one of the following: 1) Either Station Instrument Air Compressor A or B. 2) Supplemental Air Compressor. 3) Diesel Driven Air Compressor. | | | |
| | RO | Supply Reactor Building Instrument Air from Station Instrument Air with Reactor Building Instrument Air Compressors secured per SOP-121 Section IV. | SOP-306 | | |
| PI-8254, RI | B NR PRESS | CAUTION 2.7 (HVAC panel), should NOT be allowed to exceed 1.3 psig. | SOP-306 | | |
| | | Maintain RB temperature as follows: | SOP-306 | | |
| | | Monitor RB temperature and pressure for indications of insufficient cooling. | | | |
| | | b. If required, supply Service Water to the Train B RBCUs per SOP- 117. | | | |
| | | With Shift Supervisor concurrence perform the following: | SOP-306 | | |
| | | a. Secure Emergency Feedwater Pumps.b. Realign the Emergency Feedwater System for standby operation per SOP-211. | | | |
| Spent Fuel | Cooling Loop | NOTE 2.9 A is unavailable until NON-ESF LCKOUTS is reset. | SOP-306 | | |

| 2013 NRC | C Scenario 3 | Operator Actions Form ES-D-2 | | |
|---|-----------------------------------|--|---------|--|
| Op Test No. | .: NRC ILO 11 | I-01 Scenario # <u>3</u> Event # <u>5</u> Page <u>24</u> of <u>39</u> | | |
| | | | | |
| Time | Position | Applicant's Actions or Behavior | | |
| | RO | If required, startup Spent Fuel Cooling Loop B aligned to the Spent Fuel Pool per SOP-123. | SOP-306 | |
| | RO | Perform either of the following for Train A radiation monitors: | SOP-306 | |
| | | a. Restore Train A radiation monitors to normal operation per SOP- 124. | | |
| | | b. If Train A radiation monitors are unable to be restored to normal operation, contact Health Physics to perform compensatory actions per HPP-904 for loss of electrical power to Train A radiation monitors. | | |
| | RO | When operation in the Emergency Start Mode is no longer desired, perform the following: | SOP-306 | |
| | | a. Depress the GEN RELAYS RESET Pushbutton. b. Depress the EMERG START OVRRIDE Pushbutton. c. Momentarily place the TEST Switch, to START. | | |
| | RO | Ensure the following XSW1DA parameters are maintained: | SOP-306 | |
| | | a. Bus voltage between 6800 volts and 7600 volts. b. Bus frequency between 59.5 Hz and 60.5 Hz. | | |
| | | <u>NOTE 2.13</u> | SOP-306 | |
| Diesel Gen Generator | erator logs sh is run for more | ould be taken, if possible, and in all cases if the Diesel e than one hour. | | |
| | RO | Momentarily place the ESF LOADING SEQ A RESETS Switch to NON-ESF LCKOUTS. | SOP-306 | |
| | | <u>NOTE 2.15</u> | SOP-30 | |
| Per OAP-1 Results of | 00.5 the Pull- disabling a co | To-Lock position may be used for emergency stopping of equipment. mponent by use of Pull-To-Lock are: | | |
| a. The component or train is inoperable with regard to Tech Specs. b. The component, train, and system are functional with regard to EOOS Risk Assessment Program (with proper operator instructions). c. The component, train and system are available with regard to Maintenance Rule Tracking Program (with proper operator instructions). | | | | |

| 2013 NRC | Scenario 3 | Operator Actions Form ES-D-2 | - |
|---------------------------|-----------------------------------|--|---------|
| Op Test No. | NRC ILO 11 | 1-01 Scenario # <u>3</u> Event # <u>5</u> Page <u>25</u> of <u>39</u> |] |
| Event Desc | cription: 1DA F | eeder Breaker trips open and 'A' CCW Pump trips. | |
| Time | Position | Applicant's Actions or Behavior | |
| | RO | With Shift Supervisor concurrence stop non-required, operating equipment. | SOP-306 |
| | RO | If required, start PZR B/U HTRS. | SOP-306 |
| | RO | Verify the Operability of the remaining power sources within one hour by performing one of the following: | SOP-306 |
| | | a. GTP-702, Attachment VI.Y-1, One Offsite AC Circuit Inoperable. | |
| | | CAUTION 2.18 | SOP-306 |
| To maintair conditions i | n separate offs must be met fe | site circuit Operability in Modes 1 through 4, one of the following or XSW1DA and XSW1DB: | |
| a. Both NO b. Both ALT | RM FEED BR I FEED BREA | EAKERS must be closed. AKERS must be closed. | |
| | RO | When Normal or Alternate Offsite Power is available, transfer Bus 1DA from Diesel Generator A to Offsite Power per Section IV. | SOP-306 |
| | RO | Momentarily place the ESF LOADING SEQ A RESETS Switch, to AUTO-START BLOCKS. | SOP-306 |
| | RO | Realign Industrial Cooling Water to the RBCUs per SOP-125. | SOP-306 |
| | RO | Restore RBCUs to normal operation as follows: | SOP-306 |
| | | a. Stop the following fans: 1) XFN 0064A-AH, 1A SLOW. 2) XFN 0065A-AH, 2A SLOW. | |
| | | b. Place the following RBCU dampers, in BYP: 1) XDP-110A, RBCU 64A HEPA FLTR BYP DMPR. 2) XDP-111A, RBCU 65A HEPA FLTR BYP DMPR. | |
| | | c. Perform the following per SOP-114: 1) Restore RBCU fans to normal operation. 2) Startup the Control Rod Drive Mechanism Cooling System. | |
| | RO | Startup the Reactor Building Instrument Air System per SOP-121. | SOP-306 |
| | RO | Ensure Instrument Air is aligned for normal operations per SOP-220. | SOP-306 |

| 2013 NRC | C Scenario 3 | Operator Actions Form ES-D-2 | - |
|-------------|-----------------|---|---------|
| Op Test No. | . NRC ILO 1 | 1-01 Scenario # <u>3</u> Event # <u>5</u> Page <u>26</u> of <u>39</u> | |
| Event Des | cription: 1DA F | eeder Breaker trips open and 'A' CCW Pump trips. | |
| Time | Position | Applicant's Actions or Behavior | |
| | RO | If required, place the Spent Fuel Cooling System in service on loop A per SOP-123. | SOP-306 |
| | RO | Align HVAC Chillers and Chilled Water Pumps as directed by the Shift Supervisor per SOP-501. | SOP-306 |
| | RO | If desired, re-establish Steam Generator Blowdown per SOP-212. | SOP-306 |
| | RO | Perform the following ventilation system realignment at XCP-6210 (HVAC Panel). | SOP-306 |
| | RO | a. Perform the following per SOP-505: | SOP-306 |
| | | Restore Control Room ventilation to normal following reset of automatic actuation. | |
| | | 2) Align Controlled Access Area Ventilation for normal operation. | |
| | | Align Relay Room, SAS/CPU-1,2, and Computer Room Ventilation for normal operation. | |
| | RO | b. Perform the following per SOP-503: | SOP-306 |
| | | 1) Align Service Water Building Ventilation for normal operation. | |
| | | Align ventilation system operations for safety related rooms/areas. | |
| | RO | c. Align Auxiliary Building and Fuel Handling Building Ventilation for normal operation per SOP-502. | SOP-306 |
| | RO | d. Stop XFN-132, AB MCC RM A and return the control switch to AUTO. | SOP-306 |
| | RO | e. Ensure the TRAIN A BYP ESF VENTILATING SYSTEMS BYPASSED annunciator is NOT in alarm. | SOP-306 |
| | RO | Reset the target flags on the following undervoltage relays: | SOP-306 |
| | | a. 27B-1DA/RSC-1. b. 27B-1DA/RSE-2. c. 27B-1DA/RSG-3. d. XSW1DA-10-27-1DA-1. e. XSW1DA-10-27-1DA-2. f. XSW1DA-10-27-1DA-3. | |

| 2013 NRC | C Scenario 3 | Operator Actions | Form ES-D-2 | - |
|-------------|--------------|---|-----------------------------|---------|
| Op Test No. | NRC ILO 11- | 01 Scenario # <u>3</u> Event # <u>5</u> | Page <u>27</u> of <u>39</u> | |
| Time | Position | Applicant's Actions or Behavior | r | - |
| | | END OF SECTION | | SOP-306 |

| 2013 NRC Scenario 3 | | Operator Actions | Form ES-D-2 | |
|-------------------------------------|--|---|--|--|
| Op Test No | .: NRC ILO 1 | -01 Scenario # <u>3</u> Event # <u>6</u> | Page <u>28</u> of <u>39</u> | |
| Event Des FEED to 1 | cription: 8892 t DB | ips open with a "B" EDG overspeed lockout. Restor | re power thru ALT | |
| Time | Position | Applicant's Actions or Behavior | | |
| Booth C |)perator: Ir | tiate Event 6 (TRIGGER 6) when directed. | | |
| EVALUAT the Reactor operators | OR NOTE: Th or at Power. I due to the fa | is event may start when the Reactor is tripp the Reactor is at power a manual trip will b lure. | bed in Event 5 or with be inserted by the | |
| | | | | |
| Indication | s Available: | | | |
| Indication XCP-638 4 | s Available: I-1 EMERG A | IX XFMR OCB 8892 OPEN | | |
| 2013 NRC Scenario 3 | | | Ope | rator A | ctions | | | Form B | ES-D-2 | _ | |
|---------------------|---|---|-------------------------------------|---|--|---|-----------------------------------|--------------------------------------|---------------------------|-------------|---------|
| 0 | p Test No.: | NRC ILO 11 | 1-01 | Scenario # | 3 | Event # | 6 | Page | o | f <u>39</u> | |
| E F | vent Descri EED to 1DE | ption: 8892 t 3 | rips ope | n with a "B" E | DG ove | erspeed locko | out. Resto | ore power th | nru ALT | | |
| | Time | Position | | | Ар | olicant's Actior | ns or Beha | avior | | | |
| | | | R | EFERENCE | PAGE | FOR EOP- | 6.0 | | | | EOP-6.0 |
| 1 | CRITICA | L SAFETY F | UNCT | IONS | | | | | | | |
| | Critical S transition complete | afety Functio to any proc ed. | on statu edure r | us trees shou eferenced fr | uld be r om the | nonitored fo status trees | or inform s until th | ation only. is procedu | Do NO re has l | oT been | |
| 2 | SAFETY | INJECTION | I RESE | Т | | | | | | | |
| | IF an SI s reset bot either tra SYSTEM | signal exists h SI RESET in of SI does I, Section V, | or actu TRAIN NOT r to man | ates after St A(B) Switch eset, THEN qually reset re | ep 8 of les to p REFEI elays. | this procec permit manu R TO SOP- | lure has al loadir I12, SAl | been com ng of equip FETY INJE | pleted, ment. CTION | THEN IF | |
| 3 | ESF PO\ | WER RESTO | ORATIC | DN | | | | | | | |
| | WHEN p complete | ower is resto ed, THEN GO | ored to o O TO Si | either ESF b tep 30. | ous afte | r Step 8 of t | this proc | cedure has | been | | |
| 4 | BATTER | Y BUS VOL | TAGE | | | | | | | | |
| | Monitor E maintain | Battery Bus \ voltage GRE | √oltage ∃ATER | throughout THAN 108 | this pro /DC to | ocedure. Re ensure ope | duce loa erability (| ads as nece of DC loads | essary s. | to | |
| 5 | DIESEL | GENERATO | R COC | DLING | | | | | | | |
| | IF the | Service Wat PVG- | er Syst 3105A | em is NOT i (B), FS TO [| n opera)G A(B | ation AND D), to supply | G A(B) cooling | is running, water. | THEN | open | |

| 2013 NRC | C Scenario 3 | Operator Actions Form ES-D-2 | _ | | | |
|---|--|--|---------|--|--|--|
| Op Test No. Event Desc FEED to 11 | : NRC ILO 1' cription: 8892 t DB | I-01 Scenario # <u>3</u> Event # <u>6</u> Page <u>30</u> of <u>39</u> rips open with a "B" EDG overspeed lockout. Restore power thru ALT | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | |
| | NOTE | | | | | |
| Steps 1 and 2 are Immediate Operator Actions. | | | | | | |
| The EOP REFERENCE PAGE should be monitored throughout the use of this procedure. | | | | | | |
| Critical Safety Function status trees should be monitored for information only. Procedures referenced from the status trees should NOT be used during this procedure. | | | | | | |
| Condition 001, AC | ons for implen CTIVATION A | nenting Emergency Plan Procedures should be evaluated using EPP- ND IMPLEMENTATION OF EMERGENCY PLAN. | | | | |
| | | Verify Reactor Trip: | EOP-6.0 | | | |
| ΙΟΑ | CREW | Trip the Reactor using either Reactor Trip Switch. Verify all Reactor Trip and Bypass Breakers are open. Verify Reactor Power level is decreasing. | | | | |
| ΙΟΑ | BOP | Verify Turbine/Generator Trip: | EOP-6.0 | | | |
| ΙΟΑ | BOP | a. Verify all Turbine STM STOP VLVs are closed. | EOP-6.0 | | | |
| | | b. Ensure Generator Trip (after 30 second delay): | EOP-6.0 | | | |
| IOA | | Ensure the GEN BKR is open. Ensure the GEN FIELD BKR is open. Ensure the EXC FIELD CNTRL is tripped. | | | | |
| | RO | Isolate the RCS: | EOP-6.0 | | | |
| | RO | a. Ensure all Letdown Isolation Valves are closed: 1) PVT-8149A(B)(C), LTDN ORIFICE A(B)(C) ISOL. 2) LCV-459 and LCV-460, LTDN LINE ISOL. | EOP-6.0 | | | |
| | | 3) PVT-8153 and PVT-8154, XS LTDN ISOL. | | | | |

| 2013 NRC | Scenario 3 | Operator Actions Form ES-D-2 | _ |
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| Op Test No. | NRC ILO 11 | 1-01 Scenario # <u>3</u> Event # <u>6</u> Page <u>31</u> of <u>39</u> | |
| Event Desc FEED to 1 | DB | rips open with a "B" EDG overspeed lockout. Restore power thru ALI | |
| Time | Position | Applicant's Actions or Behavior | |
| | RO | b. Verify all PZR PORVs are closed. | EOP-6.0 |
| | BOP | c. Ensure all PZR and RCS sample valves are closed: SVX-9364B and SVX-9365B, RCS LP B SMPL ISOL. SVX-9364C and SVX-9365C, RCS LP C SMPL ISOL. SVX-9356A, PZR STM SMPL ISOL. SVX-9356B, PZR LIQ SMPL ISOL. SVX-9357, PZR SMPL ISOL. | EOP-6.0 |
| | BOP | Verify total EFW flow to INTACT SGs is GREATER THAN 450 gpm. (NO) | EOP-6.0 |
| | | ALTERNATIVE ACTION | EOP-6.0 |
| | | a) Ensure all TD EFW Flow Control Valves FCV-3536(3546)(3556), TD EFP TO SG A(B)(C) are open. | |
| | | b) Start the TD EFW Pump: | |
| CRITICAL TASK | BOP | Open PVG-2030, STM SPLY TO TD EFP TRN A(B). Ensure at least one of the following SAFETY INJECTION monitor lights is dim: | |
| | | XCP-6103 3-5 (MS LOOP C TO TDEFP 2802B) OR XCP-6103 4-16 MS LOOP B TO TDEF 2802A). | |

| | IF the TD EFW Pump has malfunctioned, THEN REFER TO BDMG-4.0, MANUAL OPERATION OF TURBINE DRIVEN EMERGENCY FEEDWATER PUMP (GOVERNOR, OVERSPEED, LUBE OIL LEVEL, AND FLOW MALFUNCTION). | |
|-----|---|---------|
| BOP | Verify the following valves are closed: | EOP-6.0 |

-

| 2013 NRC | C Scenario 3 | Operator Actions | Form ES-D-2 | | |
|---|---|--|--|---------|--|
| | | | | | |
| Op Test No. | NRC ILO 11 | -01 Scenario # <u>3</u> Event # <u>6</u> | Page <u>32</u> of <u>39</u> | | |
| Event Dese FEED to 1 | cription: 8892 ti DB | ips open with a "B" EDG overspeed lockout. Re | store power thru ALT | | |
| Time | Position | Applicant's Actions or Be | havior | | |
| | BOP | a. XVB-3107A, RBCU 64A/65A RTN TO | SW PND EOP-6.0 | 0 | |
| | BOP | b. XVB-3107B, RBCU 64B/65B RTN TO | SW PND EOP-6.0 | 0 | |
| When a DC TO DG A(E | G is running, th 3), must be op | <u>CAUTION - Step 6</u> e Service Water System must be in operation en to supply cooling water. | on OR PVG-3105A(B), FS | | |
| | BOP | Try to restore power to any ESF bus: | EOP-6.0 | 0 | |
| | | a. Attempt to start any DG from the Main | Control Board. (NO) EOP-6.0 | 0 | |
| | | ALTERNATIVE ACTION | EOP-6.0 | 0 | |
| | | a. Try to restore offsite power to at least of AOP-304.1, LOSS OF BUS 1DA(1DB) AVAILABLE. | one ESF bus. REFER TO WITH THE DIESEL NOT | | |
| | | CONTINUE WITH Step 7. | | | |
| EVALUAT implement ESF bus tl EOP-6.0. | OR NOTE: Ac ted to restore he operators | ditional steps in EOP-6.0 may be perform power through Alternate Feed. When po will go to Step 30 In accordance with the | ned while AOP-304.1 is wer is restored to the B Reference Page for | | |
| | | NOTE | AOP-30 |)4.1(B) | |
| This procedure assumes a loss of XSW1DB has occurred due to one of the following reasons: | | | | | |
| A loss of the offsite power source occurred. An XSW1DB Bus lockout has occurred. | | | | | |
| EVALUAT | OR NOTE: A | Frain power is not available so steps 1-5 | are N/A | | |
| The ins A opera | talled spare co ation if the Tra | NOTE - Steps 1 through 5 omponents (C Pumps or Chillers) may be al n A components are NOT available. | AOP-30 and started for Train | 04.1(B) | |

| 2013 NRC | Scenario 3 | Operator Actions | | | Form | |
|---------------------------|--------------------------|-------------------------|-------------------|-------------------|-------------|---|
| Op Test No.: | NRC ILO 11-01 | Scenario # 3 | Event # | 6 Page | ə <u>33</u> | 0 |
| Event Descr FEED to 1D | ription: 8892 trips B | open with a "B" EDG ove | erspeed locko | ut. Restore power | thru AL⊺ | Г |
| Time | Position | Ap | plicant's Actions | s or Behavior | | |

| Time | Position | Applicant's Actions or Behavior |] |
|------|----------|---|--------------|
| | BOP | Ensure a Train A Component Cooling Pump is running: (NO – A Train power is not available) GO TO Step 3. | AOP-304.1(B) |
| | BOP | Verify Component Cooling Water Loop A is the Active Loop. (NO – A Train power is not available) | AOP-304.1(B) |

EVALUATOR NOTE: The Alternative Action is not applicable because A Train power is not available.

| - | | |
|-----|--|--------------|
| | ALTERNATIVE ACTION | AOP-304.1(B) |
| | Close the following Charging and Letdown Valves: | |
| BOP | 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. | |
| RO | Establish Component Cooling Water Loop A as the Active Loop. (NO – A Train power is not available) | AOP-304.1(B) |
| BOP | Check if a Train A Service Water Pump is running: (NO – A Train power is not available) | AOP-304.1(B) |
| BOP | Ensure HVAC Chilled Water Loop A is operating: (NO – A Train power is not available) | AOP-304.1(B) |
| BOP | Check if RHR cooling is required. (NO) GO TO Step 8 | AOP-304.1(B) |
| RO | WHEN Component Cooling Water is available for non-essential loads, THEN verify Letdown flow on FI-150, LO PRESS LTDN FLOW GPM. | AOP-304.1(B) |
| RO | Verify PZR level is stable at OR trending to program level. | |

Form ES-D-2

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Operator Actions

| Op Test No. | : NRC ILO 1 | I-01 Scenario # <u>3</u> Event # <u>6</u> Page <u>34</u> of <u>39</u> | |
|-------------------------|------------------------------|--|--------------|
| Event Desc FEED to 1 | cription: 8892 t DB | rips open with a "B" EDG overspeed lockout. Restore power thru ALT | |
| Time | Position | Applicant's Actions or Behavior | |
| | BOP | Ensure Spent Fuel Cooling Loop A is in service. REFER TO SOP- 123, SPENT FUEL COOLING SYSTEM. NO – A Train power is not available) | AOP-304.1(B) |
| | | Place the following Control Switches in PULL TO LK NON-A: Charging Pump B. Charging Pump C (Train B). Emergency Feedwater Pump B. | AOP-304.1(B) |
| | | Determine the cause for loss of the ESF Bus: | AOP-304.1(B) |
| | | a. REFER TO ARP-001 XCP-633 through 641, ANNUNCIATOR RESPONSE PROCEDURE, for annunciator(s) in alarm. | AOP-304.1(B) |
| Booth O | perator: A | cknowledge Request to investigate for problems. | |
| | | Dispatch operators to the following areas to locally investigate for problems: | AOP-304.1(B) |
| | BOP | XTF0004 and XTF0005, ESF Transformers (YD-436). XTF0031, Emergency Aux Transformer #1 (YD-436). XSW1DB (IB-436). XCX5202, Diesel Generator B Local Control Panel (DB-436). GENERATOR & XFMR ELECTRICAL RELAY BOARD (CB-463), XCP6221A-EG and XCP6225-EG. | |
| Booth O | perator: If a were respon | contacted as the System Controller report that several lightning hits in sible for the failure. | |
| | CRS | c. Consult with the System Controller to determine possible causes. | AOP-304.1(B) |
| | BOP | d. Record all tripped relay flags. | AOP-304.1(B) |
| | BOP | e. Locally reset tripped relay flags and lockouts only when directed by the Shift Supervisor. | AOP-304.1(B) |

| 2013 NRU | Scenario 3 | Operator Actions Form ES | p-D-2 | |
|---|--|--|--------------------------|--|
| Op Test No. Event Dese FEED to 11 | : NRC ILO 11 cription: 8892 t DB | 1-01 Scenario # <u>3</u> Event # <u>6</u> Page <u>35</u> of | 39 | |
| Time | Position | Applicant's Actions or Behavior | | |
| | BOP | Verify an offsite power source is available to the ESF Bus:BUS 1DB ALT FEED, potential lights are energized. | AOP-304.1(B) | |
| | BOP | Verify all of the following conditions exist: The cause of the power loss has been determined. Any damage to XSW1DB has been corrected. The cause of the power loss is corrected, OR it does NOT af restoration of the bus. | AOP-304.1(B) | |
| <u>NOTE - Step 15</u> Each switch may be placed in After-Stop immediately after recording the AS FOUND position. | | | | |
| Booth Operator: When called to remove power from the ESF Load Sequencer. Acknowledge request Wait 1 minute Activate TRIGGER 15 | | | | |
| Report con | npletion in 30 | seconds. | | |
| | BOP | Record the AS FOUND Main Control Board Train B switch position then align the switches to After-Stop. REFER TO Attachment 1E | ions, AOP-304.1(B) B. | |
| | BOP | Locally remove power from the Train B ESF Loading Sequencer (XPN-6025 CB-436). | AOP-304.1(B) | |
| <u>CAUTION - Step 17</u> Due to the risks involved regarding a loss of single phase event, the amount of time that XSW1DA and XSW1DB are simultaneously energized from XTF0004, ESF Transformer or XTF0005, ESF Transformer should be minimized. | | | | |
| | BOP | Energize XSW1DB from the normal power source: (NA – Normal Power is not available) | AOP-304.1(B) | |

| 2013 NR | C Scenario 3 | Operator Actions Form ES-D-2 | _ |
|--|---|---|--------------|
| Op Test No Event Des FEED to 1 | .: NRC ILO 1 cription: 8892 t DB | 1-01 Scenario # <u>3</u> Event # <u>6</u> Page <u>36</u> of <u>39</u> rrips open with a "B" EDG overspeed lockout. Restore power thru ALT | |
| Time | Position | Applicant's Actions or Behavior | |
| CRITICAL TASK | BOP | ALTERNATIVE ACTION IF XSW1DB normal power source is NOT available, THEN energize XSW1DB from the alternate power source: a) Ensure BUS 1DB XFER INIT Switch is in OFF. b) Close BUS 1DB ALT FEED Breaker. c) Verify BUS 1DB potential lights are energized. | AOP-304.1(B) |
| | BOP | Locally verify BUS 1DB (IB-436) phase currents are consistent. XSW1DB 01, BUS 1DB EMERG INCOMING BKR XSW1DB 04, XSW1EB FDR BKR XSW1DB 07, TRANSF 1DB1 & 1DB2 XSW1DB 16, BUS 1DB NORMAL INCOMING BKR | AOP-304.1(B) |
| | BOP | Check all red first-out SI annunciators NOT lit (XCP-626 top row). | AOP-304.1(B) |
| Booth C • Acknov • Wait 1 • Activat • Report |)perator: W wledge reques minute e TRIGGER 1 completion in | /hen called to reenergize the ESF Load Sequencer: t 6 30 seconds. | |
| | BOP | Locally reenergize the Train B ESF Loading Sequencer (XPN-6025 CB-436). | AOP-304.1(B) |
| | BOP | Momentarily depress the EMERG START OVRRIDE Pushbutton for Diesel Generator B. | AOP-304.1(B) |
| | BOP | Place ESF LOADING SEQ B RESETS to: a. NON-ESF LCKOUTS. b. AUTO-START BLOCKS | AOP-304.1(B) |
| | RO | Ensure all RCPs are tripped. | EOP-6.0 |

| 2013 NRC | Scenario 3 | Operator Actions Form ES | S-D-2 | |
|---|---------------------------------------|---|----------------|--|
| Op Test No. Event Desc FEED to 1 | : NRC ILO 1 cription: 8892 t DB | 1-01 Scenario # <u>3</u> Event # <u>6</u> Page <u>37</u> of rips open with a "B" EDG overspeed lockout. Restore power thru ALT | 39 | |
| Time | Position | Applicant's Actions or Benavior | I | |
| | | CAUTION - Step 8 | EOP-6.0 | |
| If an SI manual | signal exists loading of eq | or actuates during this procedure, the signal should be reset to pe uipment. | ermit | |
| When p minimiz | ower is restor e the deterior | ed to either ESF bus, recovery should continue with Step 30 to ation of plant conditions. | | |
| A Servic provide | ce Water Purr DG cooling. | np should be kept available to automatically load on its ESF bus to | D | |
| | BOP | Place the switches for the following equipment in PULL TO NON prevent auto start: MD EFW Pumps. PZR Backup Heaters. Charging Pumps. RHR Pumps. RB Spray Pumps. RBCU Slow Speed Fans. Service Water Booster Pumps. CCW Pumps. HVAC Chilled Water Pumps. HVAC Chillers. | N-A to EOP-6.0 | |
| EVALUATOR NOTE: IAW EOP-6.0 Reference Page, when power is restored to 1 ESF bus after EOP-6.0 Step 8 then GO TO Step 30. Optional triggers are provided if the crew proceeds with this procedure while AOP-304.1(B) is being implemented. | | | | |
| Booth Operator: Insert TRIGGER 10 if requested to locally isolate the RCP seals. | | | | |
| Booth O close the R | perator: In CP seal supp | nsert TRIGGER 13 if requested to perform the Alternative Action t ly isolation valves. | o | |
| Booth Operator: Insert TRIGGER 11 if requested to locally isolate the Condenser from the CST. | | | | |

| 2013 NRC | C Scenario 3 | Operator Actions | Form ES-D-2 | - |
|---|-----------------------------------|---|-------------------|---------|
| Op Test No | .: NRC ILO 11 | I- 01 Scenario # 3 Event # 6 F | Page 38 of 39 | |
| Event Des FEED to 1 | cription: 8892 t DB | rips open with a "B" EDG overspeed lockout. Restore pov | ver thru ALT | |
| Time | Position | Applicant's Actions or Behavior | | |
| Booth C | perator: A | cknowledge request for support. | | |
| EVALUAT jumps to t | OR NOTE: Wi his step. | hen power has been restored to the 1DB bus the | n the procedure | |
| | BOP | Control Steamline PORV(s) to stabilize SG pressu value. | re at the present | EOP-6.0 |
| | | CAUTION - Steps 31 and 32 | | EOP-6.0 |
| The followi (Attachmer | ng DG loading nts 7 and 8 list | limits must NOT be exceeded, to prevent failure of equipment with significant KW ratings): | the DG | |
| • 5100 K | W for 30 minu | tes. | | |
| • 4676 K | W for 7 days. | | | |
| • 4250 K | W continuous | operation. | | |
| | BOP | Ensure the following equipment is loaded on an ES480 volt ESF buses.Battery Chargers. | SF bus: | EOP-6.0 |
| | BOP | Verify the Service Water System is in service: | | EOP-6.0 |
| | BOP | a. Ensure XPP-0039A(B)(C), PUMP A(B)(C), is ru | inning. | EOP-6.0 |
| | BOP | b. Ensure MVB-3116A(B)(C), SWP A(B)(C) DISC | H, is open. | EOP-6.0 |
| | BOP | c. Verify flow to each operating DG on FM-4462(4 CLG, (Moduflash M3(M4)/SW Pt #16). | 1492), DG A(B) | EOP-6.0 |
| NOTE - Step 33 If RCP seal cooling was previously isolated, further cooling of the RCP seals will be established by natural circulation cooldown as directed in subsequent recovery procedures. If operating, the Alternate Seal Injection System will maintain the RCP seals cool. | | | | |
| | RO | Verify the following to select the appropriate recover | ery procedure: | EOP-6.0 |

| 2013 NR(| C Scenario 3 | Operator Actions Form ES-D-2 | - |
|--------------------------------------|--|---|---------|
| Op Test No Event Des FEED to 1 | .: NRC ILO 1 cription: 8892 1 DB | 1-01 Scenario # <u>3</u> Event # <u>6</u> Page <u>39</u> of <u>39</u> trips open with a "B" EDG overspeed lockout. Restore power thru ALT | |
| Time | Position | Applicant's Actions or Behavior | |
| | RO | a. RCS subcooling on TI-499A(B), A(B) TEMP °F, is GREATER THAN 52.5°F [67.5°F]. | EOP-6.0 |
| | RO | b. PZR level is GREATER THAN 10% [28%]. | EOP-6.0 |
| | RO | c. No SI flow is indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. | EOP-6.0 |
| | CRS | GO TO EOP-6.1, LOSS OF ALL ESF AC POWER RECOVERY WITHOUT SI REQUIRED. | EOP-6.0 |
| EVALUAT bus and a | OR NOTE: TH Recovery Pr | ne scenario may be terminated after power is restored to the 1DB ocedure has been implemented. | |

| Facilit | ty: VC SUN | MMER Scena | ario No.: 4 | Op-Test No.: | 2013 NRC |
|--------------|--|--|---|---|--------------------------------|
| Exami | iners: | | Operators: | CRS: | |
| | | | | RO: | |
| | | | | BOP: | |
| Initial | Conditions: | 100% BOL Alternate Sea "B" Train wor Severe thunce The B EDG F | al Injection is OOS kweek derstorms have be has been OOS for | en reported in the area repairs for 20 hours. | |
| Turno | over: | Start "B" EDG fo hour IAW SOP-3 been OOS for re | r a maintenance to 306 Section IV.B s epairs for 20 hours | est and load to 850-100 tarting at step 2.3 (The). (LCO 3.8.1.1 Action I | 00 KW for 1 B EDG has o) |
| Critica | Critical Tasks: Insert rods and emergency borate prior to completing step 4 of EOP-13.0 (FR-S.1). Close PZR PORV block valve prior to completing step 10 of EOP-1.0 (E-0). | | | | |
| Event No. | Malf No. | Event Type* | | Event Description | |
| 1 | N/A | N – BOP | Perform "B" EDG | Normal Start/Load for | Test. |
| 2 | FW018 | TS – CRS | FWIV low pressu than 500psig. 72 | ire alarm. Local pressu hour TS call. | ure report less |
| 3 | PRS002A | I – RO, CRS TS – CRS | LT-459 (PZR drif | ts fails low - Swap cha | nnels). |
| 4 | FWM001B | R – RO C – BOP, CRS | 'B' MFP trip (Rec | duce power at 1%/min t | o <91%). |
| 5 | CVC010B | I – RO, CRS | VCT Level Chan | nel LT-115 fails HIGH. | |
| 6 | EG017 | C – BOP, CRS | XTF-2 High Tem | p - Swap BOP busses | to alternate feed |
| 7 | TUR002D PCS009A B PCS009B BCRF002 | M - ALL | Rapidly increasir trip at 11 mils res Open and RODS | ng turbine vibration requisulting in an ATWS - R 3 do not drive in Auto. | uires a turbine FBS Do Not |
| 8 | RC001P | C – RO | One Pressurizer | PORV fails OPEN. | |
| | | * (Normal), (Read | ctivity), (Instrument), | (Component), (Major) | |

The following notation is used in the ES-D-2 form "Time" column:

IOA designates Immediate Operator Action steps

* designates **Continuous Action** steps

The crew will assume the watch having been pre-briefed on the Initial Conditions, the plan for this shift and any related operating procedures.

EVENT 1: Perform "B" EDG Normal Start/Load for Test

The crew will start the "B" EDG for a maintenance test and load to 850-1000 KW using SOP-306 Section IV.B starting at step 2.3. Once load has been stabilized at 850-1000 KW the scenario will continue.

EVENT 2: FWIV low pressure alarm. Local pressure report less than 500psig.

On a cue from the Examiner, XCP-625 3-3, FIV A/B/C ACCUM PRESS LO, will alarm. The crew will send a local operator to check pressure. The pressure reported back will be less than 500 psig. The CRS will enter a 72 hour action in accordance with TS 3.7.1.6.

EVENT 3: LT-459 (PZR drifts fails low Swap channels)

On cue from the Examiner, the failure of the controlling Pressurizer Level Channel causes an increase in charging.

The crew will enter AOP-401.6, PZR Level Control and Protection Channel Failure, and the RO must shift control to an operable channel. The CRS will enter action statement 6 in accordance with TS table 3.3-1.

EVENT 4: "B" MFP trip (Reduce power at 1%/min to <91%)

On cue from the Examiner, The "B" MFP will trip causing the other two MFPs to increase in speed and all Steam Generator levels to decrease.

The crew will enter AOP-210.3, Feedwater Pump Malfunction. The BOP will ensure that the response of the FRV and other two MFP will regain Steam Generator levels. The crew will then decrease power to 91% at 1%/min by referring to GOP-4B, Power Operation (Mode 1 - Descending).

EVENT 5: LT-115 Fails High

On cue from the Examiner, VCT Level Channel LT-115 fails High causing the LCV-115A to divert letdown to the RHTs.. The crew should respond in accordance with ARP-001-XCP-613-3-1, VCT LVL HI/LO, diagnose the problem and restore letdown flow to the VCT.

EVENT 6: XTF-2 High Temp - Swap BOP busses to alternate feed

On cue from the Examiner, XCP-633 6-3, UNIT AUX XFMR XTF-2 TRBL, will alarm. Local reports about the Unit Aux Transformer indicate temperature is 101°C and stable with pumps and fans not running.

The BOP will swap feed to the BOP busses using SOP-304, 115KV/7.2KV Operations, Section IV. A.

EVENT 7: Rapidly increasing turbine vibration requires a turbine trip at 11 mils resulting in an ATWS - RTB Do Not Open and RODS do not drive in Automatic

On cue from the Examiner, Main Turbine Vibration will begin that leads to the requirement to reduce power and trip the reactor at 11 mils in accordance with XCP-632 4-2, MN TURB VIB HI.

The crew will attempt to trip the reactor in accordance with EOP-1.0 (E-0), Reactor Trip/ Safety Injection Actuation. When the reactor does not trip from the MCB they will transition to EOP-13.0 (FR-S.1), Response to Abnormal Nuclear Power Generation.

The RO will ensure that negative reactivity is added to the core by manually inserting rods and/or emergency borating. This is a critical task and must be in action prior to completing step 4 of EOP-13.0 (FR-S.1). A predetermined time after a non-licensed operator is sent to trip the reactor locally the reactor will be locally tripped.

EVENT 8: One Pressurizer PORV fails stuck Open

The crew will transition back to EOP-1.0 (E-0). It is critical that the crew closes the PZR PORV block valve prior to step 11 of EOP-1.0 (E-0). The crew will transition to EOP-1.2 (ES-1.1), Safety Injection Termination.

CRITICAL STEPS:

The critical steps are to insert negative reactivity prior to EOP-13.0 (FR-S.1) step 4 and to close PZR PORV block valve prior to completing EOP-1.0 (E-0) step 10.

TERMINATION:

The scenario can be terminated after Safety Injection is terminated or at the discretion of the Examiner.

VC Summer 2013 NRC Scenario 4 Simulator Setup

Initial Conditions:

- IC-14, 100% Power, BOL (IC-326 for 2013)
- Reactivity Management Plan/Turnover sheet for IC Set
- Rod Position = 230
- Boron Concentration = 1150 ppm
- Xe = -2620 pcm
- Burnup = 4007 MWD/MTU = 90.5 EFPD
- 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).

VC Summer 2013 NRC Scenario 4 Simulator Setup (SNAP 326)

- 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:

Standard Simulator Setup

- PMP-LD003P XPP0138 LEAK DETECTION SUMP PMP LOSS OF POWER
- VLV-FW028W XVG01676-FW FW HDR RECIRC ISOL VLV LOSS OF POWER
- VLV-FW029W XVG01679-FW FW HTR RECIRC ISO VLV LOSS OF POWER
- VLV-CS052W XVT08141A-CS RCP A SEAL LEAKOFF VLV LOSS OF POWER
- VLV-CS054W XVT08141C-CS RCP C SEAL LEAKOFF VLV LOSS OF POWER
- VLV-CS053W XVT08141B-CS RCP B SEAL LEAKOFF VLV LOSS OF POWER

Scenario Related Pre-Load

- MAL-PCS009AB REACTOR TRIP BREAKER A FAILURE (FAIL TO OPEN) Delay=0, Ramp=0, Final=BOTH Reactor Trip Breaker A will not open due to a Manual or Auto trip
- MAL-PCS009BB REACTOR TRIP BREAKER B FAILURE (FAIL TO OPEN) Delay=0, Ramp=0, Final=BOTH Reactor Trip Breaker B will not open due to a Manual or Auto trip

EVENT 1: Perform "B" EDG Normal Start/Load for Test

• No trigger

Booth Operator: When called about status of READY FOR AUTO START LIGHT report after 10 seconds that light is lit (DB-436)

When called to reset the relays on the B EDG wait 30 seconds and report that all relays are reset.

Evaluator Cue: 10 minutes has elapsed (expedite tying onto the grid.)

EVENT 2: FWIV low pressure alarm. Local pressure report less than 500psig. 72 hour TS

- TRIGGER 2
 - ANN-FW018: FIV A/B/C ACCUM PRESS LO Final=ON XCP-625 3-3.

Booth Operator: When called to read FIV accumulator pressures on XPN-7301 XPN-7302 will report after 2 min that "C" FIV valve pressure is at 485 psig and stable, but "A" and "B" are reading 610 psig.

EVENT 3: LT-459 (PZR drifts fails low - Swap channels)

- TRIGGER 3
 - MAL-PRS002A: PRESSURIZER LEVEL CHANNEL 459 FAILURE Delay=0, Ramp=00:03:00, Final =0.

First alarm at ~10 seconds; Letdown isolates at 1 min and 30 seconds

EVENT 4: 'B' MFP trip (Reduce power at 1%/min to <91%)

- TRIGGER 4
 - MAL-FWM001B: MAIN FEEDWATER PUMP B TRIP Delay=0, Ramp=0, Final=Active

EVENT 5: VCT Level Channel LT-115 fails High

- TRIGGER 5
 - MAL-CVC010B: VCT LEVEL TRANSMITTER LT115 FAILURE Delay=0,Ramp=0, Final=100

EVENT 6: XTF-2 high temp - Swap BOP busses to alternate feed

- TRIGGER 6
 - ANN-EG017: UNIT AUX XFMR XTF-2 TRBL Delay=0, Ramp=0, Final=ON

Booth Operator: When called to investigate XTF-2 Unit Aux Xfmr report Oil temperature is 101 °C and stable. Cooling pumps and fans are tripped and cannot be started.

Enclosure B limits for 230 XTF-31 are 226.4 to 239.6 when powering the 1DB and 1C buses. This is more restrictive than the initial limit.

Evaluator Cue: Cue crew that the SS will arrange to adjust the 115 KV and 230 KV alarm setpoints. DO NOT allow the crew to adjust the alarm setpoints.

EVENT 7: Rapidly Increasing Turbine Vibration Requires A Turbine Trip At 11 Mils Resulting in an ATWS - RTBs Do Not Open and RODS do not drive in Auto

- TRIGGER 7
 - MAL-TUR002D: TURBINE VIBRATION (BEARING 7) Delay=0, Ramp=00:01:30, Final=15

The Turbine Vibration increases past the 11 MIL Turbine Trip criteria

 MAL-CRF002: AUTO ROD SPEED CONTROLLER FAILURE Delay=0, Ramp=0, Final=0.

This failure prevents automatic rod insertion on the turbine trip.

The Reactor Trip Breakers will NOT open due to an Auto or manual trip. The Control Rods will NOT operate in Auto (Triggered by Event 7)

BOOTH OPERATOR: When called to locally trip the reactor use trigger 8 for local operator actions (delays built in).

LOA TRIGGER 8: This trigger will locally open the RTBs

- MAL-PCS009AA REACTOR TRIP BREAKER A FAILURE (INADVERTENT OPEN) Delay=00:00:45
- MAL-PCS009BA REACTOR TRIP BREAKER B FAILURE (INADVERTENT OPEN) Delay=00:00:59

EVENT 9: One Pressurizer PORV fails stuck Open

- AUTOMATIC TRIGGER (Pressurizer Pressure exceeds 2280 psig) PT_457 >= 2280
- VLV-RC001P: PCV00444B-RC PZR PWR REL VLV FAIL POSITION Delay=00:00:00, Ramp=00:00:30, Final=100

Required Operator Actions

| Op-Test No | D.: 2013 NRC | Scenario # _ 4 _ Event # _ 1 _ Page _ 8 _ of _ 41 _ | |
|---|--|---|---------|
| Event Desc | cription: Perfo | orm "B" EDG Normal Start/Load for Test | |
| Time | Position | Applicant's Actions or Behavior | |
| Booth (No action | Operator: is necessary | | |
| EVALUAT After turn accordan | OR NOTE: over the BOP ce with SOP-3 | will perform a normal start of the 'B' Diesel Generator In 306 Section IV.B starting at step 2.3 | |
| | BOP | Enters SOP-306 Section IV.B starting at step 2.3 | SOP-306 |
| | BOP | To start Diesel Generator B from the Main Control Board perform the following: | SOP-306 |
| | | a. Ensure the diesel is ready to be started as indicated by the following: | SOP-306 |
| | | 1. XCP-637 1-2 (DG B AUTOSTART NOT READY) is NOT in alarm. | |
| | | 2. The READY FOR AUTO START Light is lit at the Diesel Generator B Local Control Panel (DB-436.) | |
| Booth (When call light is lit (| Dperator: ed about status DB-436) | s of READY FOR AUTO START LIGHT report after 10 seconds that | |
| | BOP | b. Momentarily place the Diesel Generator B TEST Switch to START. (PEER ${\bf v})$ | SOP-306 |
| | | c. Verify the Diesel Generator starts and stabilizes between the following: | SOP-306 |
| | | 1. 58.9 Hz and 61.1 Hz. | |
| | | 2. 6800 volts and 7600 volts. | |
| | | d. Reset the tripped Diesel Generator B relay flags at the local panel (XCX-5202, DB-436.) | SOP-306 |
| Booth (When call reset. | Dperator: ed to reset the | relays on the B EDG wait 30 seconds and report that all relays are | |

Required Operator Actions

| Op-Test No Event Desc | o.: <u>2013 NRC</u> cription: Perfo | Scenario # <u>4</u> Event # <u>1</u> Page <u>9</u> of <u>41</u> orm "B" EDG Normal Start/Load for Test | | | |
|--|--|--|---------|--|--|
| Time | Position | Applicant's Actions or Behavior | | | |
| | | <u>NOTE 2.4</u> | SOP-306 | | |
| If time permits, the following guidelines should be utilized to achieve the desired load: a. Prior to closing the DG Breaker, the Diesel should be run at no-load for at least ten minutes. b. Once the DG Breaker is closed, load should be adjusted to between 850 KW and 1000 KW and maintained for at least ten minutes. c. Load should be adjusted to between 2250 KW and 2550 KW and maintained for at least ten minutes. | | | | | |
| d. Load s minute | should be adjus es. | sted to between 3250 KW and 3550 KW and maintained for at least ten | | | |
| e. Load s minute | should be adjusted. | ted to between 4150 KW and 4250 KW and maintained for at least ten | | | |
| EVALUAT Cue the o | OR CUE: | 0 minutes have elapsed to expedite tying the DG to the grid. | | | |
| | BOP | If the Diesel Generator is to be loaded, perform the following: | SOP-306 | | |
| | | a. Place the SYNCHROSCOPE Switch in ON. (PEER $$) | SOP-306 | | |
| | | b. Using the AUTO VOLT CNTRL Switch adjust Diesel Generator A VOLTMETER GENERATOR to slightly higher than VOLTMETER BUS. (PEER $$) | SOP-306 | | |
| | | c. Using the GOVERNOR Switch, adjust Diesel Generator A frequency to cause the SYNCHROSCOPE to rotate slowly in the FAST direction (clockwise). (PEER $$) | SOP-306 | | |
| | | d. When the SYNCHROSCOPE passes 11 o'clock and slowly approaches 12 o'clock, close BUS 1DA DG FEED Breaker. (PEER \checkmark) | SOP-306 | | |
| | | e. Using the GOVERNOR Switch adjust load while monitoring the following: 1. KILOWATT METER. 2. AC AMMETER. | SOP-306 | | |
| | | f. Place the SYNCHROSCOPE Switch in OFF. (PEER $$) | SOP-306 | | |
| | | g. Using the AUTO VOLT CNTRL Switch adjust AC amps. | SOP-306 | | |
| EVALUTC After the | OR NOTE: DG is loaded t | o between 850 and 1000 KW the next event may be triggered. | | | |

Required Operator Actions

| Op-Test No | o.: 2013 NRC | Scenario # 4 Event # 2 Page 10 of 41 | | |
|--|---|--|-------------|--|
| Event Desc | cription: FWI | ✓ low pressure alarm. Local pressure report less than 500psig. 72 hour TS | | |
| Time | Position | Applicant's Actions or Behavior | | |
| Booth C | Dperator: ent 2 (TRIGGE | R 2) when directed. | | |
| Indication XCP-625 | n s available: 3-3, FIV A/B/C | ACCUM PRESS LO | | |
| | BOP | Responds to alarm XCP-625 3-3, FIV A/B/C ACCUM PRESS LO | XCP-625 3-3 | |
| | BOP | Enters ARP-001-XCP-625 3-3 | XCP-625 3-3 | |
| | | NOTE 1: | XCP-625 3-3 | |
| a. If the a 500 ps b. If the a than 7 | affected valve is si. affected valve is 5 psi. | s open, that valve will be inoperable if pressure decreases to less than s closed, that valve will be inoperable if pressure decreases to less | | |
| | BOP | Verify pressure on XPN 7301 (AB 436 West Penetration and XPN 7302 (IB 436 East Penetration). | XCP-625 3-3 | |
| | CRS | 2. Refer to V.C. Summer Tech. Spec. 3.7.1.6. | XCP-625 3-3 | |
| | CRS | 3.7.1.6 Each feedwater isolation valve shall be OPERABLE. | TECH SPEC | |
| | | ACTION: With one feedwater isolation valve inoperable but open, POWER OPERATION may continue provided the inoperable valve is restored to OPERABLE status within 72 hours; Otherwise, be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. | | |
| Booth Operator: If dispatched to check the FIV pressure report the 'A' FWIV pressure is 490 psig, the others are reading 610 psig. | | | | |
| | CRS | Determines that one feedwater isolation valve is inoperable but open which allows continued operation for 72 hours provided the inoperable valve is restored to operable status within the next 72 hours. | XCP-625 3-3 | |
| Booth C Acknowled | Operator: dge all notificat | ions and requests for maintenance support | | |
| | CRS | Notifies the SS, MDS, and I&C | | |
| EVALUAT After the notified th | TOR NOTE: Tech Spec co ne next event | ndition is identified and responsible individuals have been may be triggered. | | |

Required Operator Actions

| Op-Test N | o.: 2013 NRC | Scenario # _ 4 | |
|----------------------------------|---|--|-------------|
| Event Des | cription: LT-4 | 59 (PZR drifts fails low) - Swap channels | |
| Time | Position | Applicant's Actions or Behavior | 4 |
| Booth (| Operator: | nitiate Event 3 (TRIGGER 3) when directed | Ī |
| Indication XCP-614 XCP-616 | ns available: 5-1, CHG LINE 1-5, PZR LCS | E FLO HI/LO DEV HI/LO | |
| | RO | Responds to alarm XCP-616 1-5 PZR LCS DEV HI/LO | |
| | RO | Enters ARP-001- XCP-616 1-5 | |
| | | AUTOMATIC ACTIONS: 1. Pressurizer Control Group heaters tripped. 2. Pressurizer Backup GP 1 or GP 2 heaters trip. | XCP-616 1-5 |
| | | CORRECTIVE ACTIONS: | XCP-616 1-5 |
| | RO | 1. Monitor the Pressurizer pressure and temperature. | XCP-616 1-5 |
| | | 2. Operate heaters in manual when necessary to maintain Pressurizer pressure and temperature. | XCP-616 1-5 |
| | | SUPPLEMENTAL ACTIONS: | XCP-616 1-5 |
| | RO | 1. Determine the cause of the heater trip and correct. | XCP-616 1-5 |
| | CRS | 2. If the cause of the heater trip cannot be corrected, notify Electrical Maintenance. | XCP-616 1-5 |
| | CRS | 3. Refer to Technical Specification 3.4.3. | XCP-616 1-5 |
| | CRS | Recognizes entry conditions for AOP-401.6, PZR LEVEL CONTROL AND PROTECTION CHANNEL FAILURE. | |
| | CRS | Enters AOP-401.6 and verifies immediate action performance. | AOP-401.6 |
| ΙΟΑ | RO | Place PZR LEVEL CNTRL Switch to the position with two operable channels. | AOP-401.6 |
| | RO | Select an operable channel on PZR LEVEL RCDR | AOP-401.6 |
| | | Control the PZR Heaters as necessary to maintain PZR pressure: CNTRL GRP Heaters. BU GRP 1 Heaters. BU GRP 2 Heaters. | AOP-401.6 |
| | | Verify Letdown is in service. | AOP-401.6 |
| | | Check if PZR LVL MASTER CONTROLLER is responding appropriately: | AOP-401.6 |
| | | Verify Charging flow is normal and responding to PZR level error. Verify PZR level is stable at OR trending to program level. | |

Required Operator Actions

| Op-Test No | o.: 2013 NRC | Scenario # _ 4 | | |
|--|----------------------------|--|---------------|--|
| Event Description: LT-459 (PZR drifts fails low) - Swap channels | | | | |
| Time | Position | Applicant's Actions or Behavior | | |
| | | Place FCV-122, CHG FLOW, in AUTO. REFER TO SOP-102, CHEMICAL AND VOLUME CONTROL SYSTEM. | AOP-401.6 | |
| EVALUAT | OR NOTE: bles do NOT n | need to be tripped to continue the scenario. | | |
| | CRS | Within 72 hours, place the failed channel protection bistables in a tripped condition: Identify the associated bistables for the failed channel - REFER TO Attachment 1. | AOP-401.6 | |
| EVALUAT | OR NOTE: CRS that the S | S will coordinate the performance of Attachment 1. | | |
| | CRS | Record the following for each associated bistable on SOP-401, REACTOR PROTECTION AND CONTROL SYSTEM, Attachment I: Instrument. Associated Bistable. Bistable Location. STPs. Notify the I&C Department to place the identified bistables in trip. | AOP-401.6 | |
| | | Determine and correct the cause of the channel failure. | AOP-401.6 | |
| Booth C dispatch a | Operator: A | cknowledge all notifications and requests for assistance. I&C will the bistables in trip. | | |
| | CRS | Notifies I&C Department to place the identified bistables in trip. | AOP-401.6 | |
| | | Contacts Work Control/I&C for assistance. | AOP-401.6 | |
| | | Inform S.E. of the problem. | AOP-401.6 | |
| | CRS | Enters Tech Spec Table 3.3-1, Item 11 – Action 6 | TECH SPECS | |
| | | 3/4.3 INSTRUMENTATION 3/4.3.1 REACTOR TRIP SYSTEM INSTRUMENTATION | TECH SPECS | |
| | | 3.3.1 As a minimum, the reactor trip system instrumentation and interlocks of Table 3.3-1 shall be OPERABLE with RESPONSE TIMES as shown in Table 3.3-2. | | |
| | | APPLICABILITY: As shown in Table 3.3-1. ACTION: As shown in Table 3.3-1 | | |

Required Operator Actions

| Op-Test No Event Desc | D.: <u>2013 NRC</u> | Scenario # _ 4 Event # _ 3 Page _ 13 of _ 41 _ 59 (PZR drifts fails low) - Swap channels | | | |
|--------------------------|--|---|---------------|--|--|
| — : | | | _ | | |
| lime | Position | Applicant's Actions or Behavior | ļ | | |
| | | Pressurizer Water Level – High | TECH SPECS | | |
| | | TS Table 3.3-1, Item 11 – Action 6# | | | |
| | | With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied: | | | |
| | CRS | • The inoperable channel is placed in the tripped condition within 72 hours; and | | | |
| | | • 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. | | | |
| | | # The provisions of Specification 3.0.4 are not applicable | | | |
| EVALUAT | EVALUATOR NOTE: The next event may be initiated after the Technical Specification have been addressed. | | | | |

Required Operator Actions

| Op-Test No | o.: 2013 NRC | Scenario # _ 4 _ Event # _ 4 _ Page _ 14 _ of _ 41 _ | |
|------------------------|--|---|-------------|
| Event Desc | cription: 'B' M | IFP trip (Reduce power at 1%/min to <91%) | |
| Time | Position | Applicant's Actions or Behavior | _ |
| Booth 0 | Operator: In | itiate Event 4 (Trigger 4) when directed. | |
| Indication XCP-625, | n s available: 2-1, FWP A/B/ | C TRIP | XCP-625 2-1 |
| | CREW | Refer to alarm response procedures | |
| | | AUTOMATIC ACTIONS: | |
| | | Feedwater Pump recirc valve will open on tripped Feedwater Pump (IFV-3247, 3257, 3267). | |
| | | 2. Feedwater Pump remaining in service will increase speed to increase flow to maintain Steam Generator level. | |
| | | If sufficient number of Feedwater Pumps are not in service, the Reactor will trip on one of the following: a. Low Low level in Steam Generators. b. Low level in Steam Generators in conjunction with Low Feedwater flow. | |
| | | CORRECTIVE ACTIONS: | |
| | | 1. Reduce Reactor power per GOP-4B below the following limits: | XCP-625 2-1 |
| | CREW | a. With 2 Feedwater Pumps in operation, 91% Reactor power. | |
| | | b. With 1 Feedwater Pump in operation, 48% Reactor power. | |
| | CRS | 2. Go to AOP-210.3, Feedwater Pump Malfunction. | XCP-625 2-1 |
| | BOP | Determine that "B" MFP has tripped. | XCP-625 2-1 |
| | CRS | Enter AOP-210.3, Feedwater Pump Malfunction. | XCP-625 2-1 |
| ΙΟΑ | BOP | Verify at least ONE Feedwater Pump is running. | AOP-210.3 |
| ΙΟΑ | | Check if a Feedwater Pump Trip occurred. | AOP-210.3 |
| ΙΟΑ | BOP | Check the operating Feedwater Pump(s) speed control for proper response. | AOP-210.3 |
| EVALUAT power mu | FOR NOTE: Thust be perform | e CRS will determine that a load reduction to less than 91% ned. | |

Required Operator Actions

| Op-Test No | o.: 2013 NRC | Scenario # _ 4 _ Event # _ 4 _ Page _ 15 _ of _ 41 _ | |
|---|--|--|-----------|
| Event Desc | cription: 'B' M | FP trip (Reduce power at 1%/min to <91%) | |
| Time | Position | Applicant's Actions or Behavior | |
| | CRS | REFER TO the table below to determine the Reactor Power limit based on available Feedwater System capacity:FEEDWATER PUMPSREACTOR POWER LIMIT2 MFW PUMPS91%1 MFW PUMP48% | AOP-210.3 |
| | BOP | Verify two Feedwater Pumps are running. | AOP-210.3 |
| | CREW | Reduce Reactor Power at 1%/min to the limit determined in Step 4. REFER TO GOP-4B, POWER OPERATION (MODE 1 - DESCENDING). | AOP-210.3 |
| | CRS | Verify the high pressure and low pressure stop valves close on the AFFECTED Feedwater Pump (GRAPHIC 310 SCREEN). | AOP-210.3 |
| | BOP | Verify proper operation of the AFFECTED Feedwater Pump Turning Gear: | AOP-210.3 |
| | | a. Check if the Feedwater Pump Turbine is stopped. | AOP-210.3 |
| | | ALTERNATIVE ACTION | |
| | | a. WHEN the Feedwater Pump Turbine is stopped, THEN COMPLETE Step 8. | |
| Booth (Acknowled If contacted | Operator: dge requests fo ed to investigate | or support. The pump trip report that no cause is immediately apparent. | |
| | CRS | Determine and correct the cause of the trip. | AOP-210.3 |
| | BOP | Ensure all operating Feedwater Pump speed controller(s)(MCB M/A Stations) are in AUTO. REFER TO SOP-210, FEEDWATER SYSTEM. | AOP-210.3 |
| EVALUATOR NOTE: The following steps are from SOP-106 "Borate Operations." | | | |
| | | <u>NOTE 2.0</u> | SOP-106 |
| Energizing additional Pressurizer Heaters will enhance mixing. LCV-115A, LTDN DIVERT TO HU-TK, will begin to modulate to the HU-TK position at 70% level on LI-115, VCT LEVEL %. | | | |

Required Operator Actions

| Op-Test No | o.: 2013 NRC | Scenario # _ 4 | | | | | | | |
|------------------------|---|--|---------|--|--|--|--|--|--|
| Event Dese | cription: 'B' N | IFP trip (Reduce power at 1%/min to <91%) | | | | | | | |
| Time | Position Applicant's Actions or Behavior | | | | | | | | |
| | RO | Ensure at least one Reactor Coolant Pump is running. | SOP-106 | | | | | | |
| | | lace RX COOL SYS MU switch to STOP. | | | | | | | |
| | | lace RX COOL SYS MU MODE SELECT switch to BOR. (Peer $$) | | | | | | | |
| | Set FIS-113, BA TO BLNDR FLOW, Batch Integrator to the desired volume. (Peer $$) | | | | | | | | |
| | | Place RX COOL SYS MU switch to START | SOP-106 | | | | | | |
| | | <u>NOTE 2.6</u> | SOP-106 | | | | | | |
| Step 2.6 n | nay be omitted | when borating less than 10 gallons | | | | | | | |
| | RO | Place FCV-113 A&B, BA FLOW, controller in AUTO. | SOP-106 | | | | | | |
| | | <u>NOTE 2.7</u> | SOP-106 | | | | | | |
| The AUTC obtain the | D setpoint dial f desired flow ra | or FCV-113A&B, BA FLOW, controller may be adjusted slowly to ate | | | | | | | |
| | RO | Verify the desired Boric Acid flow rate on FR-113, BA TO BLNDR GPM (F-113). | SOP-106 | | | | | | |
| | | When the preset volume of boric acid has been reached, perform the following: | SOP-106 | | | | | | |
| | | a. Place FCV-113A&B, BA flow controller in MAN.b. Verify boration stops. | | | | | | | |
| | RO | Place RX COOL SYS MU switch to STOP. | SOP-106 | | | | | | |
| | | <u>NOTE 2.10</u> | | | | | | | |
| a. lf p b. Th ga | plant conditions e volume in the llons. | require repeated borations, Step 2.10 may be omitted. e piping between the blender and the VCT outlet is approximately 3.8 | | | | | | | |
| | RO | Alternate Dilute 4 to 6 gallons of Reactor Makeup Water to flush the line downstream of the blender by performing the following: | | | | | | | |
| | | a. Place RX COOL SYS MU MODE SELECT switch to ALT DIL. (PEER $$) | | | | | | | |

Required Operator Actions

| Op-Test No | o.: 2013 NRC | Scenario # _ 4 | | | | | | | |
|--|--------------|---|---------|--|--|--|--|--|--|
| Event Description: 'B' MFP trip (Reduce power at 1%/min to <91%) | | | | | | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | | | | |
| | RO | b. Adjust FCV-168, TOTAL MU FLOW SET PT, to desired flow rate. | SOP-106 | | | | | | |
| | | c. Set FIS-168, TOTAL MU FLOW, batch integrator to desired volume. (PEER $$) | | | | | | | |
| | | d. Place RX COOL SYS MU switch to START. | SOP-106 | | | | | | |
| | | e. Verify desired flow rate on FR-113, TOTAL MU GPM (F-168). | SOP-106 | | | | | | |
| | | f. Verify alternate dilution stops when preset volume is reached on FIS-168, TOTAL MU FLOW, batch integrator. | SOP-106 | | | | | | |
| | | g. Place RX COOL SYS MU switch to STOP. | SOP-106 | | | | | | |
| | RO | Place RX COOL SYS MU MODE SELECT switch to AUTO. (PEER $\checkmark)$ | SOP-106 | | | | | | |
| | | Adjust FCV-168, TOTAL MU FLOW SET PT, to 7.5 (120 gpm.) | SOP-106 | | | | | | |
| | | In MAN, adjust FCV-113 A&B, BA FLOW OUTPUT, to the required position which will ensure proper Boric Acid addition for subsequent Automatic Makeup operations. | SOP-106 | | | | | | |
| | | Adjust FCV-113A&B, BA FLOW SET PT, to the desired position to ensure proper boric acid addition for subsequent Automatic Makeup operations. | SOP-106 | | | | | | |
| | | Place RX COOL SYS MU switch to START. | SOP-106 | | | | | | |
| | RO | Perform the following: | SOP-106 | | | | | | |
| | | a. Start XPP-13A(B), BA XFER PP A(B), for the in-service Boric Acid Tank. | | | | | | | |
| | | b. If necessary, start XPP-13A(B), BA XFER PP A(B), for the Boric Acid Tank on recirculation. | | | | | | | |
| | | END OF SECTION | SOP-106 | | | | | | |
| EVALUAT | OR NOTE: B | OP Steps below initiate the turbine load reduction IAW GOP-4B. | | | | | | | |

Required Operator Actions

| Op-Test No.: 2 | 2013 NRC Scenario # _ 4 Event # _ 4 Page _ 18 of _ 41 | |
|-------------------|--|-----|
| Event Description | : 'B' MFP trip (Reduce power at 1%/min to <91%) | |
| Time P | osition Applicant's Actions or Behavior | |
| | GOP- 4B REFERENCE PAGE | GOF |
| | GENERAL NOTES | |
| Α. | Procedure steps should normally be performed in sequence. However, it is acceptable to perform steps in advance after thorough evaluation of plant conditions and impact by the Shift Supervisor or Control Room Supervisor. | |
| В. | Axial Flux Difference, ∆I, should be maintained within limits per V.C. Summer Curve Book, Figure I-4.1 during Reactor Power Operation above 50% per Tech Spec 3.2.1. | |
| C. | After any Thermal Power change of greater than 15% within any one hour, Attachment III.H. of GTP-702 must be completed. | |
| D. | If time allows, all load changes should be discussed with the Load Dispatcher prior to commencing the load change. | |
| E. | If Reactor Power is stabilized during this procedure for the purpose of raising power per GOP-4A, a Power Range Heat Balance shall be performed. | |
| | REACTOR CONTROL | |
| Α. | During operation with a positive Moderator Temperature Coefficient: | |
| | Power and temperature changes should be slow and will require constant operator attention. | |
| | All power and load changes should be performed in small increments. | |
| В. | Rod Control should be maintained in Automatic if any Pressurizer PORV is isolated. | |
| C. | If at any time, power decreases unexpectedly below 0.1% on any Power Range NI (computer indication available) OR below 1.0% on any Power Range NI control board indication (computer not available): | |
| | No positive reactivity will be added by rods or dilution. | |
| | A complete reactor shutdown shall be performed per GOP-5. | |
| | A controlled reactor startup may be commenced per GOP-3 once the event has been reviewed by Reactor Engineering. | |
| | TURBINE CONTROL | |
| Α. | If during power descension plant stabilization is required, Use the EHC HMI: Control/Load screen, select HOLD. | |
| В. | To resume power descension select the recommended Load Ramp Rate | |
| C. | Turbine Load values are approximate and provided as initial starting points for load changes. When desired Reactor or Turbine parameters are achieved stabilize (if necessary) and proceed as directed. | |
| D. | The load limit "ramp rate" buttons only affect how fast the Load Limit Ref. moves to the new Load Limit Setpoint. Load reductions made using the limiter will always occur at 30% per minute. | |
| E. | The load limiter will reduce turbine load if it is set more than 2% below the current Load Reference value. Load will only be shed until the Load Reference value is once again within 2% of Load Limit Ref. | |
| | MSR CONTROL | |
| A | Do not exceed 50°F Δ T between the inlets to the Low Pressure Turbine. | |
| B. | When in Manual, do not exceed 25°F per half-hour temperature change rate for the tube side of the Moisture Separator/Reheater. | |

Required Operator Actions

| Op-Test No | o.: 2013 NRC | Scenario # _ 4 _ Event # _ 4 _ Page _ 19 _ of _ 41 _ | |
|-----------------------|--------------------------------------|--|--------|
| Event Dese | cription: 'B' M | IFP trip (Reduce power at 1%/min to <91%) | |
| Time | Position | Applicant's Actions or Behavior | |
| | | CAUTION 3.1 through 3.12 | GOP-4B |
| a. Therm GTP-7 | al Power chan 02 Attachment | ges of greater than 15% in any one-hour period requires completion of III.H. | |
| b. VCS PI therma | D Report, POV al power chang | VER CHANGE SEARCH, should be periodically performed to ensure a e of greater than 15% in any one-hour period is detected. | |
| | | NOTE 3.1 through 3.12 | GOP-4B |
| a. Step 3 | .1 lowers Read | ctor Power from 100% to 90%. | |
| b. If the F should | RCS will be ope I be initiated pe | ened for maintenance during the shutdown, degassing of the RCS er SOP-102, Chemical And Volume Control System. | |
| c. The se chang | etpoint for IFK3 es to maintain | 136, FLOW TO DEAERATOR, should be adjusted during power LI-3136, DEAER STOR TK NR LVL, between 2.5 and 5.0 feet. | |
| | BOP | Reduce Reactor Power to 90% as follows: | GOP-4B |
| | | a. Using the EHC HMI, Control/Load screen, reduce load per SOP- 214 at a rate of 1% per minute or less. | GOP-4B |
| The Syste MVAR | m Controller sh s in a five minu | <u>NOTE 3.1.b</u> hould be notified prior to manually changing MVARs by more than 50 ite period, unless the change is needed to prevent equipment damage. | GOP-4B |
| | BOP | As load decreases, adjust Megavars using GEN FIELD VOLT ADJ as requested by the System Controller and within the Estimated Generator Capability Curve (Enclosure A). | GOP-4B |
| | | c. Maintain Tavg within the control band by Control Rod motion or boron concentration changes. | GOP-4B |
| | | d. Borate or dilute per SOP-106, Reactor Makeup Water System, to maintain the following parameters: | GOP-4B |
| | | ΔI within limits. Control Rods above the Rod Insertion Limit. | |
| | | e. Monitor Steam Generator Blowdown Condensate return temperature for proper operation as DA temperature is lowered. | GOP-4B |

Required Operator Actions

| Op-Test No Event Desc | p.: <u>2013 NRC</u> cription: 'B' M | Scenario #4 Event #4 Page20 of41 FP trip (Reduce power at 1%/min to <91%) | | |
|---|--|---|--------|--|
| Time | Position | Applicant's Actions or Behavior | | |
| | BOP | f. Ensure MSR's are in Temp Ramp mode. | GOP-4B | |
| | | g. Monitor MSR temperatures and Main Turbine vibration levels closely as Main Turbine load is reduced. | GOP-4B | |
| <u>CAUTION 3.1.h</u> To minimize stress in the Low Pressure Turbines, Hot Reheat Steam temperature changes must be limited to 125°F/hr. | | | | |
| | BOP | h. If necessary, manually control MSRs per SOP-204, Extraction Steam, Reheat Steam, Heater Vents And Drains, maintaining MSR temperatures on program. | GOP-4B | |
| | | If desired, stabilize at 90% Reactor Power, otherwise proceed to Step 3.2. | GOP-4B | |
| EVALUAT | OR NOTE: The ntrolled. | e next event may be initiated after power is below 91% with SG | | |

Required Operator Actions

| Op-Test No | o.: 2013 NRC | Scenario # _ 4 | | | | | |
|--|---|---|-------------|--|--|--|--|
| Event Desc | cription: VCT | Level Channel LT-115 fails HIGH | | | | | |
| Time | Time Position Applicant's Actions or Behavior | | | | | | |
| Booth C | Dperator: | nitiate Event 5 (TRIGGER 5) when directed. | | | | | |
| Indication XCP-613, XCP-613, LCV-115A | ns available: 3-1, VCT LVL 3-5, VCT LCV- , LTDN DIVER | HI/LO ·115A TO HU-TK LVL HI T TO HU TK, will divert | | | | | |
| | RO | Enters ARP-001- XCP-613, 3-5 | XCP-613 3-5 | | | | |
| | | AUTOMATIC ACTIONS: | XCP-613 3-5 | | | | |
| | | LCV-115A, LTDN DIVERT TO HU-TK, diverts letdown flow to the Recycle Holdup Tanks. | | | | | |
| | RO | CORRECTIVE ACTIONS: | | | | | |
| | | 1. Verify Pressurizer level is at programmed value. | | | | | |
| | | Verify VCT level stabilizes as LCV-115A, LTDN DIVERT TO HU- TK, opens. | | | | | |
| | | Verify VCT level on LI-112A, LEVEL %, if ILT00115, VOLUME CONTROL TANK LEVEL TRANSMITTER, has failed. (NO) | | | | | |
| | | Evaluate the need to position LCV-115A, LTDN DIVERT TO HU- TK to VCT position to avoid loss of suction to Charging Pump. | XCP-613 3-5 | | | | |
| | RO | SUPPLEMENTAL ACTIONS: | | | | | |
| | | Monitor VCT level and LCV-115A, LTDN DIVERT TO HU-TK, for proper operation. | XCP-613 3-5 | | | | |
| | | Verify that LT-115 failed HIGH by comparing indications with LI-112 | XCP-613 3-5 | | | | |
| EVALUAT prevent A accordan Level Cor | OR NOTE: L Luto makeup to ce with SOP-1 htrol | T-115 failing HIGH will divert letdown to the Holdup Tanks and o the VCT. Makeup, if necessary, would be accomplished in 06, Reactor Makeup Water System , Section III.C – Manual VCT | | | | | |
| Booth C Acknowled assigned t | Booth Operator: Acknowledge all requests for I&C / Maintenance support for this failure. Personnel will be assigned to investigate the failure. | | | | | | |
| | CRS | Contact I&C to initiate repairs | | | | | |
| | RO | Place LCV-115A to "VCT" position to mitigate the event | | | | | |
| EVALUAT | OR NOTE: event may be | initiated after the LCV-115A is positioned to VCT. | | | | | |

Required Operator Actions

| Op-Test No Event Desc | o.: <u>2013 NRC</u> cription: XTF- | Scenario # <u>4</u> Event # <u>6</u> Page <u>22</u> of <u>41</u> 2 High Temp - Swap BOP buses to Alternate Feed | | | | | | |
|---|--|---|-------------|--|--|--|--|--|
| Time Position Applicant's Actions or Behavior | | | | | | | | |
| Booth Op Initiate Ev | erator Instruc ent 6 (TRIGGE | tions: R 6) when directed. | | | | | | |
| Indication XCP-633- | n s Available: 6-3, UNIT AUX | XFMR XTF-2 TRBL | | | | | | |
| | BOP | Enters ARP-001-XCP-633-6-3. | XCP-633 6-3 | | | | | |
| Booth 0 | Operator: Ad | cknowledge requests to investigate. | | | | | | |
| | BOP | CORRECTIVE ACTIONS: | | | | | | |
| | | 1. If a trip occurs, refer to UNIT AUX DIFF LCKOUT 86T2-1 (XCP- 639 3-2). | | | | | | |
| | | Dispatch an Operator to XTF0002, UNIT AUXILIARY XC TRANSFORMER, to determine the cause of the alarm. If necessary, contact PSE/Substation Maintenance for assistance. | | | | | | |
| | | 3. Notify the System Controller. | XCP-633 6-3 | | | | | |
| | CREW | Dispatches AO to investigate. | | | | | | |
| Booth C fans are n remain be | Dperator: If ot running and low 105° C | called to investigate the cause of the alarm report that the pumps and oil temperature is stable at 101° C and that it appears that oil temp will | | | | | | |
| Booth Operator: If contacted as PSE/Substation Maintenance , wait 3 minutes then report that the temperature appears to be valid but no reason is apparent for the failure of the pumps and fans. | | | | | | | | |
| Booth Operator: If contacted as System Controller – Acknowledge all communications. | | | | | | | | |

F

Required Operator Actions

Form ES-D-2

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| Op-Test No | o.: <u>2013 NRC</u> | Scenario # _ 4 Event # _ 6 Page _ 23 of _ 41 | | | | | |
|--|--|---|---------|--|--|--|--|
| Event Description: XTF-2 High Temp - Swap BOP buses to Alternate Feed | | | | | | | |
| Time | Position | sition Applicant's Actions or Behavior | | | | | |
| | SUPPLEMENTAL ACTIONS: 1. If oil temperatures exceed 100° C or winding temperatures exceed 120° C, transfer loads to the Emergency Auxiliary Transformers per SOP-304. | | | | | | |
| | BOP | If oil temperatures exceed 105° C or winding temperatures exceed 135° C, trip the plant per EOP-1.0 or AOP-214.1 and deenergize XTF0002, UNIT AUXILIARY TRANSFORMER per SOP-302. | | | | | |
| | | Perform ISP-032, LARGE POWER TRANSFORMER HAZARDOUS ZONE TRAFFIC EXCLUSION to keep people clear. | | | | | |
| | | When the cause has been corrected, verify XTF0002, UNIT AUXILIARY TRANSFORMER, auxiliaries are returned to normal operation per SOP-302. | | | | | |
| | CRS | Directs BOP to transfer loads to Emergency Auxiliary Transformers IAW SOP-304 Section IV.A TRANSFERRING BOP BUSES FROM NORMAL TO ALTERNATE FEED | | | | | |
| | BOP | Verifies Initial Conditions: The AUTO-MAN XFER Switch for each Balance of Plant bus is in AUTO. XTF0031 and XTF0032, EMERGENCY AUXILIARY TRANSFORMER #1 and #2 are in service per SOP-302. Conditions exist which require removal of normal feed for the buses. XTF0001, MAIN TRANSFORMER and XTF0002, UNIT AUXILIARY TRANSFORMER are in service per SOP-302. | SOP-304 | | | | |
| For the properties of the prop | otection of equ d alternate fee nay exceed lon | CAUTION 2.0 ipment, parallel operations should be kept to a minimum with both der breakers closed. Due to the fact that with both breakers closed, g term overcurrent trip setpoints. Trips may occur in 40 to 100 | SOP-304 | | | | |
| Procedur automatic | e Note 2.1 thro transfer to its r | bugh 2.3: When BUS 1A, 1B, or 1C is aligned to its alternate feed, normal feed is not available. | SOP-304 | | | | |
| | BOP | Manually transfer BUS 1A to alternate feed as follows: | SOP-304 | | | | |
| a. Place BUS 1A AUTO-MAN XFER Switch in MAN. | | | | | | | |

Required Operator Actions

| Op-Test No | o.: 2013 NRC | Scenario # _ 4 | | | | | | | |
|---|---|---|---------|--|--|--|--|--|--|
| Event Desc | cription: XTF | -2 High Temp - Swap BOP buses to Alternate Feed | | | | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | | | | |
| | | . Close BUS 1A ALT FEED breaker. (PEER $$) | | | | | | | |
| | | c. Open BUS 1A NORM FEED breaker. (PEER $$) | SOP-304 | | | | | | |
| | | Verify BUS 1A potential lights remain energized SC | | | | | | | |
| | | e. Place BUS 1A AUTO-MAN XFER Switch in AUTO. (PEER $$) | SOP-304 | | | | | | |
| | BOP | Manually transfer BUS 1B to alternate feed as follows: | SOP-304 | | | | | | |
| | | a. Place BUS 1B AUTO-MAN XFER Switch in MAN. | SOP-304 | | | | | | |
| | | b. Close BUS 1B ALT FEED breaker. (PEER $$) | SOP-304 | | | | | | |
| | | c. Open BUS 1B NORM FEED breaker. (PEER $$) | SOP-304 | | | | | | |
| | | d. Verify BUS 1B potential lights remain energized. | SOP-304 | | | | | | |
| | | e. Place BUS 1B AUTO-MAN XFER Switch in AUTO. (PEER $$) | SOP-304 | | | | | | |
| | | Procedural NOTE 2.3.a and 2.3.b | SOP-304 | | | | | | |
| When place shall be do to not mee | cing XSW1C or one at the end eting voltage re | n alternate feed during time critical situations, Steps 2.3.a and 2.3.b of the transfer. By skipping these steps the bus may be inoperable due equirements or Real Time Contingency Analysis. | | | | | | | |
| | BOP | Manually transfer BUS 1C to alternate feed as follows: | SOP-304 | | | | | | |
| | | a. Notify the System Controller of the applicable bus voltage limits from Enclosure B. | SOP-304 | | | | | | |
| | | b. If required, adjust the 115KV and/or 230KV alarm setpoints per Attachment VA and/or Attachment VB for the current lineup. | SOP-304 | | | | | | |
| | BOP | c. Place BUS 1C AUTO-MAN XFER Switch in MAN. | SOP-304 | | | | | | |
| | | d. Close BUS 1C ALT FEED breaker. (PEER $$) | SOP-304 | | | | | | |
| | | e. Open BUS 1C NORM FEED breaker. (PEER $$) | SOP-304 | | | | | | |
| | | f. Verify BUS 1C potential lights remain energized. | SOP-304 | | | | | | |
| | | g. Place BUS 1C AUTO-MAN XFER Switch in AUTO. (PEER $$) | SOP-304 | | | | | | |
| Booth (| Operator: W ne bus. | hen contacted as the System Controller – Acknowledge the voltage | | | | | | | |

Required Operator Actions

| Op-Test No | D.: <u>2013 NRC</u> | Scenario # | <u>4</u> Event | # | Page5 | of1 | |
|--|---------------------|--|-----------------------|--|---|-----------------------|---------|
| Event Desc | cription: XTF | -2 High Lemp | - Swap BOP bus | ses to Alternate | Feed | | |
| Time | Position | | Appli | cant's Actions or I | Behavior | | |
| | CREW | Notify the S Enclosure E | ystem Controlle 3. | er of the applic | able bus volta | ge limits from | SOP-304 |
| | | EXCERPT | FROM ENCLO | SURE B | | | SOP-304 |
| | | XFMR(s) | Connected Buses | Allowab | le Range of Of KILOVOLTS | ffsite AC | |
| | CRS | | | Generator On Line (≤330 MVAR) | Generator On Line (>330 to ≤484 MVAR) | Generator Off Line | |
| | | 230 KV Source | | (XCP-6118, | INCOMING 2 | 30 KV BUS) | |
| | | XTF-31 | 1DB | 225.7 to 239.6 | 228.4 to 239.6 | 218.3 to 239.6 | |
| | | XTF-31 | 1DB and 1C | 226.4 to 239.6 | 229.1 to 239.6 | 219.0 to 239.6 | |
| | CRS | EXCERPT FROM ENCLOSURE B (ACTIONS) 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. | | | | | SOP-304 |
| EVALUAT | EVALUATOR NOTE: | | | | | | |
| The next event may be initiated after all loads have been transferred to the Alternate Source. | | | | | | | |
Required Operator Actions

| Op-Test No | o.: 2013 NRC | Scenario # _ 4 | |
|-----------------------------------|--|---|-------------|
| Event Desc | cription: Turbi drive | ine High Vibration resulting in ATWS - RTB Do Not Open and RODS do not in Auto | |
| Time | Position | Applicant's Actions or Behavior | |
| Booth Op Initiate Ev | erator Instruc ent 7 (TRIGGE | tions : R 7) when directed. | |
| Indication XCP-632 XCP-632 | ns available: 1-4, TURB SUF 5-5, CMPTR IP | PERVISORY INSTR CS FAIL | |
| EVALUAT This even reaching | TOR NOTE: at provides a re the limit of 11 | eason for a manual Reactor Trip based on turbine vibration MILS. | |
| | BOP | Respond to alarm XCP-632 1-4 TURB SUPERVISORY INSTR | |
| | | CORRECTIVE ACTIONS: | XCP-632 1-4 |
| | BOP | On the HMI select: Monitor/ Vibration or Monitor/Prox to verify indication. | XCP-632 1-4 |
| | | 2. If high bearing vibration, refer to XCP-632 annunciator point 4-2, MN TURB VIB HI. | XCP-632 1-4 |
| | CRS | SUPPLEMENTAL ACTIONS: 1. Contact I & C and PSE for further evaluation of the alarm. | XCP-632 1-4 |
| | CRS | Refers to XCP-632 annunciator point 4-2, MN TURB VIB HI. | XCP-632 4-2 |
| | | CORRECTIVE ACTIONS: | XCP-632 4-2 |
| | BOP | 1. Evacuate all unnecessary personnel from the Turbine Building. | XCP-632 4-2 |
| | BOP | 2. Monitor Main Turbine vibration levels: | XCP-632 4-2 |
| | | a. At the HMI: Select Monitor and as applicable: | |
| | | LP Hoods TEMP Lube – Hyd Oil. Vibration. Prox. | XCP-632 4-2 |
| | | b. IPCS, type in TURBRG. | XCP-632 4-2 |
| EVALUAT Turbine v the React | OR NOTE: ibration will ex or will not trip | xceed 11 MILS so a Reactor/Turbine trip will be initiated however (ATWS). | |

| Event Description: Turbine High Vibration resulting in ATWS - RTB Do Not Open and RODS do not drive in Auto | | | | | |
|---|------------------------------|---|--|--|-------------|
| Time | Position | A | | | |
| | | SPEED | TRIP IMMEDIATELY IF JOURNAL 1-8 VIBRATION EXCEEDS | TRIP IMMEDIATELY IF JOURNAL 9-10 VIBRATION EXCEEDS | |
| | BOP | LESS THAN 800 RPM | 8 MILS | 8 MILS | XCP-632 4-2 |
| | DOI | 800-1800 RPM | 11 MILS | 9 MILS | X01 002 4 2 |
| | | If any of the above view of the following: a.Trip the Main Turk b. Implement AOP-2 imminent Turbine | bration trip conditions a bine. 214.1 while monitoring f a damage per Step 4. | are exceeded, perform for indications of | |
| EVALUAT | OR NOTE: ent of steps 4 a | and 5 is truncated as th | ose steps are not app | blicable. | |
| | BOP | 4. If vibration levels exc than 900 RPM perfor | eed 14 mils and Turbin m the following: | e speed is greater | XCP-632 4-2 |
| | BOP | 5. If a Turbine trip is <u>NC</u> | <u>DT</u> required perform the | e following: | XCP-632 4-2 |
| | CRS | The CRS will direct a m EOP-1.0 | anual Reactor/Turbine | trip and entry into | |
| Booth 0 | Operator: No | o action is necessary. | | | |
| Indications available: Multiple alarms in Control Room RTB remain closed Control Rods remain out | | | | | |
| | CRS | Direct entry to EOP-1.0 | , Reactor Trip/Safety In | jection Actuation | EOP-1.0 |
| | RO | Attempt manual reactor | · trip | | EOP-1.0 |
| | BOP | Manually trip the Main | Furbine | | EOP-1.0 |
| | CRS | CRS directs implement | ation of EOP-1.0 | | |

 Op-Test No.:
 2013 NRC
 Scenario #
 4
 Event #
 7 & 8
 Page
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 of
 41

Required Operator Actions

| O E' | p-Test No vent Desc | o.: <u>2013 NRC</u> pription: Turbi | Scenario # _ 4 Event # _ 7 & 8 Page _ 28 of _ 41 ine High Vibration resulting in ATWS - RTB Do Not Open and RODS do not | |
|---|--|--|---|---------|
| | Time | Position | Applicant's Actions or Behavior | - |
| | | | REFERENCE PAGE FOR EOP-1.0 | |
| 1 | | | | |
| 1 | | | | |
| | a. | IF Phase B Co | ntainment Isolation has actuated (XCP-612 4-2), THEN trip all RCPs. | |
| | b. | IF both of the fo | ollowing conditions occur, THEN trip all RCPs: | |
| | | • SI flow is i | ndicated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. | |
| | | AND RCS Wide | e Range pressure is LESS THAN 1418 psig. | EOP-1.0 |
| 2 | REDU Reduc actuat | CING CONTRO e Control Roor ion. REFER TO | DL ROOM EMERGENCY VENTILATION m Emergency Ventilation to one train in operation within 30 minutes of D SOP-505, CONTROL BUILDING VENTILATION SYSTEM. | |
| 3 | MONI ⁻ Period recove • Sp • Sp | FOR SPENT Fl ically check sta ery: ent Fuel Pool le ent Fuel Pool te | UEL COOLING atus of Spent Fuel Cooling by monitoring the following throughout event evel. emperature. | |
| NC | DTE | | | |
| • | Steps | 1 through 5 are | Immediate Operator Actions. | |
| • | • The EOP REFERENCE PAGE should be monitored throughout the use of this procedure. | | | EOP-1.0 |
| Conditions for implementing Emergency Plan Procedures should be evaluated using EPP-001, ACTIVATION AND IMPLEMENTATION OF EMERGENCY PLAN. | | | | |
| | | | Verify Reactor Trip: | |
| | ΙΟΑ | RO | Trip the Reactor using <u>either</u> Reactor Trip Switch. Verify <u>all</u> Reactor Trip and Bypass Breakers are open. (NO) Verify <u>all</u> Rod Bottom Lights are lit. (NO) Verify Reactor Power level is decreasing. (NO) | EOP-1.0 |

Required Operator Actions

| Op-Test No | o.: 2013 NRC | Scenario # _ 4 | |
|---|---|---|----------|
| Event Desc | cription: Turbi drive | ine High Vibration resulting in ATWS - RTB Do Not Open and RODS do not in Auto | |
| Time | Position | Applicant's Actions or Behavior | |
| | | ALTERNATE ACTION: | |
| ΙΟΑ | RO | Trip the Reactor using both Reactor Trip Switches | EOP-1.0 |
| | | If the Reactor is NOT subcritical THEN GO TO EOP-13.0, RESPONSE TO ABNORMAL NUCLEAR POWER GENERATION, Step 1. | |
| | CRS | Directs entry to EOP-13.0 | EOP-13.0 |
| RCPs sho damage d | uld NOT be trip ue to low flow. | CAUTION oped with Reactor power GREATER THAN 5%, to prevent core | EOP-13.0 |
| | | Note: | |
| Ste Co EP | eps 1 and 2 are inditions for imp P-001, ACTIV/ | e Immediate Operator Actions. Dementing Emergency Plan Procedures should be evaluated using ATION AND IMPLEMENTATION OF EMERGENCY PLAN | EOP-13.0 |
| | | NOTE - Step 1 | |
| Manual or provides t | Automatic Roo he fastest Cont | d Control may be used to perform Alternative Action Step 1, whichever rol Rod insertion rate. | EOP-13.0 |
| | | Verify Reactor Trip: | |
| ΙΟΑ | RO | Trip the Reactor using both Reactor Trip Switches. Verify all Reactor Trip and Bypass Breakers are open (NO) Verify all Rod Bottom Lights are lit. (NO) Verify Reactor Power level is decreasing. (NO) | EOP-13.0 |
| AL AL | | ALTERNATE ACTION: | |
| CRITIC TASI | RO | IF the Reactor will <u>NOT</u> trip <u>OR</u> is <u>NOT</u> subcritical, <u>THEN</u> insert Control Rods. | EOP-13.0 |
| ΙΟΑ | RO | Trip the Reactor per ATTACHMENT 1, TRIPPING THE REACTOR LOCALLY. | EOP-13.0 |
| ΙΟΑ | Crew | Dispatch an operator to trip the reactor locally IAW EOP-13.0, Attachment 1. | EOP-13.0 |

Required Operator Actions

| Op-Test No | o.: 2013 NRC | Scenario # _ 4 | |
|--|---|--|----------|
| Event Desc | cription: Turb drive | ine High Vibration resulting in ATWS - RTB Do Not Open and RODS do not in Auto | |
| Time | Position | Applicant's Actions or Behavior | |
| Booth C Acknowled | Operator: dge instructions | s from the crew to locally trip the reactor IAW EOP-13.0 Attachment 1 | |
| Booth C | Operator: | | |
| AFTER the AND AFTER the Attachmer THEN Activate T | e RO has perfo e Crew has rec nt 1 rigger 8 to mar | ormed the critical task of manually inserting the Control Rods puested an operator to locally trip the reactor IAW EOP-13.0 pually trip the reactor. | |
| Booth C One minut | Operator: te after insertin | g Trigger 8 (if the RTB are OPEN) Report completion of Attachment 1 | |
| ΙΟΑ | BOP | Verify Turbine/Generator Trip: | EOP-13.0 |
| | | a. Verify all Turbine STM STOP VLVs are closed. | EOP-13.0 |
| | | b. Ensure Generator Trip (after 30 second delay): | |
| | | Ensure the GEN BKR is open. Ensure the GEN FIELD BKR is open. Ensure the EXC FIELD CNTRL is tripped. | EOP-13.0 |
| | | c. Verify all Turbine STM STOP VLVs are closed. | EOP-13.0 |
| | BOP | Ensure EFW Pumps are running: | EOP-13.0 |
| | | a. Ensure both MD EFW Pumps are running. | EOP-13.0 |
| | | b. Verify the TD EFW Pump is running if necessary to maintain SG levels. | EOP-13.0 |
| | RO | Initiate emergency boration of the RCS | EOP-13.0 |
| | | a. Ensure at least one Charging Pump is running. (YES) | EOP-13.0 |
| | | b. Verify PZR pressure is LESS THAN 2330 psig. (YES) | EOP-13.0 |

Required Operator Actions

| Op-Test N | o.: 2013 NRC | C_ Scenario # _4_ Event # _7 & 8_ Page _31_ of _41_ | | | |
|---|---|---|----------|--|--|
| Event Des | cription: Tu dri | rbine High Vibration resulting in ATWS - RTB Do Not Open and RODS do not ve in Auto | | | |
| Time | Position | Applicant's Actions or Behavior | | | |
| | | c. Verify SI ACT status light is NOT lit. (NO) | | | |
| | RO | ALTERNATE ACTION: | EOP-13.0 | | |
| | | Verify SI flow on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM.GO TO Step 5.Observe the CAUTION prior to Step 5. | | | |
| EVALUA Safety In EOP-1.0 a attachme | TOR NOTE: jection is exp and EOP-1.0 ent to this do | pected as a result of the PORV failing open. Steps 1 through 8 of Attachment 3 SI EQUIPMENT VERIFICATION are included as an cument. | | | |
| | | CAUTION - Step 5 | | | |
| If an autor INJECTIC with this p Feedwate | matic SI exist ON ACTUATIO procedure. A r r Isolation. | s or occurs, Steps 1 through 8 of EOP-1.0, REACTOR TRIP/SAFETY ON, should be performed to verify proper SI actuation, while continuing manual SI should NOT be actuated while in this procedure, to avoid | EOP-13.0 | | |
| | RO Verify Containment Ventilation Isolation Valves closed by verifying the following SAFETY INJECTION monitor lights are dim: • XCP-6103 3-4 (POST ACCID HR VLV, 6057 & 6067). • XCP-6103 2-1 (POST ACCID HR EXH 6056/6066) | | | | |
| | RO Veri | fy the Reactor is subcritical: | EOP-13.0 | | |
| | a. P | ower Range channels indicate LESS THAN 5%. | EOP-13.0 | | |
| | b. Ir | ntermediate Range channels indicate a negative startup rate. | EOP-13.0 | | |
| | c. G | O TO Step 15. Observe the CAUTION prior to Step 15. | EOP-13.0 | | |
| CAUTION - Step 15 Boration should be continued to obtain adequate shutdown margin during subsequent actions. | | | | | |
| | CRS RET | FURN TO the Procedure and Step in effect. | EOP-13.0 | | |
| | CRS Dire | ects implementation of EOP-1.0 | EOP-13.0 | | |
| EVALUA Steps 1-8 task in E | TOR NOTE: 8 of EOP-1.0 OP-13.0 | including Attachment 3 may have been completed as a concurrent | | | |

Required Operator Actions

| Op-Test Event D | No.: <u>201</u> escription: | <u>13 NRC</u> Turb drive | Scenario # _4 Event # _7 & 8 Page _32 of _41 ine High Vibration resulting in ATWS - RTB Do Not Open and RODS do not | | |
|--|---|--|---|---------|--|
| Time | Pos | ition | Applicant's Actions or Behavior | | |
| <u> </u> | L | | REFERENCE PAGE FOR EOP-1.0 | | |
| 1. RCF a. IF | P TRIP CF F Phase B | RITERIA Contai | A nment Isolation has actuated (XCP-612 4-2), THEN trip all RCPs. | | |
| b. If | ⁼ both of th • SI flow AND | ne follov / is indic | wing conditions occur, THEN trip all RCPs: cated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. | | |
| | RCS V | Vide Ra | ange pressure is LESS THAN 1418 psig. | | |
| 2. RE Rec actu | 2. 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. | | | | |
| 3. MO Peri reco | NITOR SF odically cl overy: Spent Fue Spent Fue | PENT F neck sta el Pool I el Pool t | UEL COOLING atus of Spent Fuel Cooling by monitoring the following throughout event evel. emperature. | | |
| NOTE | | | | | |
| Step | os 1 throug | gh 5 are | e Immediate Operator Actions. | | |
| • The | EOP REP | EREN | CE PAGE should be monitored throughout the use of this procedure. | EOP-1.0 | |
| Conditions for implementing Emergency Plan Procedures should be evaluated using EPP- 001, ACTIVATION AND IMPLEMENTATION OF EMERGENCY PLAN. | | | | | |
| | | Verify | Reactor Trip: | | |
| IOA | RO | Tr Ve Ve Ve | ip the Reactor using <u>either</u> Reactor Trip Switch. erify all Reactor Trip and Bypass Breakers are open. erify all Rod Bottom Lights are lit. erify Reactor Power level is decreasing. | EOP-1.0 | |

Required Operator Actions

| Op-Test | t No.: <u>201</u> | 13 NRC Scenario # _ 4 Event # _ 7 & 8 Page _ 33 of _ 41 | |
|------------------------------|------------------------------------|--|---------|
| Event D | escription: | Turbine High Vibration resulting in ATWS - RTB Do Not Open and RODS do not drive in Auto | |
| Time | Posi | ition Applicant's Actions or Behavior | |
| IOA | RO | Verify Turbine/Generator Trip: | EOP-1.0 |
| | | a. Verify all Turbine STM STOP VLVs are closed. | EOP-1.0 |
| | | b. Ensure Generator Trip (after 30 second delay): | |
| | | 1) Ensure the GEN BKR is open. 2) Ensure the GEN FIELD BKR is open. | EOP-1.0 |
| | | 3) Ensure the EXC FIELD CNTRL is tripped. | |
| IOA | RO | Verify both ESF buses are energized. | EOP-1.0 |
| IOA | RO | Check if SI is actuated: | EOP-1.0 |
| | | a. Check if either: | |
| | | SI ACT status light is bright on XCP-6107 1-1. | EOP-1.0 |
| | | Any red first-out SI annunciator is lit on XCP-626 top row. | |
| | | b. Actuate SI using either SI ACTUATION Switch. | EOP-1.0 |
| EVALU • Atta • The | ATOR NC achment 3 are are no | DTE: 3 is included as a separate section at the end of this D-2. failures associated with the Attachment 3 | |
| EVALU Attachi 1.0 stej | ATOR NC ment 3 ve os 1-8. | OTE: rification may be in progress due to EOP-13.0 direction to perform EOP- | |
| | BOP | Initiate ATTACHMENT 3, SI EQUIPMENT VERIFICATION. | EOP-1.0 |
| | BOP | Announce plant conditions over the page system. | EOP-1.0 |
| | BOP | Verify RB pressure has remained LESS THAN 12 psig on PR-951, RB PSIG (P-951), red pen. | EOP-1.0 |
| | RO | Check RCS temperature: With any RCP running, 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. | EOP-1.0 |

Required Operator Actions

| Op-Test No | D.: 2013 NRC | Scenario # _ 4 _ Event # _ 7 & 8 _ Page _ 34 _ of _ 41 | |
|------------------|-------------------------|---|---------|
| Event Desc | cription: Turb drive | ine High Vibration resulting in ATWS - RTB Do Not Open and RODS do not | |
| Time | Position | Applicant's Actions or Behavior | |
| | RO | Check PZR PORVs and Spray Valves: | EOP-1.0 |
| CRITICAL TASK | RO | a. PZR PORVs are closed. (NO) ALTERNATIVE ACTION: a. IF PZR pressure is LESS THAN 2330 psig, THEN close the PZR PORVs. IF any PZR PORV can NOT be closed, THEN close its Block Valve. IF the Block Valve can NOT be closed, THEN GO TO EOP-2.0, LOSS OF REACTOR OR SECONDARY COOLANT. Step 1. | EOP-1.0 |
| | RO | b. PZR Spray Valves are closed. | EOP-1.0 |
| | RO | c. Verify power is available to at least one PZR PORV Block Valve: MVG-8000A, RELIEF 445 A ISOL. MVG-8000B, RELIEF 444 B ISOL. MVG-8000C, RELIEF 445 B ISOL. | EOP-1.0 |
| | RO | d. Verify at least one PZR PORV Block Valve is open. | EOP-1.0 |
| | | NOTE - Step 11 | EOP-1.0 |
| Seal Injec | tion flow should | d be maintained to all RCPs. | |
| | RO | Check if RCPs should be stopped: | |
| | RO | a. Check if either of the following criteria is met: Annunciator XCP-612 4-2 is lit (PHASE B ISOL). OR RCS pressure is LESS THAN 1418 psig AND SI flow is indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. | EOP-1.0 |
| | RO | b. Stop all RCPs. | EOP-1.0 |

Required Operator Actions

| Op-Test No | o.: 2013 NRC | Scenario # _ 4 | |
|------------|-------------------------|---|---------|
| Event Dese | cription: Turb drive | ine High Vibration resulting in ATWS - RTB Do Not Open and RODS do not in Auto | |
| Time | Position | Applicant's Actions or Behavior | |
| | RO | Verify no SG is FAULTED: No SG pressure is decreasing in an uncontrolled manner. No SG is completely depressurized. | EOP-1.0 |
| | RO | Verify Secondary radiation levels GENERATOR indicate SG tubes are NOT RUPTURED: RM-G19A(B)(C), STMLN HI RNG GAMMA. RM-A9, CNDSR EXHAUST GAS ATMOS MONITOR. RM-L3, STEAM GENERATOR BLOWDOWN LIQUID MONITOR. | - |
| | RO | RM-L10, SG BLOWDOWN CW DISCHARGE LIQUID MONITOR. | FOP-1.0 |
| | | a. RB radiation levels are normal on: | EOP-1.0 |
| | | RM-G7, CNTMT HI RNG GAMMA. RM-G18, CNTMT HI RNG GAMMA. | |
| | | b. RB Sump levels are normal. | EOP-1.0 |
| | | c. RB pressure is LESS THAN 1.5 psig. | EOP-1.0 |
| | | d. The following annunciators are NOT lit: | EOP-1.0 |
| | | XCP-606 2-2 (RBCU 1A/2A DRN FLO HI). XCP-607 2-2 (RBCU 1B/2B DRN FLO HI). | |
| | RO | Reset both SI RESET TRAIN A(B) Switches. | EOP-1.0 |
| | | Reset Containment Isolation: | EOP-1.0 |
| | RO | RESET PHASE A - TRAIN A(B) CNTMT ISOL. RESET PHASE B - TRAIN A(B) CNTMT ISOL. | |
| | RO | Place both ESF LOADING SEQ A(B) RESETS to: | EOP-1.0 |
| | | a. NON-ESF LCKOUTS. | EOP-1.0 |
| | | b. AUTO-START BLOCKS. | EOP-1.0 |

Required Operator Actions

| Op-Test No | o.: 2013 NRC | Scenario # _ 4 | |
|------------|-------------------------|--|---------|
| Event Desc | cription: Turb drive | ine High Vibration resulting in ATWS - RTB Do Not Open and RODS do not | |
| Time | Position | Applicant's Actions or Behavior | |
| | RO | Establish Instrument Air to the RB: | EOP-1.0 |
| | | a. Start one Instrument Air Compressor and place the other Compressor in Standby. | EOP-1.0 |
| | | b. Open PVA-2659, INST AIR TO RB AIR SERV. | EOP-1.0 |
| | | c. Open PVT-2660, AIR SPLY TO RB. | EOP-1.0 |
| | | Check if SI flow should be reduced: | EOP-1.0 |
| | | a. RCS subcooling on TI-499A(B), A(B) TEMP °F, is GREATER THAN 52.5°F. | EOP-1.0 |
| | | b. Secondary Heat Sink is adequate: Total EFW flow to the SGs is GREATER THAN 450 gpm. OR | EOP-1.0 |
| | | Narrow Range level is GREATER THAN 26% in at least one SG. | |
| | | c. RCS pressure is stable OR increasing. | EOP-1.0 |
| | | NOTE - Step 19.d | |
| If PZR lev | /el is LESS TH | AN 10%, the PZR should refill from SI flow after pressure is stabilized. | |
| | RO | d. PZR level is GREATER THAN 10%. | EOP-1.0 |
| | CRS | e. GO TO EOP-1.2, SAFETY INJECTION TERMINATION, Step 1. | EOP-1.0 |

Required Operator Actions

| Op-Test No.: 2013 N | IRC Scenario # _ 4 _ Event # _ 7 & 8 _ Page _ 37 _ of _ 41 _ | |
|--|--|---------|
| Event Description: | Turbine High Vibration resulting in ATWS - RTB Do Not Open and RODS do not drive in Auto | |
| Time Positior | Applicant's Actions or Behavior | |
| | REFERENCE PAGE FOR EOP-1.2 | EOP-1.2 |
| 1 SI REINITIATION | CRITERIA | |
| Following SI tern Pumps and oper SECONDARY C | nination, IF either of the following conditions occurs, THEN start Charging ate valves as necessary, and GO TO EOP-2.0, LOSS OF REACTOR OR OOLANT, Step 1: | |
| RCS subcool | ing on TI-499A(B), A(B) TEMP °F, is LESS THAN 52.5°F [67.5°F]. | |
| PZR level ca | n NOT be maintained GREATER THAN 10% [28%]. | |
| 2 SECONDARY IN | TEGRITY TRANSITION CRITERIA | |
| IF any unisolated S depressurized, TH | G pressure is decreasing in an uncontrolled manner OR is completely EN GO TO EOP-3.0, FAULTED STEAM GENERATOR ISOLATION, Step 1. | |
| 3 REDUCING CON | TROL ROOM EMERGENCY VENTILATION | |
| Reduce Control actuation. REFE | Room Emergency Ventilation to one train in operation within 30 minutes of R TO SOP-505, CONTROL BUILDING VENTILATION SYSTEM. | |
| | NOTE | EOP-1.2 |
| The EOP REFEREN | CE PAGE should be monitored throughout the use of this procedure. | |
| RO | Stop all but one Charging Pump and place in Standby. | EOP-1.2 |
| RO | Verify RCS pressure is stable OR increasing. | EOP-1.2 |
| RO | Establish Normal Charging: | EOP-1.2 |
| RO | a. Close FCV-122, CHG FLOW. | EOP-1.2 |
| | b. Open both MVG-8107 and MVG-8108, CHG LINE ISOL. | EOP-1.2 |
| | c. Adjust FCV-122, CHG FLOW, to obtain 70 gpm Charging flow. | EOP-1.2 |
| | d. Close both MVG-8801A(B), HI HEAD TO COLD LEG INJ. | EOP-1.2 |
| | Control FCV-122, CHG FLOW, to maintain PZR level. | EOP-1.2 |
| EVALUATOR NOTE This scenario can b | e terminated after normal charging flow has been established. | |

Required Operator Actions

| Op-Test N Event Des | o.: <u>2013 NRC</u> cription: EOP | Scenario #4 Event #8 & 9 Page38 of41 -1.0 Steps 1 through 8 | | | | | | |
|---|--|--|---------|--|--|--|--|--|
| Time | Position | Applicant's Actions or Behavior | | | | | | |
| | | REFERENCE PAGE FOR EOP-1.0 | EOP-1.0 | | | | | |
| 1. RCP 1 | | A | | | | | | |
| a. IF | Phase B Conta | ainment Isolation has actuated (XCP-612 4-2), THEN trip all RCPs. | | | | | | |
| b. IF b AN | b. IF both of the following conditions occur, THEN trip all RCPs: SI flow is indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. AND | | | | | | | |
| 2 REDI | ICING CONTR | | | | | | | |
| Reduc | ce Control Roor | m Emergency Ventilation to one train in operation within 30 minutes of O SOP-505, CONTROL BUILDING VENTILATION SYSTEM. | | | | | | |
| 3. MONI | TOR SPENT F | UEL COOLING | | | | | | |
| Perioc recove • Sp • Sp | dically check sta ery: pent Fuel Pool I pent Fuel Pool t | atus of Spent Fuel Cooling by monitoring the following throughout event evel. remperature. | | | | | | |
| NOTE Steps 1 through 5 are Immediate Operator Actions. The EOP REFERENCE PAGE should be monitored throughout the use of this procedure. | | | | | | | | |
| • Co EF | Conditions for implementing Emergency Plan Procedures should be evaluated using EPP-001, ACTIVATION AND IMPLEMENTATION OF EMERGENCY PLAN. | | | | | | | |
| EVALUATOR NOTE: Steps 1-8 of EOP-1.0 are being performed at this time due to SI actuation. The Reactor may not be tripped at this time but the contingencies in EOP-13.0 are being implemented. | | | | | | | | |
| IOA | BOP | Verify Reactor Trip: Trip the Reactor using <u>either</u> 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: | EOP-1.0 | | | | | |

Required Operator Actions

| Op-Test No Event Desc | o.: <u>2013 NRC</u> cription: EOP | Scenario # <u>4</u> Event # <u>8 & 9</u> Page <u>39</u> of <u>41</u> -1.0 Steps 1 through 8 | | | | | | | | |
|--------------------------|--|--|---------|--|--|--|--|--|--|--|
| Time | Position | Position Applicant's Actions or Behavior | | | | | | | | |
| | BOP | a. Verify all Turbine STM STOP VLVs are closed. | EOP-1.0 | | | | | | | |
| | BOP | b. Ensure Generator Trip (after 30 second delay): 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 | BOP | Check if SI is actuated: | EOP-1.0 | | | | | | | |
| | BOP | a. Check if either: 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. | EOP-1.0 | | | | | | | |
| | BOP | b. Actuate SI using either SI ACTUATION Switch. | EOP-1.0 | | | | | | | |
| EVALUAT • Att • Th | OR NOTE: tachment 3 is ere are no fail | included as a separate section at the end of this D-2. ures associated with the Attachment 3 | | | | | | | | |
| | BOP | Initiate ATTACHMENT 3, SI EQUIPMENT VERIFICATION. | EOP-1.0 | | | | | | | |
| | BOP | Announce plant conditions over the page system. | EOP-1.0 | | | | | | | |
| | BOP | Verify RB pressure has remained LESS THAN 12 psig on PR-951, RB PSIG (P-951), red pen. | EOP-1.0 | | | | | | | |
| | BOP | Report to the CRS that EOP-1.0 Step 1-8 have been completed. | EOP-1.0 | | | | | | | |
| EVALUAT END OF E | EVALUATOR NOTE: END OF EOP-1.0 Steps 1-8 | | | | | | | | | |

Required Operator Actions

| Op- | Fest No.: | 2013 NRC | Scenario # | 4 Event # | 8 & 9 | Page _ | 40 of | 41 | |
|--|--------------|--|--|--|---|-------------|----------|------|-------------------------|
| Ever | nt Descripti | on: EOP-1.0 | 0 Attachment | 3 - SI Equipmen | t Verification | | | | |
| Tin | ne | Position | | Applica | nt's Actions or B | ehavior | | | |
| EVALATORS NOTE: This attachment is to verify equipment status after Safety Injection has been initiated and is run concurrently with the main body of EOP-1.0. | | | | | | | | | |
| THE | | Ensure EFV | V Pumps are | e runnina: | | | | | EOP-1.0 |
| | | | | | | | | | Attachment 3 |
| | вор | a. Ensure b | oth MD EFV | / Pumps are ru | nning. | | | | |
| | | b. Verify the | TD EFW P | ump is running | if necessary | to maintair | n SG lev | els. | |
| | | Ensure the | following EF | W valves are c | pen: | | | | EOP-1.0 Attachment 3 |
| | BOP | FCV-353 FCV-353 MVG-280 | 1(3541)(355 6(3546)(355)2A(B), MS I | 1), MD EFP T(6), TD EFP TC LOOP B(C) TO | O SG A(B)(C). SG A(B)(C). TD EFP. | | | | |
| | BOP | Verify total | EFW flow is | GREATER TH | AN 450 gpm. | | | | EOP-1.0 Attachment 3 |
| | | Ensure FW | Isolation: | | | | | | EOP-1.0 Attachment 3 |
| | | a. Ensure th | ne following | are closed: | | | | | |
| | | • FW Flow | Control, FC | V-478(488)(49 | 8). | | | | |
| | BOP | • FW Isola | tion, PVG-16 | 611A(B)(C). | | | | | |
| | | FW Flow SG Blow | Control Byp | ass, FCV-3321 503A(B)(C) | (3331)(3341) |). | | | |
| | | SG Samp | ole, SVX-939 | 98A(B)(C). | | | | | |
| | | b. Ensure a | II Main FW F | Pumps are tripp | ed. | | | | |
| | | Ensure SI F | oumps are ru | inning: | | | | | EOP-1.0 |
| | BOP | Two Cha | rging Pumps | s are running. | | | | | Attachment 3 |
| | | | | e running. | | | -:) | | |
| | BOP | Ensure two | RBCU Fans | are running in | slow speed (| one per tra | ain). | | Attachment 3 |
| | | Verify Servi | ce Water to | the RBCUs: | | | | | EOP-1.0 Attachment 3 |
| | | a. Ensure tv | vo Service V | Vater Pumps a | re running. | | | | |
| | BOP | b. Verify bo | th Service W | /ater Booster P | umps A(B) ar | e running. | | | |
| | | c. Verify GRFI-4466,FI-4496, | REATER THA SWBP A DIS SWBP B DIS | AN 2000 gpm f SCH FLOW GF SCH FLOW GF | low for each t PM. PM. | rain on: | | | |

Required Operator Actions

| Op-Test | No.: _ | 2013 NRC | Scenario # 4 Event # 8 & 9 Page 41 of 41 | | | | | |
|---|------------|--|--|-------------------------|--|--|--|--|
| Event De | escription | n: EOP | -1.0 Attachment 3 - SI Equipment Verification | | | | | |
| Time Position Applicant's Actions or Behavior | | | | | | | | |
| E | BOP | Verify two | o CCW Pumps are running. | EOP-1.0 Attachment 3 | | | | |
| E | BOP | Ensure ty | wo Chilled Water Pumps and Chillers are running. | EOP-1.0 Attachment 3 | | | | |
| E | BOP | Verify bo | th trains of Control Room Ventilation are running in Emergency Mode. | EOP-1.0 Attachment 3 | | | | |
| | | Check if | Main Steamlines should be isolated: | EOP-1.0 Attachment 3 | | | | |
| E | 30P | a. Check | if any of the following conditions are met: B pressure GREATER THAN 6.35 psig. R eamline pressure LESS THAN 675 psig. | | | | | |
| | | • Ste 552 | 、 eamline flow GREATER THAN 1.6 MPPH AND Tavg LESS THAN 2°F. | | | | | |
| | | b. Ensure • MS • MS | e all the following are closed: S Isolation Valves, PVM-2801A(B)(C). S Isolation Bypass Valves, PVM-2869A(B)(C). | EOP-1.0 Attachment 3 | | | | |
| E | BOP | Ensure E • P • P | Excess Letdown Isolation Valves are closed: VT-8153, XS LTDN ISOL. VT-8154, XS LTDN ISOL. | EOP-1.0 Attachment 3 | | | | |
| E | BOP | Verify ES Isolation CONTAII needed. | Verify ESF monitor lights indicate 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. | | | | | |
| | | Verify pro | oper SI alignment: | EOP-1.0 Attachment 3 | | | | |
| | | a. Verify monit | VI valve alignment by verifying SAFETY INJECTION/PHASE A ISOL for lights are bright on XCP-6104. | | | | | |
| | | b. Verify | all SAFETY INJECTION monitor lights are dim on XCP-6106. | | | | | |
| E | BOP | c. Verify | / SI flow on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM | | | | | |
| | | d. Chec | k if RCS pressure is LESS THAN 325 psig. | | | | | |
| | | e. Verify • F | / RHR flow on: I-605A, RHR DISCHARGE PUMP A FLOW GPM. ND | | | | | |
| | | • F | I-605B, RHR DISCHARGE PUMP B FLOW GPM. | | | | | |
| EVALU | ATOR | NOTE: EN | ND OF EOP-1.0 ATTACHMENT 3 | | | | | |

2013 NRC Scenario Spare

Scenario Outline

| Facility: | VC SUN | MER | Scenario No.: | Spare | Op Test No.: | NRC ILO 11-01 | | |
|-------------------|----------------------|--|---|--|-------------------------------------|------------------------------------|--|--|
| Exami | iners: | | Operators: | CRS: | | | | |
| | _ | | | RO: | | | | |
| | | | | BOP: | | | | |
| Initial Condif | • • • | Reactor Critical a The fuel has beer The Main Steam GOP-3 is comple A and B CWP rur | Reactor Critical at 10 ⁻³ % MOL following a short maintenance outage. The fuel has been pre-conditioned during previous operation. The Main Steam system has being warmed and the MSIVs are open. GOP-3 is complete to step 3.14. A and B CWP running C CWP will be returned to service on next shift. | | | | | |
| Turno | ver: • | Increase power to | o approximately 3%. | | | | | |
| Critica | I Task: • | Establish high head injection prior to Orange path on core cooling. Failure of phase A at least one valve closed in that line prior to finishing Attachment III. | | | | | | |
| Event No. | Malf. No. | Event Type* | [| Event Des | cription | | | |
| 1 | N/A | R – RO, N – BOP, CRS | Perform Reactor Start-up IAW GOP-3 Reactor Startup From Hot Standby To Startup (Mode 3 To Mode 2) | | | | | |
| 2 | EF001T | C – BOP, CRS TS – CRS | "A" MDEFW trip, Th | "A" MDEFW trip, Throttle flow with "B" MDEFW | | | | |
| 3 | RCS008H | TS – CRS | RCS Loop 3 T _{HOT} R | 3 T _{HOT} RTD Fails Low. | | | | |
| 4 | TB001T | С-ВОР | B CWP Bearing Fai Temperatures incre auto trips | WP Bearing Failure (A and B CWP running) peratures increase until it is tripped by the cropt trips | | ing) he crew or it | | |
| 5 | CRF004D4 CRF004K2 | C – RO, CRS | 2 Dropped Rods – Trip reactor (D4) (K2) Staggered rod drop > 1 minute apart. | | | | | |
| 6 | CS004S | C – RO, CRS | "A" Charging Pump | sheared s | shaft. (Trigger o | on Rx Trip) | | |
| 7 | PRS008 | M - ALL | PZR Steam Space ((Manual trigger afte | LOCA r CHG Pp | is aligned and | started) | | |
| 8 | SS003P SS004P | С-ВОР | Containment penetr close on Phase A. | ation valv | es PVA-9312 / | A & B fail to | | |
| 9 | CVC017B CVC017C | C-RO | The running Chargin restart. The Non-run but will start manua | ng Pump v nning Cha Ily | will trip on the S rging Pp does | SI and will not not start on SI | | |
| * | (N)ormal, (R)e | activity, (I)nstrume | nt, (C)omponent, (N | ۸)ajor | | | | |

*

The following notation is used in the ES-D-2 form "Time" column:

IOA designates **Immediate Operator Action** steps

designates Continuous Action steps

The crew will assume the watch having been pre-briefed on the Initial Conditions, the plan for this shift and any related operating procedures.

The scenario involves a plant startup so GOP-3, Reactor Startup from Hot Standby to Startup (Mode 3 to Mode 2), is being implemented. Step 3.13 has been completed and the reactor is critical in Mode 2. The secondary plant has been warmed with the turbine on turning gear.

The scenario starts on step 3.14. Power will be raised to the Point of Adding Heat.

EVENT 1: Normal Power Increase

The RO will increase Reactor Power to the Point of Adding Heat and the crew will transition to GOP-4A, Power Operation (Mode 1 - Ascending). GTP-702 Attachment II G, Operational Mode Change Plant Startup - Entering Mode 1, is complete.

EVENT 2: "A" MDEFW Pump Trip

On cue from the Examiner at approximately 1-3% power the "A" MDEFW will trip.

In accordance with XCP-622 1-3, MD EFP A Trip" EFW flow must be reduced to below 400 gpm. The EFW flow requirement is approximately 180 gpm/percent so power is limited to approximately 2% using the "B" MDEFW unless the crew decides to use the TDEFW Pump.

The BOP will throttle EFW flow to the S/Gs using the "B" MDEFW IAW SOP-211, Emergency Feedwater System.

The CRS will evaluate the failure and determine that the A MSEFW Pump is inoperable and Tech Spec 3.7.1.2 applies. The action statement requires that be returned to operable status within 72 hours.

EVENT 3: T_{Hot} RTD Fails Low.

On cue from the Examiner the Loop 3 T_{Hot} RTD will fail Low. The crew will respond in accordance with the ARP(s). The crew will implement AOP-401.2, Protection Channel RCS Loop RTD Failure, to identify the failed RTD and ensuring an operable loop is selected on ΔT TR-412 Input Switch.

The CRS should enter the applicable TS for Reactor Trip Instrumentation and ESF Instrumentation to determine that the failed channel protection bistables must be placed in the tripped condition within 72 hours.

EVENT 4: B CWP Bearing Failure (A and B CWP running) Temperatures increase until it is tripped by the crew or it auto trips

On cue from the Examiner The B CWP bearing will fail. Bearing temperatures will increase until the pump is stopped or an auto trip occurs. The operators will start the C CWP and verify proper operation.

EVENT 5: Two Dropped Rods

On cue from the Examiner, one rod will drop to the fully inserted position. The RO will take immediate actions IAW AOP-403.6, Dropped Control Rod. A second rod will drop 60 seconds after the first. IAW AOP-403.6, Dropped Control Rod, the RO will trip the Reactor and implement EOP-1.0 (E-0) Reactor Trip/Safety Injection Actuation. The crew will transition to EOP-1.1 (ES-0.1), Reactor Trip Recovery.

EVENT 6: Charging Pump Sheared Shaft

On the reactor trip the "A" Charging Pump shaft will shear. The crew will be implementing EOP-1.0 or 1.1 when the condition is addressed by entering AOP-102.2, Loss of Charging. The crew will align and start the C Charging pump on the A Header. Permission to start the Charging Pump will be granted by a SS role player in the booth.

EVENT 7: Steam Space LOCA

On a cue from the Examiner after a charging pump has been started a steam space LOCA will be inserted. Safety Injection will initiate on RCS Pressure and EOP-1.0 (E-0) will be entered.

EVENT 8: Containment penetration valves XVA9312 A & B fail to close on Phase A

This event is the result of the Safety Injection Actuation. The BOP must close at least one Phase "A" isolation value in the unisolated line (RMA-2 Sample Isolation Values) during the conduct of EOP-1.0, Attachment 3 – SI Equipment Verification.

EVENT 9: The running Charging Pump will trip on the SI and will not restart

This event is the result of the Safety Injection Actuation. One Charging pump was previously faulted. The running charging pump will trip on the SI and cannot be restarted. The sequence to restore charging flow is dependent on previous actions:

If the "B" Charging pump was running, the "C" charging pump must be racked-up and started. If the "C" Charging pump was running, the "B" charging pump can be manually started from the MCB.

The crew will transition to EOP-2.0 (E-1), Loss of Reactor or Secondary Coolant, based on containment conditions. The crew will later transition to EOP-2.1 (ES-1.2), Post-LOCA Cooldown and Depressurization.

Appendix D

CRITICAL TASKS:

Establish high head injection prior to orange path on core cooling. Failure of phase A - at least one valve closed in that line prior to finishing Attachment III.

TERMINATION:

The scenario can be terminated after EOP-2.1, Post-LOCA Cooldown and Depressurization is implemented or at the discretion of the Examiner.

VC Summer 2013 NRC Scenario 'Spare' Simulator Setup

Initial Conditions:

- IC-6, 10⁻³ % power MOL, (IC-328 for 2013)
- Reactivity Management Plan/Turnover sheet for IC Set
- Rod Position = Bank D at 100 steps
- Boron Concentration = 1507 ppm
- Xe = 0 pcm
- Burnup = 10002 MWD/MTU = 226 EFPD
- 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).

VC Summer 2013 NRC Scenario 'Spare' Simulator Setup (SNAP 328)

- 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
- Complete Critical Data for GOP-3 Step 3.13 using the following data
 - RCS Pressure 2240
 - Bank D at 100 steps
 - Tavg 558.5
 - Time: Current time minus 1 hour
 - Stable power 10e-3
- Need Copies of procedure because not laminated in simulator (both GOP3 and SOP-201)
- Need to have booth operator put NI-45 in fast speed prior to turnover so crew can return it to slow speed (this is not part of the snap).
- May need GOP-3 ATTACHMENT I Sign-off Identification List
- GOP-4A must be signed off up to step 3.6

PRE-LOAD:

Standard Simulator Setup

- PMP-LD003P XPP0138 LEAK DETECTION SUMP PMP LOSS OF POWER
- VLV-FW028W XVG01676-FW FW HDR RECIRC ISOL VLV LOSS OF POWER
- VLV-FW029W XVG01679-FW FW HTR RECIRC ISO VLV LOSS OF POWER
- VLV-CS052W XVT08141A-CS RCP A SEAL LEAKOFF VLV LOSS OF POWER
- VLV-CS054W XVT08141C-CS RCP C SEAL LEAKOFF VLV LOSS OF POWER
- VLV-CS053W XVT08141B-CS RCP B SEAL LEAKOFF VLV LOSS OF POWER

Scenario Related

- VLV-SS003P XVA09312A-SS RMA2 CNMT ISO VLV FAIL POSITION Delay=0, Ramp=0, Final=100
- VLV-SS004P XVA09312B-SS RMA2 CNMT ISO VLV FAIL POSITION Delay=0, Ramp=0, Final=100

EVENT 1: Perform Reactor Start-up IAW GOP-3 Reactor Startup From Hot Standby To Startup (Mode 3 To Mode 2)

- No triggers needed
- Need Copies of procedure because not laminated in simulator (both GOP3 and SOP-201)
- Need to have booth operator put NI-45 in fast speed prior to turnover so crew can return it to slow speed (this is not part of the snap).

EVENT 2: "A" MDEFW trip, Throttle flow with "B" MDEFW

Snapped with both EFW pump running. This was not how it was in IC 6 so should not be an issue with plausibility with students. I think is more challenging with both running, but have to make sure they have control of SG level after coming to MODE 2 so can see was stable to out of whack to back to stable (this can be slow).

- TRIGGER #2
 - PMP-EF001T XPP021A MOTOR DRIVEN EFW PMP A TRIP ON COMMAND

Immediately get 622 1-3.

EVENT 3: RCS Loop 3 T-HOT RTD Fails Low.

- TRIGGER #3
 - MAL-RCS008F RCS RTD FAILURE (LOOP 2 – HOT LEG) 432B3 Delay=0, Ramp=0, Final=530

Immediately get 615 1-5, 3-5

EVENT 4: B CWP Bearing Failure (A and B CWP running) Temperatures increase until it is tripped by the crew or it auto trips

- TRIGGER 4
 - PMP-CW002B
 XPP0006B CW PMP B BRG FAILURE

EVENT 5: "A" Charging Pump sheared shaft.

- TRIGGER 5
 - PMP-CS004S XPP0043A CHRG/SI PMP A SHEARED SHAFT Delay=0, Ramp=0, Final=Active

Annunciate immediately 614 5-1 617 2-2 618 2-2 619 2-2. Since level is so low 25% it does not take long to get PZR level alarms and eventual and automatic isolation and turn off of heaters.

EVENT 6: 2 Dropped Rods – Trip reactor (D4) (K2)

- TRIGGER 6
 - MAL-CRF004D4
 DROPPED ROD D4,
 Delay=0, Ramp=0, Final=STATIONARY
 - MAL-CRF004K2 DROPPED ROD K2, Delay=0, Ramp=0, Final=STATIONARY

621 3-1,3-2 come in immediately as well as DRPI. May want to think about changing rods these are on same screen in the center.

EVENT 7: PZR Steam Space LOCA

- TRIGGER 7
 - MAL-PRS008 PRESSURIZER STEAM SPACE LEAK Delay=0, Ramp=0, Final=500

EVENT 8: Containment penetration valves PVA-9312 A & B fail to close on Phase A.

Loaded as pre-event. These triggers cause them to close.

- EVENT 29 "X02I398C"==1
 - o TRIGGER 29
 - VLV-SS003P
 XVA09312A-SS RMA2 CNMT ISO VLV FAIL POSITION
 Delay=0, Ramp=00:00:01, Final=0
- EVENT 30
 "X02I399C"==1
 - o TRIGGER 30
 - VLV-SS004P
 XVA09312B-SS RMA2 CNMT ISO VLV FAIL POSITION
 Delay=0, Ramp=00:00:01, Final=0

EVENT 9: The running Charging Pump will trip on the SI and will not restart automatically or manually.

EVENT 9 TRIGGER – Determines Pressure Approaching SI, the B CHG Pump is running and the C CHG Pump has <u>not tripped</u>.

- PT_457<1860
- X04O058R==1 (CHG PUMP B RED LAMP)
- JMLCVC17C!=1 (CHG PUMP C TRIP NOT TRIPPED)
 - TRIGGER 9
 - MAL-CVC017B CHARGING PUMP B TRIP Delay=0, Ramp=0, Final=Active

EVENT 10 TRIGGER – Determines Pressure Approaching SI, the C CHG Pump is running and the B CHG Pump has <u>not tripped</u>.

- PT_457<1860
- X04O056R==1 | X04O057R==1 (CHG PUMP C RED LAMP ON A) (CHG PUMP C RED LAMP ON B)
- JMLCVC17B!=1 CHG PUMP B NOT TRIPPED
 - o TRIGGER 10
 - MAL-CVC017C CHARGING PUMP C TRIP Delay=0, Ramp=0, Final=Active

| 2013 NRC Scenari | io Spa | are | Operator Actions | Form ES-D-2 | | | |
|---|------------------|---|---|--------------------------|-------|--|--|
| | | | | I | 1 | | |
| Op Test No.: NRC | ILO 1 | 1-01 | Scenario # Spare Event # 1 Page | ə <u>10</u> of <u>42</u> | | | |
| Event Description: | Perfor Startu | m Rea p (Mo | ctor Start-up IAW GOP-3 Reactor Startup From Hot St le 3 To Mode 2). Cycle open drain valves IAW SOP-20 | andby To 1 Step 2.11 | | | |
| Time Position | | | Applicant's Actions or Behavior | | | | |
| Booth Operato | or: No | o trigg | er necessary | | GOP-3 | | |
| EVALUATOR NOT | E: | | | | | | |
| The Unit is stable i change to Mode 2. Mode 2). | in Mo GOP | de 3 -3 Re | at turnover with all surveillances completed for actor Startup From Hot Standby To Startup (M | r a Mode ode 3 To | | | |
| GOP-3 is complete to GOP-4A Power | e to si Opera | tep 3. ation | 14. The RO will bring the Reactor to the POAH (Mode 1 – Ascending). | and transition | | | |
| GOP-4A is comple | te to | step | 3.6. | | | | |
| | | | GOP 3 REFERENCE PAGE | | GOP-3 | | |
| 1 | . <u>GEN</u> | | OTES | _ | | | |
| | A. | A. Procedure steps should normally be performed in sequence. However, it is acceptable to perform steps in advance after thorough evaluation of plant conditions and impact by the Shift Supervisor or Control Room | | | | | |
| | В. | At lea prese | st two licensed operators, one of whom is SRO licensed, must be nt in the Control Room during Reactor Startup. | | | | |
| 2 | . <u>REA</u> | CTOR | ONTROL | | | | |
| | Α. | Shuto | own Bank Control: | | | | |
| | | 1) | The Shutdown Banks must be fully withdrawn whenever reactivity additions are being made by dilution, Xenon, T _{avg} , or control roo unless one of the following conditions exists: | ' İs | | | |
| | | | a) The RCS is borated to Cold Shutdown concentration and verified by sample. | | | | |
| | | | b) T_{avg} is 557°F and the RCS is borated to the hot, Xenon-fre concentration and verified by sample. | e | | | |
| | | 2) | If the count rate on any source range channel increases by more than a factor of two during any increment of Shutdown Bank withdrawal, rod withdrawal shall be stopped and the Shutdown Bank reinserted. Until Reactor Engineering has made a satisfactor evaluation of the situation, rod withdrawal shall not resume. | згу | | | |
| | В. | Sourc | e Range Control: | | | | |
| | | 1) | Source Range Counts and Digital Rod Position indication should be monitored during any Shutdown and Control Bank withdrawal insertion. | or | | | |
| | | 2) | While in the Source Range, positive reactivity may be changed by only one controlled method. | (| | | |
| | C. | Antici | pate criticality anytime: | | | | |
| | | 1) | During rod motion. | | | | |
| | | 2) | Boron dilution is in progress. | _ | | | |

| 2013 N | RC Scena | rio Spare Operator Actions Form ES-D-2 | _ | | | | | | | |
|--|--|---|-------|--|--|--|--|--|--|--|
| | | | | | | | | | | |
| Op Test N | No.: NRC | CILO 11-01 Scenario # Spare Event # 1 Page 11 of 42 | | | | | | | | |
| Event Description: Perform Reactor Start-up IAW GOP-3 Reactor Startup From Hot Standby To Startup (Mode 3 To Mode 2), Cycle open drain valves IAW SOP-201 Step 2 11 | | | | | | | | | | |
| Time | Time Position Applicant's Actions or Behavior | | | | | | | | | |
| | | <u>NOTE 3.14</u> | GOP-3 | | | | | | | |
| Ensure s | ufficient E | mergency Feedwater Flow exists prior to raising power | | | | | | | | |
| | RO | Increase Reactor Power to between 1% and 3%. | GOP-3 | | | | | | | |
| | RO | At the Point of Adding Heat, if NR-45, NIS RECORDER, had previously been selected to HI speed place the recorder in LO speed. | GOP-3 | | | | | | | |
| | · | CAUTION 3.16 | GOP-3 | | | | | | | |
| a. Adjus CNTI | stment of ⁻ RL BANK | Favg with the Rod Control System must not be attempted with the ROD SEL Switch in any position other than MAN. | | | | | | | | |
| b. Manu autor | al rod cor natic rod v | ntrol is required to establish equilibrium conditions, since C-5 blocks vithdrawal. | | | | | | | | |
| | RO | Maintain Tavg between 555°F and 559°F. | GOP-3 | | | | | | | |
| | N/A | Complete Attachment II.G, Operational Mode Change / Plant Startup - Entering Mode 1, of GTP-702. | GOP-3 | | | | | | | |
| | CRS Proceed to GOP-4A, Power Operation (Mode 1 - Ascending). | | | | | | | | | |
| EVALUATOR NOTE: GOP-4A POWER OPERATION (MODE 1 - ASCENDING) has several line-up verifications. GOP-4A is complete to step 3.6 | | | | | | | | | | |

| 2013 N | RC Scena | rio Spare Operator Actions Form ES-D-2 | |
|-----------|----------------|--|--------|
| Op Test I | No.: NR | CILO 11-01 Scenario # Spare Event # 1 Page 12 of 42 | |
| Event D | escription: | Perform Reactor Start-up IAW GOP-3 Reactor Startup From Hot Standby To Startup (Mode 3 To Mode 2). Cycle open drain valves IAW SOP-201 Step 2.11 | |
| Time | Position | Applicant's Actions or Behavior | |
| | | GOP- 4A REFERENCE PAGE | GOP-4A |
| | | GENERAL NOTES | |
| | Α. | Procedure steps should normally be performed in sequence. However, it is acceptable to perform steps in advance after thorough evaluation of plant conditions and impact by the Shift Supervisor or Control Room Supervisor. | |
| | B. | Axial Flux Difference, ΔI , should be maintained within limits per V.C. Summer Curve Book, Figure I-4.1 during Reactor Power Operation above 50% per Tech Spec 3.2.1. | |
| | C. | After any Thermal Power change of greater than 15% within any one hour, Attachment III.H. of GTP-702 must be completed. | |
| | D. | If time allows, all load changes should be discussed with the System Controller prior to commencing the load change. | |
| | | REACTOR CONTROL | |
| | Α. | During operation with a positive Moderator Temperature Coefficient: | |
| | | Power and temperature changes should be slow and will require constant operator attention. | |
| | | T_{avg} should be maintained within 0.5°F of T_{ref} unless T_{avg} is being increased in preparation for Turbine startup. | |
| | | 3) All power and load changes should be performed in small increments. | |
| | В. | Reactor Power increases should be made in accordance with the guidelines established in GOP Appendix A. The recommended rate of power increase is 1/2% per minute and need not be continuous. | |
| | C. | Rod Control should be maintained in Automatic if any Pressurizer PORV is isolated. | |
| | | TURBINE CONTROL | |
| | Α. | If during load changes, plant stabilization is required, under the Turbine HMI: Control/Load screen, select HOLD. | |
| | B. | To resume power ascension select the recommended Load Ramp Rate. | |
| | C. | Turbine Load values are approximate and provided as initial starting points for load changes. When desired Reactor or Turbine parameters are achieved stabilize (if necessary) and proceed as directed. | |
| | | MSR CONTROL | |
| | Α. | Do not exceed 50°F Δ T between the inlets to the Low Pressure Turbine. | |
| | B. | When in Manual, do not exceed 25°F per half-hour temperature change rate for the tube side of the Moisture Separator/Reheater. | |
| | | NOTE 3.1 through 3.11 | GOP-4A |
| Steps 3. | 1 through | 3.11 raise Reactor Power from 1% to 25%. | |
| EVALUA | | TE: The next event may be initiated after GOP-4A is entered. | |

| 2013 NF | RC Scenari | o Spare Operator Actions Form ES-D-2 | - | | | | | | | |
|---|--|---|-------------|--|--|--|--|--|--|--|
| Op Test N | lo.: NRC | ILO 11-01 Scenario # Spare Event # 2 Page 13 of 42 | | | | | | | | |
| Event De | escription: "A | A" MDEFW Trip | | | | | | | | |
| Time Position Applicant's Actions or Behavior | | | | | | | | | | |
| Booth Operator: Initiate Event 2 (TRIGGER 2) when directed. | | | | | | | | | | |
| EVALUATOR NOTE: Event 2 should be initiated on entry into EOP-4A, Power Operation (Mode 1 - Ascending). | | | | | | | | | | |
| Indications Available: XCP-622 1-3, MD EFP A TRIP | | | | | | | | | | |
| | BOP | Enters ARP-001-XCP-622, 1-3 | XCP-622 1-3 | | | | | | | |
| EVALUA Pump "E is not no | TOR NOTE 3" is suffic ormally us | E: The CRS could direct the RO to reduce power to ensure MD EFW ient and/or for the BOP to start the TD EFW Pump. The TD EFW Pump ed for SG level control during heatup/cooldown. | | | | | | | | |
| | | CORRECTIVE ACTIONS: | XCP-622 1-3 | | | | | | | |
| | BOP | Start Motor Driven Emergency Feedwater Pump B if necessary to maintain Steam Generator levels. | XCP-622 1-3 | | | | | | | |
| | BOP | 2. Reduce feedwater demand to less than 400 gpm. | XCP-622 1-3 | | | | | | | |
| | CRS | 3. Refer to SOP-211. | XCP-622 1-3 | | | | | | | |
| | | SUPPLEMENTAL ACTIONS: | XCP-622 1-3 | | | | | | | |
| | BOP | If Steam Generator levels cannot be maintained with one motor driven pump, start the Turbine Driven Emergency Feedwater Pump. | XCP-622 1-3 | | | | | | | |
| | BOP | Place PUMP A control switch in NORMAL-AFTER-STOP to clear the alarm. | XCP-622 1-3 | | | | | | | |
| | CRS | CRS 3. Determine the cause of the trip and correct as soon as possible. | | | | | | | | |
| | CRS | 4. If the pump is inoperable, refer to Tech Spec 3.7.1.2. | | | | | | | | |
| | CREW | Dispatches an AO to investigate | | | | | | | | |

| 2013 NRC Scenario Spare | | | Operator Actions Form ES | | | ES-D-2 | _ | | | |
|--|-------------|---|--|---------------|--------------|--------|-----------|---------|-----------|---|
| [| | | | | | | | | | - |
| Op Test No.: NRC ILO 11-01 Scenario # Spare Event # 2 Page 14 of 42 | | | | | | | | | | |
| Event Description: "A" MDEFW Trip | | | | | | | | | | |
| Time | Position | | Ар | plicant's Act | ions or Beha | avior | | | | |
| Booth | Operato | r: | | | | | | | | |
| Wait 2 m actuated | inutes then | report MD EFW | / Pump "A" b | oreaker trip | ped and t | he ove | rcurren | t relay | , | |
| | CRS | Contacts Wor | Contacts Work Control and/or Maintenance for assistance. | | | | | | | |
| | CRS | Enters TS 3.7 | Enters TS 3.7.1.2, Action a: | | | | | | TECH SPEC | |
| | CRS | • With one emergency feedwater pump inoperable, restore the required emergency feedwater pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. | | | | | TECH SPEC | | | |
| EVALUATOR NOTE: When SG levels are under control and the TS entry is complete, cue Event 3, RCS Loop 3 T _{HOT} RTD Fails Low. | | | | | | | | | | |

| 2013 NRC | C Scenario Sp | are Operator Actions Form ES-D-2 | - |
|---|--|--|-------------|
| Op Test No. | .: NRC ILO 1 | 1-01 Scenario # Spare Event # <u>3</u> Page <u>15</u> of <u>42</u> |] |
| Event Des | cription: RCS L | oop 3 T _{HOT} RTD Fails Low | |
| Time | Position | Applicant's Actions or Behavior | |
| Booth C | perator: In | itiate Event 3 (TRIGGER 3) when directed. | |
| Indication XCP-615-1 XCP-615-1 XCP-615-3 | s Available: I-2, RCS TAV(I-5, RCS TAV(3-5, RCS ΔT D | G LO; XCP-615-1-2, RCS TAVG LO-LO G DEV HI/LO; DEV HI/LO | |
| | RO | Responds to multiple alarms. | |
| | RO | Enters ARP-001-XCP-615 1-2. | XCP-615 1-2 |
| | | CORRECTIVE ACTIONS: | XCP-615 1-2 |
| | RO | 1. Monitor TI-412D, TI-422D and TI-432D to determine if a channel failed. | XCP-615 1-2 |
| | RO | 2. Place Rod Control in MAN and match Tavg to Tref. | XCP-615 1-2 |
| | | SUPPLEMENTAL ACTIONS: | XCP-615 1-2 |
| | | 1. If a channel has failed, perform the following: | XCP-615 1-2 |
| | CRS | Refer to AOP-401.2 to trip all bistables associated with that channel. | |
| | | Refer to Technical Specification Table 3.3-3 for minimum channel requirements. | |
| | CRS | 2. If the Rod Control System malfunctioned, refer to AOP-403.4, Failure of Control Rods to Move. | |
| | CRS | Refers to AOP-401.2, PROTECTION CHANNEL RCS LOOP RTD FAILURE. | AOP-401.2 |
| | RO | Determine which RCS loop has a failed RTD by comparing loop ΔT and Tavg indicators. | AOP-401.2 |
| | RO | Reports Loop 3 Thot has failed. | |

| 2013 NR0 | C Scenario Sp | are Operator Actions Form ES-D-2 | - | | | | | |
|-----------------------|--|---|-----------|--|--|--|--|--|
| Op Test No | .: NRC ILO 1 | I1-01 Scenario # Spare Event # 3 Page 16 of 42 | | | | | | |
| Event Des | cription: RCS L | LOOP 3 THOT RTD Fails LOW | | | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | | | |
| | RO | Ensure an operable loop is selected on Δ T TR-412 INPUT SEL Switch. | AOP-401.2 | | | | | |
| Booth C before the |)perator: A end of the shi | cknowledge direction to trip bistables and report that you will get it done ft. The bistables need not be tripped during the scenario. | | | | | | |
| | CRS Within 72 hours, place the failed channel protection bistables in a tripped condition: | | | | | | | |
| | CRS | a. Identify the associated bistables for the failed channel. REFER TO Attachment 1. | AOP-401.2 | | | | | |
| | CRS | b. Record the following for each associated bistable on SOP-401, Reactor Protection And Control System, Attachment I: Instrument. Associated Bistable. Bistable Location. STPs. | AOP-401.2 | | | | | |
| Booth C | perator: A | cknowledge request for assistance. | | | | | | |
| | CRS | c. Notify the I&C Department to place the identified bistables in trip. | AOP-401.2 | | | | | |
| | CRS | Contacts Work Control/I&C for assistance. | | | | | | |
| | CRS | Determine and correct the cause of the channel failure. | AOP-401.2 | | | | | |
| | CRS | Enters TS Table 3.3-1 (Functional Units 7 and 8), Action 6# : | TECH SPEC | | | | | |
| | CRS | 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: | TECH SPEC | | | | | |
| | CRS | • The inoperable channel is placed in the tripped condition within 72 hours; and | TECH SPEC | | | | | |

| 2013 NRC Scenario Spare | | are Operator Actions Form ES-D-2 | - | | | |
|--|---------------------------------|---|-----------|--|--|--|
| Op Test No. Event Dese | .: NRC ILO 1 cription: RCS L | 1-01 Scenario # <u>Spare</u> Event # <u>3</u> Page <u>17</u> of <u>42</u> .oop 3 T _{HOT} RTD Fails Low | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | |
| | CRS | • 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. | TECH SPEC | | | |
| EVALUATOR NOTE: The next event may be initiated after all actions are completed and the applicable Tech Spec have been identified. | | | | | | |

| 2013 NRC | C Scenario Sp | are Rev 1 Operator Actions Form ES-D-2 | - |
|-------------------------|--------------------------------------|--|-------------|
| Op Test No. | NRC ILO 1 | | Ī |
| Event Dese | cription: B CWI | P Bearing Failure and Trip | |
| Time | Position | Applicant's Actions or Behavior | _ |
| `Booth Op | erator Instru | ctions: Initiate Event 4 (TRIGGER 4) when directed. | |
| Indication XCP-628-3 | s Available: 8-1, CWP A/B/ | C TRIP | |
| | BOP | Responds to alarm XCP-628-3-1, CWP A/B/C TRIP. | |
| | BOP | Reports CWP "B" tripped/not running. | |
| | BOP | Enters ARP-001-XCP-628-3-1 | XCP-628 3-1 |
| | | AUTOMATIC ACTIONS: | |
| | | 1. The discharge isolation valve for the tripped pump will close. | XCP-628 3-1 |
| Becaus start co | e CWP "A" ha | as just been made available, an operator may be dispatched to verify | |
| The cre | ew should ann | ounce the start of any major equipment. | |
| | | CORRECTIVE ACTIONS: | XCP-628 3-1 |
| | | If only two pumps were operating prior to the pump trip, perform the following: | |
| | | a. Verify the discharge valve for the operating Circulating Water Pump closes to 30% open while performing the next steps. | |
| | BOP | b. Verify the discharge valve for the idle Circulating Water Pump is in AUTO. | XCP-628 3-1 |
| | _ | c. Start the idle Circulating Water Pump. | |
| | | When the discharge valves for the operating Circulating Water Pumps are 30% open, open the discharge valves. | |
| | | e. When the discharge valves for the operating Circulating Water Pumps are open, place the discharge valves in AUTO. | |

| 2013 NRC | C Scenario Sp | are Rev 1 Operator Actions Form ES-D-2 | | |
|---|---------------|--|-------------|--|
| Op Test No. Event Desc | : NRC ILO 1 | 1-01 Scenario # Spare Event # 4 Page 19 of 42 P Bearing Failure and Trip | | |
| Time | Position | Applicant's Actions or Behavior | | |
| | BOP | 2. If only one pump is running and a second pump cannot be started, perform the following: a. Trip the reactor. b. Implement EOP-1.0. | XCP-628 3-1 | |
| | BOP | 3. Reduce Turbine load as necessary per GOP-4B to maintain the following: a. Main Condenser vacuum less than 4" Hg absolute. b. Aux Condenser vacuum less than 9" Hg absolute. c. Circulating Water outlet temperature less than 113°F. | XCP-628 3-1 | |
| | BOP | Determine which pump tripped and verify its discharge valve is fully closed. | XCP-628 3-1 | |
| EVALUATOR NOTE: The following steps are to start the C CWP | | | | |
| Booth Operator: Report the Circulating Water Pump breaker tripped on overload – cause unknown. If called to be stationed at the CWP Breaker with safety gear; WAIT 1 MIN. Report you are standing by at the supply breaker. | | | | |
| CAUTION 2.1 | | | | |
| a. An Operator with the required ISP-027 safety gear in place should be stationed at the supply breaker for the Circulating Water Pump to be started should local tripping of the breaker be required. | | | | |
| b. Circulating Water Pump operation is limited to prevent exceeding the CW Pump House electrical duct bank design current rating when XSW1C2 is aligned to emergency feed as follows: | | | | |
| Only two Circulating Water Pumps may be in operation for the first 48 hours. Only Circulating Water Pump A or Circulating Water Pump C may be in operation following 48 hours. | | | | |

| 2013 NR | C Scenario Sp | bare Rev 1 Operator Actions Form ES-D-2 | - |
|------------|-----------------|--|---------|
| Op Test No | D.: NRC ILO | 11-01 Scenario # <u>Spare</u> Event # <u>4</u> Page <u>20</u> of <u>42</u> | |
| Event Des | scription: B CW | P Bearing Failure and Trip | |
| Time | Position | Applicant's Actions or Behavior | 1 |
| | BOP | Start one of the following: (PEER ✓) c. XPP-0006C, CWP C. | SOP-207 |
| | BOP | Verify the discharge isolation valve for the started Circulating Water Pump, MVB-802A(B)(C), A(B)(C) DISCH ISOL, is 30% open and the red indicator light is illuminated. | SOP-207 |
| | BOP | Place MVB-802A(B)(C), A(B)(C) DISCH ISOL, for the started Circulating Water Pump to OPEN. | SOP-207 |
| | BOP | When MVB-802A(B)(C), A(B)(C) DISCH ISOL, is full open, return MVB-802A(B)(C), A(B)(C) DISCH ISOL, to AUTO. | SOP-207 |
| Booth C | Dperator: A | Acknowledge request to check the Traveling Screen wash supply valves. | - |
| | BOP | Ensure the Traveling Screen wash supply valves are open for the Circulating Water Pump placed in service (CW-436): c. XVG00813E(F)-CW, TRAVELING SCREEN 5E(F) SUPPLY VALVE. | SOP-207 |
| | BOP | If XPP-0006C, CWP C, is the pump restored to service, close breaker APN4016 01-03-05, XST0012 SCREEN WASH PP DISCH TRAINER, to re-enable screen wash strainer backwash. | SOP-207 |
| | BOP | Align the Screen Wash System for normal operation per Section III. | SOP-207 |
| EVALUAT | OR NOTE: T | he next event may be initiated after the C CWP has been started. | |
| 2013 NRC | C Scenario Sp | are Rev 1 Operator Actions Form ES-D-2 | _ | | | |
|--------------------------|---|--|-------------|--|--|--|
| | | | ٦ | | | |
| Op Test No. | NRC ILO 1 | 1-01 Scenario # Spare Event # 5 Page 21 of 42 | | | | |
| Event Dese | cription: 2 Drop | oped Rods – Trip reactor (D4) (K2) | | | | |
| Time | Time Desition Applicant's Actions or Pohovier | | | | | |
| | | | | | | |
| BOOTH C | | hitiate Event 5 (TRIGGER 5) when directed. | | | | |
| EVALUAT | OR NOTE: 1 | dropped rod – annunciators and rod drive to manual. | | | | |
| Indication | Available: | | | | | |
| XCP-621 3 | 3-1 ONE ROD | ON BOTTOM | | | | |
| | | CORRECTIVE ACTIONS: | XCP-621 3-1 | | | |
| | RO | If a shutdown or control group rod has dropped and the Reactor did not trip, implement AOP-403.6, Dropped Control Rod. | XCP-621 3-1 | | | |
| EVALUAT Operator | OR NOTE: Th Actions are de | ne second rod drops 1 minute after the first so only the Immediate etailed. | | | | |
| ΙΟΑ | RO | Verify only one Control Rod has dropped. | AOP-403.6 | | | |
| ΙΟΑ | RO | Place ROD CNTRL BANK SEL Switch in MAN. | AOP-403.6 | | | |
| EVALUAT | OR NOTE: Th | ne following steps occur after the 2 nd rod drops. | | | | |
| Indication XCP-621, 3 | s Available: 3-2 RODS ON | ΙΒΟΤΤΟΜ | | | | |
| | | AUTOMATIC ACTIONS: 1. Possible Reactor Trip. | XCP-621 3-2 | | | |
| | | CORRECTIVE ACTIONS: | XCP-621 3-2 | | | |
| | RO | 1. If two or more rods have dropped, manually trip the Reactor and implement EOP-1.0, Reactor Trip/Safety Injection Actuation. | XCP-621 3-2 | | | |
| | CRS | Directs a manual Reactor trip and EOP-1.0 entry. | | | | |
| EVALUAT | OR NOTE: Th | ne next event occurs automatically on the Reactor trip. | | | | |

| 2013 NRC | C Scenario Sp | are Operator Actions Form ES-D-2 | |
|---------------------------|-----------------------------|---|--------------|
| Op Test No. | : NRC ILO 1 | 1-01 Scenario # Spare Event # 6 Page 22 of 42 | |
| Event Dest | прион. А Сп | | |
| Time Booth O | Position | Applicant's Actions or Behavior | |
| | | | |
| Operators Injection A | will perform | the Immediate Operator Actions of EOP-1.0, Reactor Trip/Safety the corrective actions of AOP-102.2, Loss of Charging. | |
| Indications XCP-614, 5 | Available: 5-1, CHG LINE | E FLO HI/LO | |
| | | CORRECTIVE ACTIONS: | XCP-614, 5-1 |
| | RO | If the running Charging Pump suction flowpath has become isolated, secure the Charging Pump and go to AOP-102.2, Loss of Charging. | XCP-614, 5-1 |
| | RO | If the PUMP A(B) or PUMP C TRAIN A(B) ammeter indication is abnormal for the running Charging Pump and the pump must be tripped, go to AOP-102.2, Loss of Charging. (YES) | XCP-614, 5-1 |
| | CRS | Directs entry to AOP-102.2, Loss of Charging. | |
| | RO | 3. Monitor LT-112A and LT-115, % LEVEL, to verify proper VCT level. | XCP-614, 5-1 |
| | RO | 4. Monitor FI-122A, CHG FLOW GPM. | XCP-614, 5-1 |
| | | 5. Verify the Charging header valve lineup: | XCP-614, 5-1 |
| | | a. Verify the following valves are open: | |
| | RO | FCV-122, CHG FLOW. MVG-8107, CHG LINE ISOL. MVG-8108, CHG LINE ISOL. Either of the following: | |
| | | a) PVT-8146, NORM CHG TO RCS LP B. b) PVT-8147, ALT CHG TO RCS LP A. | |
| | | b. If the Charging header has isolated go to AOP-102.2, Loss of Charging. | |
| | RO | If Charging flow has NOT been lost but a loss of automatic control of FCV-122, CHG FLOW, is suspected perform the following: | XCP-614, 5-1 |

| 2013 NRC | C Scenario Sp | are Operator Actions Form ES-D-2 | - |
|-----------------------------|---|---|---------|
| Op Test No. | : NRC ILO 1 | 1-01 Scenario # Spare Event # 6 Page 23 of 42 |] |
| Event Desc | cription: "A" Ch | arging Pump sheared shaft. (Triggered of Reactor Trip) | |
| Time | Position | Applicant's Actions or Behavior | 1 |
| | | Place FCV-122, CHG FLOW, in MAN and adjust, as required, to maintain TI-140, REGEN HX OUT TEMP °F, between 250°F and 350°F while maintaining Pressurizer level. | |
| | | b. If FCV-122, CHG FLOW, fails to respond in MAN, perform SOP-102, Off Normal, Response To Malfunction Of FCV-122, to bypass FCV00122-CS, XCP-614, 5-1CHARGING HEADER FLOW CONTROL VALVE (AB-412 West Pen). | |
| | CRS | Implement AOP-102.2, Loss of Charging. | |
| 1 <u>RCP</u> | TRIP CRITER | REFERENCE PAGE FOR EOP-1.0 | EOP-1.0 |
| a. II b. IF • : Al | F Phase B Co both of the fo SI flow is indic ND RCS Wide Ba | ntainment Isolation has actuated (XCP-612 4-2), THEN trip all RCPs. Illowing conditions occur, THEN trip all RCPs: ated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. | |
| 2 <u>REDI</u> | JCING CONT | ROL ROOM EMERGENCY VENTILATION | |
| Redu of act | ce Control Ro uation. REFE | om Emergency Ventilation to one train in operation within 30 minutes R TO SOP-505, CONTROL BUILDING VENTILATION SYSTEM. | |
| 3 <u>MON</u> | ITOR SPENT | FUEL COOLING | |
| Perio event | dically check s recovery: Spent Fuel Po Spent Fuel Po | status of Spent Fuel Cooling by monitoring the following throughout ool level. ool temperature. | |
| ΙΟΑ | Crew | Verify Reactor Trip: 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 |
| ΙΟΑ | BOP | Verify Turbine/Generator Trip: | EOP-1.0 |
| ΙΟΑ | BOP | a. Verify all Turbine STM STOP VLVs are closed. | EOP-1.0 |

2013 NRC Scenario Spare **Operator Actions** Form ES-D-2 Op Test No.: NRC ILO 11-01 Scenario # Spare Event # 6 Page 24 of 42 Event Description: "A" Charging Pump sheared shaft. (Triggered of Reactor Trip) Position Time Applicant's Actions or Behavior EOP-1.0 b. Ensure Generator Trip (after 30 second delay): IOA BOP 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 Check if SI is actuated: a. Check if either: BOP IOA • 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. EOP-1.0 ALTERNATIVE ACTION GO TO Step 5 Check if SI is required: EOP-1.0 a. Check if any of the following conditions exist: PZR pressure LESS THAN 1850 psig. OR CREW RB pressure GREATER THAN 3.6 psig. OR Steamline pressure LESS THAN 675 psig. OR Steamline differential pressure GREATER THAN 97 psid. EOP-1.0 ALTERNATIVE ACTION CRS a. GO TO EOP-1.1, REACTOR TRIP RECOVERY, Step 1. EVALUATOR NOTE: AOP-102.2, LOSS OF CHARGING, will be run in parallel with EOP-1.1 to restore charging. AOP-102.2 CAUTION Seal water injection should be maintained any time the RCS is pressurized.

| 2013 NR(| C Scenario Sp | are Operator Actions Form ES-D-2 | - |
|--------------------------|-------------------|--|-----------|
| Op Test No | .: NRC ILO 1 | I1-01 Scenario # Spare Event # 6 Page 25 of 42 | |
| Event Des | cription: "A" Ch | arging Pump sheared shaft. (Triggered of Reactor Trip) | |
| Time | Position | Applicant's Actions or Behavior | |
| The Alternative the RCS. | ate Seal Inject | <u>NOTE</u> tion System should deliver 20 gpm of borated water from the RWST to | AOP-102.2 |
| | | Check if Charging Pump flow is normal: | AOP-102.2 |
| | RO | FI-122A, CHG FLOW GPM, between 30 gpm and 115 gpm. Pump amps between 30 amps and 50 amps. PI-121, CHG PRESS PSIG, between 2650 psig and 2850 psig. | |
| | | ALTERNATIVE ACTION | AOP-102.2 |
| | | IF Charging Pump has tripped or flow is abnormal, THEN perform the following: | |
| | | a) Ensure the Charging Pump is secured. | |
| | | b) Close all Letdown Isolation Valves: | |
| | 50 | PVT-8149A(B)(C), LTDN ORIFICE A(B)(C) ISOL. PVT-8152, LTDN LINE ISOL. LCV-459, LTDN LINE ISOL. LCV-460, LTDN LINE ISOL. | |
| | RU | c) Close FCV-122, CHG FLOW. | |
| | | d) Verify CCW flow to the RCP Thermal Barriers is GREATER THAN 90 gpm on FI-7273A(B), THERM BARR FLOW GPM. | |
| | | e) Display Dedicated Display ZZRCPBRG on the IPCS to monitor RCP temperatures. | |
| | | f) Determine if Alternate Seal Injection is in service as indicated by both the following annunciators are lit: | |
| | | 1) XCP-614 2-1 (ALT SL INJ PUMP RUN). 2) XCP-614 2-2 (ALT SL INJ DSL GEN RUN). | |
| Booth C | perator: A | cknowledge requests for support | |
| | | g) Contact Electrical and Mechanical Maintenance to investigate. | AOP-102.2 |
| | CRS | h) GO TO Step 3. | |

| 2013 NR | C Scenario Sp | are Operator Actions Form ES-D-2 | - |
|----------------------|--------------------------------------|---|-----------|
| Op Test No | .: NRC ILO 1 | 11-01 Scenario # Spare Event # 6 Page 26 of 42 | |
| Event Des | cription: "A" Ch | arging Pump sheared shaft. (Triggered of Reactor Trip) | |
| Time | Position | Applicant's Actions or Behavior | |
| | | Verify Charging System valve lineup: | AOP-102.2 |
| | RO | a. IF Charging Pump suction is aligned to the VCT, THEN ensure both LCV-115C(E), VCT OUTLET ISOL, are open. | |
| | | b. Ensure the following valves are open: | AOP-102.2 |
| | RO | MVG-8106, CHG PP. MVT-8109A(B)(C), CHG PP A(B)(C). MVG-8130A(B), LP A SUCT TO CHG PP C. MVG-8131A(B), LP B SUCT TO CHG PP C. MVG-8132A(B), CHG PP C TO LP A DISCH. MVG-8133A(B), CHG PP C TO LP B DISCH. | |
| Booth C When disp |)perator: batched to check | ck pressures, report that all gauges read ~ 57 psig. | |
| | RO | c. Check the Charging header valve lineup as follows: 1) Ensure MVG-8107, CHG LINE ISOL, is open. 2) Ensure MVG-8108, CHG LINE ISOL, is open. 3) Ensure FCV-122, CHG FLOW, is in MAN and CLOSE. 4) Ensure one of the following valves is open: PVT-8146, NORM CHG TO RCS LP B. OR PVT-8147, ALT CHG TO RCS LP A. 5) Verify VCT level is GREATER THAN 20%. 6) Locally verify Charging Pump suction pressure is between 50 psig and 100 psig as indicated on the following (AB-388): PI-151A, SUCTION PRESS, for Charging Pump A. PI-153A, SUCTION PRESS, for Charging Pump B. PI-153A, SUCTION PRESS, for Charging Pump C. | AOP-102.2 |
| | RO | With Shift Supervisor's permission, start a Charging Pump, while monitoring RCP temperatures. Refer To SOP-102, Chemical And Volume Control System. | AOP-102.2 |
| | RO | When a Charging Pump is operating THEN perform the following. Refer To SOP-102, Chemical And Volume Control System. Place Charging and Normal Letdown in service. Secure Alternate Seal Injection. | AOP-102.2 |

| 2013 NRC | Scenario Spa | are O | perator Actions | | Form E | ES-D-2 | |
|---------------------------------------|------------------------------|--|--------------------------|----------------|-----------------|-------------|---------|
| | | | | | | | |
| Op Test No.: | NRC ILO 1 | 1-01 Scenario # | ≠ <u>Spare</u> Ev | ent # <u>6</u> | Page 27 o | f <u>42</u> | |
| Event Desc | ription: "A" Ch | arging Pump sheared s | shaft. (Triggered of | Reactor Trip) | | | |
| Time | Position | | Applicant's Actior | ns or Behavior | | | |
| Contact Ele | ctrical and Me | echanical Maintenand | ce to investigate | | | | |
| | CRS | RETURN TO the Pr | ocedure and Ste | p in effect. | | AO | P-102.2 |
| 1 SI ACTUA | ATION CRITE | RIA | | | | EO | P-1.1 |
| IF either of TRIP/SAFE | the following TY INJECTIC | conditions occurs, TH ON ACTUATION, Ste | IEN actuate SI a p 1: | nd GO TO EC | OP-1.0, REAC | TOR | |
| | | REFERENCE F | AGE FOR EOP | 1.1 | | | |
| PZR lev | el can NOT b | e maintained GREAT | FER THAN 8%. | | | | |
| OR | | | | | | | |
| RCS su below: | bcooling on T | T-499A(B), A(B) TEM | P °F, is LESS Tŀ | HAN the value | e listed in the | table | |
| | | RCS PRESSURE | RCS SUBCOOLIN | | | | |
| | | (psig) | G (°F) | | | | |
| | | 1576-3075 | 42.5 | 1 | | | |
| | | 876-1575 | 45 | | | | |
| | | 576-875 | 47.5 | | | | |
| | | 476-575 | 50 | | | | |
| | | 375-475 | 52.5 | | | | |
| If SI actuation | on occurs dur | CA ing this procedure, E | UTION OP-1.0, REACT | OR TRIP/SAF | ETY INJECT | ION | P-1.1 |
| | N, should be | performed to stabilize | e the plant. | | | | |
| • Main Turb | ine vibration s | N should be monitored | NOTE | n | | EO | P-1.1 |
| • The EOP procedure. | REFERENCE | PAGE should be mo | onitored through | out the use of | this | | |
| | CREW | Announce plant cor | ditions over the | page system. | | EO | P-1.1 |

| 2013 NRC | Scenario Sp | are Operator Actions Form ES-D-2 | _ |
|-------------------------|-----------------------------|--|---------|
| | | | - |
| Op Test No.: | NRC ILO 1 | 11-01 Scenario # Spare Event # 6 Page 28 of 42 | |
| Event Desc | cription: "A" Ch | narging Pump sheared shaft. (Triggered of Reactor Trip) | |
| Time | Position | Applicant's Actions or Behavior | |
| | | Check FW status: a. Check if RCS Tavg is LESS THAN 564°F. b. Verify FW Isolation: | EOP-1.1 |
| | | 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. Ensure EFW Pumps are running: | |
| | | Ensure both MD EFW Pumps are running. Verify the TD EFW Pump is running if necessary to maintain SG levels. Verify total EFW flow is GREATER THAN 450 gpm. Trip all Main FW Pumps. | |
| * | | Check RCS temperature: • With any RCP running, 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. | EOP-1.1 |
| EVALUATO started and | OR NOTE: Th d EOP-1.1 ha | ne next event may be inserted after a Charging Pump has been is been implemented. | |

| 2013 NRC | C Scenario Sp | are Operator Actions Form ES-D- | 2 |
|--|--|---|----------------------------|
| Op Test No. | : NRC ILO 1 | 1-01 Scenario # Spare Event # 7, 8 & 9 Page 29 of 42 | |
| Event Desc | cription: PZR S fails to | team Space LOCA, Running Charging Pump Trips on SI, PVA-9312 A & B close on Phase A | |
| Time | Position | Applicant's Actions or Behavior | |
| Booth O | perator: In | itiate Event 7 (TRIGGER 7) when directed. | |
| EVALUAT The B or C will not au | OR NOTE: Fa Charging pu to-start. | ilures 8 and 9 are preloaded. Imp started in the previous event will trip and the Backup pump | |
| | | | |
| Indication | s Available: | Multiple annunciates including: | |
| XCP 616, 2 XCP 616, 2 First Out - 2 First Out - 2 | 2-2 PZR PRE 2-3 PZR PRE XCP-626 5-3 XCP-626 5-3 | SS LO SS HI/LO PZR PRESS LO PZR SI | |
| | | AUTOMATIC ACTIONS: 1. Reactor Trip. 2. Turbine Trip. 3. Generator Trip (after 30 second delay). | XCP-626 5-1 XCP-626 5-3 |
| | CRS | CORRECTIVE ACTIONS: 1. Trip the Reactor and go to EOP-1.0, Reactor Trip/Safety Injection Actuation. | XCP-626 5-1 XCP-626 5-3 |
| | CRS | Direct EOP-1.0 entry | |
| | | Verify Reactor Trip: | EOP-1.0 |
| ΙΟΑ | Crew | 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. | |
| | 000 | Verify Turbine/Generator Trip: | EOP-1.0 |
| IUA | BOA | a. Verify all Turbine STM STOP VLVs are closed. | |
| | | b. Ensure Generator Trip (after 30 second delay): | EOP-1.0 |
| ΙΟΑ | BOP | Ensure the GEN BKR is open. Ensure the GEN FIELD BKR is open. Ensure the EXC FIELD CNTRL is tripped. | |
| ΙΟΑ | BOP | Verify both ESF buses are energized. | EOP-1.0 |

| 2013 NRC | C Scenario Sp | are Operator Actions Form ES-D-2 | _ |
|-------------|-----------------------------|---|---------|
| Op Test No. | NRC ILO 1 | 1-01 Scenario # Spare Event # 7, 8 & 9 Page 30 of 42 | |
| Event Desc | cription: PZR S fails to | team Space LOCA, Running Charging Pump Trips on SI, PVA-9312 A & B close on Phase A | |
| Time | Position | Applicant's Actions or Behavior | |
| ΙΟΑ | BOP | Check if SI is actuated: a. Check if either: 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 |
| | | c. GO TO Step 6. | - |
| | BOP | Initiate ATTACHMENT 3, SI EQUIPMENT VERIFICATION. | EOP-1.0 |
| | BOP | Announce plant conditions over the page system. | EOP-1.0 |
| * | BOP | Verify RB pressure has remained LESS THAN 12 psig on PR-951, RB PSIG (P-951), red pen. | EOP-1.0 |
| * | BOP | Check RCS temperature: With any RCP running, 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. | EOP-1.0 |
| | RO | 557°F. Check PZR PORVs and Spray Valves: a. PZR PORVs are closed. b. PZR Spray Valves are closed. c. Verify power is available to at least one PZR PORV Block Valve: MVG-8000A, RELIEF 445 A ISOL. MVG-8000B, RELIEF 444 B ISOL. MVG-8000C, RELIEF 445 B ISOL. d. Verify at least one PZR PORV Block Valve is open. | EOP-1.0 |
| | | NOTE - Step 11 | |

| 2013 NRC | C Scenario Sp | are Operator Actions Form ES-D-2 | _ |
|-------------|-----------------------------|--|---------|
| Op Test No. | INRC ILO 1 | 1-01 Scenario # Spare Event # <u>7, 8 & 9</u> Page <u>31</u> of <u>42</u> |] |
| Event Des | cription: PZR S fails to | Iteam Space LOCA, Running Charging Pump Trips on SI, PVA-9312 A & B close on Phase A | |
| Time | Position | Applicant's Actions or Behavior | |
| Seal Inject | ion flow should | d be maintained to all RCPs. | |
| | | Check if RCPs should be stopped: | EOP-1.0 |
| | | a. Check if either of the following criteria is met: | |
| | | Annunciator XCP-612 4-2 is lit (PHASE B ISOL). | |
| | RO | OR | |
| | | RCS pressure is LESS THAN 1418 psig AND SI flow is indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. | |
| | | b. Stop all RCPs. | |
| | | Verify no SG is FAULTED: | EOP-1.0 |
| | BOP | No SG pressure is decreasing in an uncontrolled manner. No SG is completely depressurized. | |
| | | Verify Secondary radiation levels indicate SG tubes are NOT RUPTURED: | EOP-1.0 |
| | BOP | RM-G19A(B)(C), STMLN HI RNG GAMMA. RM-A9, CNDSR EXHAUST GAS ATMOS MONITOR. RM-L3, STEAM GENERATOR BLOWDOWN LIQUID MONITOR. RM-L10, SG BLOWDOWN CW DISCHARGE LIQUID MONITOR. | |
| | | Check if the RCS is INTACT: | EOP-1.0 |
| | | a. RB radiation levels are normal on: | |
| | | RM-G7, CNTMT HI RNG GAMMA. RM-G18, CNTMT HI RNG GAMMA. | |
| | BOP | b. RB Sump levels are normal. | |
| | | c. RB pressure is LESS THAN 1.5 psig. | |
| | | d. The following annunciators are NOT lit: | |
| | | XCP-606 2-2 (RBCU 1A/2A DRN FLO HI). XCP-607 2-2 (RBCU 1B/2B DRN FLO HI). | |

| 2013 NRC Scenario Spare | | are Operator Actions Form ES-D-2 | _ | |
|--|------------|--|---------|--|
| Op Test No. | INRC ILO 1 | 1-01 Scenario # Spare Event # <u>7, 8 & 9</u> Page <u>32</u> of <u>42</u> | | |
| Event Description: PZR Steam Space LOCA, Running Charging Pump Trips on SI, PVA-9312 A & B fails to close on Phase A | | | | |
| Time | Position | Applicant's Actions or Behavior | | |
| | CRS | GO TO EOP-2.0, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1. | EOP-1.0 | |

| 2 | D13 NRC Scenario SpareOperator ActionsForm ES-D-2 | - |
|---|--|---------|
| 0 | Test No.: NRC ILO 11-01 Scenario # Spare Event # 7, 8 & 9 Page 33 of 42 | |
| E | vent Description: PZR Steam Space LOCA, Running Charging Pump Trips on SI, PVA-9312 A & B fails to close on Phase A | |
| | Time Position Applicant's Actions or Behavior |] |
| 1 | SI REINITIATION CRITERIA | EOP-2.0 |
| | IF either of the following conditions occurs, THEN start Charging Pumps and operate valves as necessary: | |
| | RCS subcooling on TI-499A(B), A(B) TEMP°F, is LESS THAN 52.5°F [67.5°F]. PZR level can NOT be maintained GREATER THAN 10% [28%]. | |
| 2 | RCP TRIP CRITERIA | |
| | IF either of the following criteria is met, THEN trip all RCPs: | |
| | Annunciator XCP-612 4-2 is lit (PHASE B ISOL). | |
| | • RCS pressure is LESS THAN 1418 psig AND SI flow is indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. | |
| 3 | SECONDARY INTEGRITY TRANSITION CRITERIA | |
| | IF any unisolated SG pressure is decreasing in an uncontrolled manner OR is completely depressurized, THEN GO TO EOP-3.0, FAULTED STEAM GENERATOR ISOLATION, Step 1. | |
| 4 | TUBE RUPTURE TRANSITION CRITERIA | |
| | IF any SG level increases in an uncontrolled manner OR if any SG has abnormal radiation, THEN start Charging Pumps and operate valves as necessary, and GO TO EOP-4.0, STEAM GENERATOR TUBE RUPTURE, Step 1. | |
| 5 | COLD LEG RECIRCULATION TRANSITION CRITERION | |
| | IF RWST level decreases to LESS THAN 18%, THEN GO TO EOP-2.2, TRANSFER TO COLD LEG RECIRCULATION, Step 1. | |
| 6 | LOSS OF EMERGENCY COOLANT RECIRCULATION TRANSITION CRITERION | |
| | IF Emergency Coolant Recirculation is established and subsequently lost, THEN GO TO EOP-2.4, LOSS OF EMERGENCY COOLANT RECIRCULATION, Step 1. | |
| 7 | 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. | |

| 2013 NRC | C Scenario Sp | are Operator Actions Form ES-D-2 | - |
|--|----------------|---|---------|
| Op Test No. | NRC ILO 1 | 1-01 Scenario # <u>Spare</u> Event # <u>7, 8 & 9</u> Page <u>34</u> of <u>42</u> | |
| Event Desc | fails to | close on Phase A | |
| Time | Position | Applicant's Actions or Behavior | |
| | | NOTE | EOP-2.0 |
| The EC | P REFEREN | CE PAGE should be monitored throughout the use of this procedure. | |
| Seal Inj | ection flow sh | ould be maintained to all RCPs. | |
| Condition 001, AC | ons for implem | nenting Emergency Plan Procedures should be evaluated using EPP- ND IMPLEMENTATION OF EMERGENCY PLAN. | |
| | | Check if RCPs should be stopped: | EOP-2.0 |
| | | a. Check if either of the following criteria is met: | |
| | BOP | Annunciator XCP-612 4-2 is lit (PHASE B ISOL). | |
| | | OR | |
| | | RCS pressure is LESS THAN 1418 psig AND SI flow is indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. | |
| EVALUATOR NOTE: The RCPs should not be stopped until SI flow is established. | | | |
| | BOP | b. Stop all RCPs. | EOP-2.0 |
| | | Verify no SG is FAULTED: | EOP-2.0 |
| | BOP | No SG pressure is decreasing in an uncontrolled manner.No SG is completely depressurized. | |
| | | Check INTACT SG levels: | EOP-2.0 |
| * | BOP | a. Verify Narrow Range level in INTACT SGs is GREATER THAN 26% [41%]. | |
| | | b. Control EFW flow to maintain Narrow Range level in each INTACT SG between 40% and 60%. | |
| | BOP | Reset both SI RESET TRAIN A(B) Switches. | EOP-2.0 |
| | | Reset Containment Isolation: | EOP-2.0 |
| | BOP | RESET PHASE A - TRAIN A(B) CNTMT ISOL. RESET PHASE B - TRAIN A(B) CNTMT ISOL. | |

| 2013 NRC | Scenario Sp | are Operator Actions Form ES-D-2 | - |
|---|---------------------------------------|---|---------|
| Op Test No. Event Desc | : <u>NRC ILO 1</u> cription: PZR S | 1-01 Scenario # Spare Event # <u>7, 8 & 9</u> Page <u>35</u> of <u>42</u> team Space LOCA, Running Charging Pump Trips on SI, PVA-9312 A & B | |
| Time | Position | Applicant's Actions or Behavior | |
| | | Check if Secondary radiation levels are normal: a. Check radiation levels normal on: RM-G19A(B)(C), STMLN HI RNG GAMMA. RM-A9, CNDSR EXHAUST GAS ATMOS MONITOR. | EOP-2.0 |
| | BOP | RM-L3, STEAM GENERATOR BLOWDOWN LIQUID MONITOR. RM-L10, SG BLOWDOWN CW DISCHARGE LIQUID MONITOR. Place SVX-9398A(B)(C), SG A(B)(C) SMPL ISOL, in AUTO. Notify Chemistry to sample all SG secondary sides, and screen | |
| * | BOP | samples for abnormal activity using a frisker. Check PZR PORVs and Block Valves: a. 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-2.0 |
| <u>CAUTION - Step 7.b</u> If any PZR PORV opens because of high PZR pressure, Step 7.b should be repeated after pressure decreases to LESS THAN 2330 psig, to ensure the PORV recloses. | | | |
| | BOP | b. Verify all PZR PORVs are closed. | EOP-2.0 |
| | BOP | c. Verify at least one PZR PORV Block Valve is open. | EOP-2.0 |
| | BOP | Place both ESF LOADING SEQ A(B) RESETS to: a. NON-ESF LCKOUTS. b. AUTO-START BLOCKS. | EOP-2.0 |

| 2013 NRC | C Scenario Sp | are Operator Actions Form ES-D-2 | | | | |
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| Op Test No.: NRC ILO 11-01 Scenario # Spare Event # 7, 8 & 9 Page 36 of 42 | | | | | | |
| Event Dese | Event Description: PZR Steam Space LOCA, Running Charging Pump Trips on SI, PVA-9312 A & B fails to close on Phase A | | | | | |
| Time | Position | Applicant's Actions or Behavior | | | | |
| | | Establish Instrument Air to the RB: a. Start one Instrument Air Compressor and place the other in | EOP-2.0 | | | |
| | BOP | Standby. | | | | |
| | | b. Open PVA-2659, INST AIR TO RB AIR SERV. | | | | |
| | | c. Open PVT-2660, AIR SPLY TO RB. | | | | |
| | | Check if SI flow should be reduced: | EOP-2.0 | | | |
| | | a. RCS subcooling on TI-499A(B), A(B) TEMP °F, is GREATER THAN 52.5°F [67.5°F]. | | | | |
| | | b. Secondary Heat Sink is adequate: | | | | |
| * | BOP | Total EFW flow to INTACT SGs is GREATER THAN 450 gpm. OR | | | | |
| | | Narrow Range level is GREATER THAN 26% [41%] in at least one INTACT SG. | | | | |
| | | c. RCS pressure is stable OR increasing. | | | | |
| | POD | ALTERNATIVE ACTION | EOP-2.0 | | | |
| | BOP | GO TO Step 11 | | | | |
| | BOP | Check if RB Spray should be stopped: | EOP-2.0 | | | |
| - | | a. Check if any RB Spray Pumps are running. | | | | |
| â | | b. Verify RB pressure is LESS THAN 11 psig. | | | | |
| | | c. Depress both RESET TRAIN A(B) RB SPRAY. | | | | |
| NOTE - Step 11.d | | | | | | |
| RB Spray must run for a minimum of four hours. Anytime RB Spray Pumps are stopped, MVG-3003A(B), A(B), should be closed for containment isolation. | | | | | | |
| | CRS d. Consult with TSC personnel concerning RB Spray System operation. | | | | | |

| 2013 NRC | C Scenario Sp | are Operator Actions Form ES-D-2 | _ | |
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| Op Test No. | NRC ILO 1 | 1-01 Scenario # Spare Event # <u>7, 8 & 9</u> Page <u>37</u> of <u>42</u> |] | |
| Event Desc | cription: PZR S fails to | team Space LOCA, Running Charging Pump Trips on SI, PVA-9312 A & B close on Phase A | | |
| Time | Position | Applicant's Actions or Behavior | | |
| | | CAUTION - Step 12 | EOP-2.0 | |
| RCS press LESS THA | ure should be N 325 psig, th | monitored. If RCS pressure decreases in an uncontrolled manner to e RHR Pumps must be manually restarted to supply water to the RCS. | | |
| | | Check if RHR Pumps should be stopped: | EOP-2.0 | |
| | | a. Check RCS pressure: | | |
| | BOP | 1) RCS pressure is GREATER THAN 325 psig. 2) RCS pressure is stable OR increasing. | | |
| | | b. Check if any RHR Pump is running with suction aligned to the RWST. | | |
| | | Stop any RHR Pump which is running with suction aligned to the RWST and place in Standby. | | |
| | BOP | Check if RCS pressure is stable OR decreasing. | EOP-2.0 | |
| | BOP | Check if pressure in all SGs is stable OR increasing. | EOP-2.0 | |
| | | Check if DGs should be stopped: | EOP-2.0 | |
| | BOP | a. Verify both ESF buses are energized by offsite power. | | |
| | | b. Stop any unloaded DG. REFER TO SOP-306, EMERGENCY DIESEL GENERATOR. | | |
| | | Verify equipment is available for Cold Leg Recirculation: | EOP-2.0 | |
| | | a. Verify power is available for at least one RHR Pump: | | |
| | BOP | 1) PUMP A. 2) PUMP B. | | |
| | | b. 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. | | | | |
| If CCW can NOT be shifted to fast speed, this procedure should be continued. CCW alignment will be addressed in EOP-2.2, TRANSFER TO COLD LEG RECIRCULATION. | | | | |

| 2013 NRC | C Scenario Sp | are Operator Actions Form ES-D-2 | _ | |
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| Op Test No. Event Desc | : NRC ILO 1 | I1-01 Scenario # <u>Spare</u> Event # <u>7, 8 & 9</u> Page <u>38</u> of <u>42</u> Steam Space LOCA, Running Charging Pump Trips on SI, PVA-9312 A & B | | |
| Time | fails to close on Phase A | | | |
| Time | BOP | c. Shift the CCW Train to fast speed in the Active Loop. REFER TO SOP-118, COMPONENT COOLING WATER. d. Consult with TSC personnel to determine if equipment required for Cold Leg Recirculation is available. | EOP-2.0 | |
| | BOP | Check the AB for evidence of ECCS leakage: a. Verify AB radiation levels are normal on: RM-A3, MAIN PLANT VENT EXH ATMOS MONITOR: PARTICULATE, IODINE, GAS. RM-A13, PLANT VENT HI RANGE. RM-A11, AB VENT GAS ATMOS MONITOR. Local area monitors. b. Verify annunciator XCP-631 6-1 is NOT lit (AB SMP LVL HI). c. Verify annunciators XCP-606 3-4 and XCP-607 3-4 are NOT lit (LD TRBL AB SMP/FLDRN LVL HI). | EOP-2.0 | |
| | BOP | Obtain necessary Chemistry samples: a. Ensure all RCS sample valves are in AUTO: SVX-9364B and SVX-9365B, RCS LP B SMPL ISOL. SVX-9364C and SVX-9365C, RCS LP C SMPL ISOL. b. Notify Chemistry to sample the following: RCS. All SGs for isotopic activity. | EOP-2.0 | |
| | BOP | Shut down and stabilize the Secondary Plant. REFER TO AOP-214.1, TURBINE TRIP. | EOP-2.0 | |
| | CRS | Check if RCS cooldown and depressurization is required: a. RCS pressure is GREATER THAN 325 psig. b. GO TO EOP-2.1, POST-LOCA COOLDOWN AND DEPRESSURIZATION, Step 1. | EOP-2.0 | |
| EVALUAT The scena | OR NOTE: rio may be te | erminated after the crew transitions to EOP-2.1 | | |

| 2013 NRC | C Scenario Sp | are Operator Actions Form ES-D-2 | 2 |
|---|-----------------------------|---|-------------------------|
| Op Test No. | . NRC ILO 1 | 1-01 Scenario # Spare Event # 7, 8 & 9 Page 39 of 42 | |
| Event Desc | cription: PZR S fails to | steam Space LOCA, Running Charging Pump Trips on SI, PVA-9312 A & B close on Phase A | |
| Time | Position | Applicant's Actions or Behavior | |
| EVALATO has been i | RS NOTE: Th | is attachment is to verify equipment status after Safety Injection is run concurrently with the main body of EOP-1.0. | |
| | | Ensure EFW Pumps are running: | EOP-1.0 Attachment 3 |
| | BOP | a. Ensure both MD EFW Pumps are running. | |
| | | b. Verify the TD EFW Pump is running if necessary to maintain SG levels. | |
| | | Ensure the following EFW valves are open: | EOP-1.0 Attachment 3 |
| | BOP | FCV-3531(3541)(3551), MD EFP TO SG A(B)(C). FCV-3536(3546)(3556), TD EFP TO SG A(B)(C). MVG-2802A(B), MS LOOP B(C) TO TD EFP. | |
| | BOP | Verify total EFW flow is GREATER THAN 450 gpm. | EOP-1.0 Attachment 3 |
| | | Ensure FW Isolation: | EOP-1.0 Attachment 3 |
| | | a. Ensure the following are closed: | |
| | | • FW Flow Control, FCV-478(488)(498). | |
| | BOP | • FW Isolation, PVG-1611A(B)(C). | |
| | | FW Flow Control Bypass, FCV-3321(3331)(3341). SG Blowdown, BVG 5034(B)(C) | |
| | | SG Sample, SVX-9398A(B)(C). | |
| | | b. Ensure all Main FW Pumps are tripped. | |
| EVALUATOR NOTE: The failure of the Back-up Charging Pump to Auto-Start may have been addressed earlier. | | | |
| k AL | | Ensure SI Pumps are running: | EOP-1.0 Attachment 3 |
| CRITCI TASŀ | BOP | Two Charging Pumps are running.Both RHR Pumps are running. | |
| | BOP | Ensure two RBCU Fans are running in slow speed (one per train). | EOP-1.0 Attachment 3 |

| 2013 NRC | C Scenario Sp | are Operator Actions Form ES-D-2 | - | | |
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| Op Test No. | INRC ILO 1 | I1-01 Scenario # Spare Event # _7, 8 & 9 Page _40 of _42 | | | |
| Event Dese | cription: PZR S fails to | Steam Space LOCA, Running Charging Pump Trips on SI, PVA-9312 A & B close on Phase A | | | |
| Time | Position | Applicant's Actions or Behavior | | | |
| | Verify Service Water to the RBCUs: | | | | |
| | BOP | b. Verify both Service Water Booster Pumps A(B) are running. | | | |
| | | c. Verify GREATER THAN 2000 gpm flow for each train on: | | | |
| | | FI-4466, SWBP A DISCH FLOW GPM. FI-4496, SWBP B DISCH FLOW GPM. | | | |
| | BOP | Verify two CCW Pumps are running. | EOP-1.0 Attachment 3 | | |
| | BOP | Ensure two Chilled Water Pumps and Chillers are running. | EOP-1.0 Attachment 3 | | |
| | BOP | Verify both trains of Control Room Ventilation are running in Emergency Mode. | EOP-1.0 Attachment 3 | | |
| | BOP | Check if Main Steamlines should be isolated: | EOP-1.0 Attachment 3 | | |
| | | a. Check if any of the following conditions are met: | | | |
| | | RB pressure GREATER THAN 6.35 psig. | | | |
| | | OR | | | |
| | | Steamline pressure LESS THAN 675 psig. | | | |
| | | | | | |
| | | Steamline flow GREATER THAN 1.6 MPPH AND Tavg LESS THAN 552°F. | | | |
| | | b. Ensure all the following are closed: | | | |
| | | MS Isolation Valves, PVM-2801A(B)(C). MS Isolation Bypass Valves, PVM-2869A(B)(C). | | | |
| | BOP | Ensure Excess Letdown Isolation Valves are closed: | EOP-1.0 Attachment 3 | | |
| | | PVT-8153, XS LTDN ISOL.PVT-8154, XS LTDN ISOL. | | | |

| 2013 NRC | C Scenario Spa | are Op | erator Actions | | Form ES-D-2 | - |
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| Op Test No. | . NRC ILO 1 | 1-01 Scenario # | Spare Event # | 7,8&9 Pag | je <u>41</u> of <u>42</u> | |
| Event Dese | cription: PZR S fails to | eam Space LOCA, Run close on Phase A | hing Charging Pum | p Trips on SI, PV | 'A-9312 A & B | |
| EVALUAT The Safety operator n | OR NOTE: / Injection Ph nust close at | ase A Isol panel will i least 1 of the valves | indicate the 9312 | A and B are ong Attachmen | pen. The t 3. | |
| CRITICAL TASK | BOP | Verify ESF monitor lig Ventilation Isolation of ATTACHMENT 4, CO STATUS LIGHT LOC | ghts indicate Phas on XCP-6103, 610 ONTAINMENT IS ATIONS, as need | se A and Conta 04, and 6106. R DLATION VALV ded. | inment EFER TO /E MCB | EOP-1.0 Attachment 3 |
| Excerpt fro | SG A BLWDN ISOL 503A CLSD RB NR PT JSOL VLV 6054 CLSD | 4 showing relative pos <u>XCP</u> - SAFETY PHASE SG B BLWDN ISOL 503B CLSD SG C BLWDN ISOL 503C CLSD FIRE SERY TSOL 6797 CLSD Lights should be B | RIGHT. | rted windows. | RG-1.97 | EOP-1.0 Attachment 4 |
| | BOP | . Only the windows i Verify proper SI align a. Verify SI valve align INJECTION/PHAS 6104. | ndicated are Phas ment: gnment by verifyir SE A ISOL monito | se A Isolation ng SAFETY or lights are brig | Valves. ht on XCP- | EOP-1.0 Attachment 3 |

| 2013 NRC | C Scenario Sp | are Operator Actions Form ES-D-2 | |
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| Op Test No. | NRC ILO 1 | 1-01 Scenario # Spare Event # <u>7, 8 & 9</u> Page <u>42</u> of <u>42</u> | |
| Event Des | cription: PZR S | steam Space LOCA, Running Charging Pump Trips on SL PVA-9312 A & B | |
| | fails to | close on Phase A | |
| Time | Position | Applicant's Actions or Behavior | |
| | BOP | Verify proper SI alignment: | EOP-1.0 Attachment 3 |
| | | ALTERNATIVE ACTION | |
| | | a. Ensure proper SI valve alignment: | |
| | | Open MVG-8801A(B), HI HEAD TO COLD LEG INJ. Close MVG-8107 and MVG-8108, CHG LINE ISOL. Open LCV-115B(D), RWST TO CHG PP SUCT. Close LCV-115C(E), VCT OUTLET ISOL. Open MVG-8809A(B), RWST TO RHR PP A(B). Open MVG-8888A(B), RHR LP A(B) TO COLD LEGS. | |
| | BOP | b. Verify all SAFETY INJECTION monitor lights are dim on XCP- 6106. | EOP-1.0 Attachment 3 |
| | BOP | c. Verify SI flow on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM | EOP-1.0 Attachment 3 |
| | BOP | d. Check if RCS pressure is LESS THAN 325 psig. | EOP-1.0 Attachment 3 |
| | BOP | e. Verify RHR flow on: FI-605A, RHR DISCHARGE PUMP A FLOW GPM. | EOP-1.0 Attachment 3 |
| | | AND | |
| | | • FI-605B, RHR DISCHARGE PUMP B FLOW GPM. | |
| | BOP | Reports completion of EOP-1.0 Attachment 3 to the CRS | |
| EVALUAT | OR NOTE: OP-1.0 ATTA | CHMENT 3 | |