Reactor Operator

Facility: **Watts Bar** Date of Examination: **October 2013**

Examination Level: RO ☒ SRO ☐ Operating Test Number: **302**

Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M,R	**1. Perform Hand Calculation Of Boric Acid And Primary Water Integrator Settings For Manual Makeup To VCT.** *2.1.25 Ability to interpret reference materials, such as graphs, curves, tables, etc. (3.9/4.2) (CFR: 41.10 / 43.5 / 45.12)* |
Conduct of Operations	N,R	**2. Determine AFW Pump Requirements** *2.1.32 Ability to explain and apply system limits and precautions. 3.8/4.0 (CFR: 41.10 / 43.2 / 45.12)*
Equipment Control	M,R	**3. Review 1-SI-0-4, "Monthly Surveillances."** *2.2.12 Knowledge of surveillance procedures.3.7/4.1 (CFR 41.10 / 45.13)*
Radiation Control	M,R	**4. Calculate Stay Time For Emergency Exposure** *2.3.4 Knowledge of radiation exposure limits under normal or emergency conditions.3.2/3.7 (CFR: 41.12/43.4/45.10)*
Emergency Procedures / Plan	N/A	*N/A*

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

* Type Codes & Criteria:
(C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)

RO Admin JPM Summary

1 Task/KA/Safety Function:

PERFORM SOI-62.02, "BORON CONCENTRATION CONTROL," APPENDIX C, "CALCULATION OF BORIC ACID AND PRIMARY WATER INTEGRATOR SETTING FOR MANUAL MAKEUP TO VCT (RCS)." / 2.1.25 Ability to interpret reference materials, such as graphs, curves, tables, etc. (3.9/4.2) (CFR 41.10 / 43.5 / 45.12)/ 2.1 Conduct of Operations.

Task Standard:

The applicant performs SOI-62.02, "Boron Concentration Control," Appendix C, "CALCULATION OF BORIC ACID AND PRIMARY WATER INTEGRATOR SETTING FOR MANUAL MAKEUP TO VCT (RCS)," and calculates:

1.) The total VCT addition to be 367 ± 1 gallon.

2.) The BA flow rate to be 10.60 gpm. (10.729 gpm is acceptable, if applicant elects to perform conservative calculation.)

3.) The amount of BA to be entered into the BA integrator to be 48 gallons ± 1 gallon.

4.) The amount of PW to be entered into the PW integrator to be 318 gallons ± 1 gallon.

Critical Steps:

CALCULATE total VCT addition volume needed for desired level. (Rounded to the nearest whole number.)

CALCULATE 1-FC-62-139, BA TO BLENDER FCV-62-140 CONTROL, flow setpoint.

CALCULATE TOTAL flow rate.

CALCULATE [Y] BA Fraction.

CALCULATE 1-FQ-62-139, BA BATCH COUNTER Setting.

CALCULATE [Z] PW Fraction.

CALCULATE 1-FQ-62-142, PW BATCH COUNTER Setting.

The applicant will perform actions of the following procedures:

SOI-62.02, "Boron Concentration Control."

TI-59, "Boron Tables."

2 Task/KA/Safety Function:

DETERMINE AFW PUMP REQUIREMENTS / 2.1.32 Ability to explain and apply system limits and precautions (3.8/4.0) (CFR 41.10/43.2/45.12) / 2.1 Conduct of Operations.

Task Standard:

The applicant determines:

1.) No starting limitations have been violated.

2.) 1B-B AFW pump may be restarted immediately, or at any time after 2125. The 1A-A AFW pump cannot be restarted on October 15, 2013.

3.) Determines that Electrical Maintenance (EM) must be notified to perform 2500-volt megger, bridge, and dc high-potential tests after the 1B-B AFW pump tripped by instantaneous overcurrent relay operation.

Critical Steps:

Applicant determines:

No starting limitations have been violated based on GOI-7, “Generic Equipment Operating Guidelines.”

1B-B MD AFW Pump may be started immediately, or at any time after 2125. The 1A-A MD AFW pump cannot be restarted on October 15, 2013.

Electrical Maintenance (EM)must be notified to perform 2500-volt megger, bridge, and dc high-potential tests after a 6,900-volt motor has been tripped by relay operation

The applicant will perform actions of the following procedures:

GOI-7, “Generic Equipment Operating Guidelines.”

3 Task/KA/Safety Function:

REVIEW 1-SI-0-4, “MONTHLY SURVEILLANCES.” / 2.2.12 Knowledge of surveillance procedures. (3.7/4.1) (CFR 41.10/45.13) / 2.2 Equipment Control.

Task Standard:

The applicant reviews a completed 0-SI-4, “Monthly Surveillance,” and determines that the following **5 ITEMS** are exceeding MCD limits OR have exceeded specified values:

1. **ITEM 4:** 1-PI-1-1C, SG 1 Press, is exceeding its MCD value.
2. **ITEM 7:** 1-PI-68-336C PZR PRESS is exceeding its MCD value.
3. **ITEM 13:** 1-TI-68-43C LOOP 3 HL TEMP is exceeding its MCD value.
4. **ITEM 25:** 1-FI-68-93C CHARGING FLOW is within its MCD value, but exceeding the 20 gpm limit of NOTE (32).
5. **ITEM 29:** 1-PI-62-81C LP LETDOWN PRESS is exceeding its MCD value.

The applicant indicates that the following actions are required (in no particular order) for **each** of the 5 items identified:

1. SM/Unit SRO must be notified of each item that exceeds limits.
2. A Work Order (WO) or Service Request (SR) must be prepared for each item that exceeds limits.
3. **ITEM 25** requires a calibration of 1-FI-68-93C CHARGING FLOW.

Critical Steps:

ITEM 4: 1-PI-1-1C, SG 1 Press, is exceeding its MCD value.

ITEM 7: 1-PI-68-336C PZR PRESS is exceeding its MCD value.

ITEM 13: 1-TI-68-43C LOOP 3 HL TEMP is exceeding its MCD value.

ITEM 25: 1-FI-68-93C CHARGING FLOW is within its MCD value, but exceeding the 20 gpm limit of NOTE (32). Also requires calibration of the flow instrumentation.

ITEM 29: 1-PI-62-81C LP LETDOWN PRESS is exceeding its MCD value.

The applicant will perform actions of the following procedures:

1-SI-0-4, “Monthly Surveillances.”

4 **Task/KA/Safety Function:**

CALCULATE STAY TIME FOR EMERGENCY EXPOSURE / 2.3.4 Knowledge of radiation exposure limits under normal or emergency conditions. (3.2/3.7) (CFR 41.12/43.4/45.10) / 2.3 Radiation Control.

Task Standard:

The applicant:

1. Calculates the total dose received performing the assigned tasks to be 19.8 Rem TEDE and 180 REM to the hands. (**Acceptable Range 19.6 - 19.8 TEDE , Hands 180 REM).**
2. Determines the restrictions contained in EPIP-15, Emergency Exposure Guidelines," Section 3.1.4, "Post Exposure Evaluations," are to be applied to the AB AUO.:

Critical Steps:

Calculates the total dose received performing the assigned tasks to be 19.8 Rem TEDE and 180 REM to the hands. (**Acceptable Range 19.6 - 19.8 TEDE , Hands 180 REM).**

Determines that personnel receiving emergency or accident exposures should be restricted from further occupational exposure pending the outcome of exposure evaluations and, if necessary, medical surveillance

The applicant will perform actions of the following procedures:

EPIP-15, Emergency Exposure Guidelines."

5 **Not Applicable**

Senior Reactor Operator

Facility: **Watts Bar** Date of Examination: **October 2013**

Examination Level: RO ☐ SRO ☒ Operating Test Number: **302**

Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M,R	**1. Perform Hand Calculation Of Boric Acid And Primary Water Integrator Settings For Manual Makeup To VCT.** *2.1.25 Ability to interpret reference materials, such as graphs, curves, tables, etc. (3.9/4.2) (CFR: 41.10 / 43.5 / 45.12)* |
Conduct of Operations	N,R	**2. Determine AFW Pump Requirements.** *2.1.32 Ability to explain and apply system limits and precautions. 3.8/4.0 (CFR: 41.10 / 43.2 / 45.12)*
Equipment Control	M,R	**3. Determine Risk Level using EOOS Software.** *2.2.14 Knowledge of the process for controlling equipment configuration or status. 3.9/4.3 (CFR 41.10 / 43.3 / 45.13)*
Radiation Control	M,R	**4. Determine Requirements for Authorizing Emergency Exposure.** *2.3.4 Knowledge of radiation exposure limits under normal or emergency conditions.3.2/3.7 (CFR: 41.12/43.4/45.10)*
Emergency Procedures / Plan	M,R	**5. Classify an Event.** *2.4.41 Knowledge of the emergency action level thresholds and classifications. 2.9/4.6 (CFR: 41.10 / 43.5 / 45.11)*

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

* Type Codes & Criteria:
(C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)

SRO Admin JPM Summary

1 Task/KA/Safety Function:

PERFORM SOI-62.02, "BORON CONCENTRATION CONTROL," APPENDIX C, "CALCULATION OF BORIC ACID AND PRIMARY WATER INTEGRATOR SETTING FOR MANUAL MAKEUP TO VCT (RCS)." / 2.1.25 Ability to interpret reference materials, such as graphs, curves, tables, etc. (3.9/4.2) (CFR 41.10 / 43.5 / 45.12)/ 2.1 Conduct of Operations.

Task Standard:

The applicant performs SOI-62.02, "Boron Concentration Control," Appendix C, "CALCULATION OF BORIC ACID AND PRIMARY WATER INTEGRATOR SETTING FOR MANUAL MAKEUP TO VCT (RCS)," and calculates:

1.) The total VCT addition to be 367 ± 1 gallon.

2.) The BA flow rate to be 10.60 gpm. (10.729 gpm is acceptable, if applicant elects to perform conservative calculation.)

3.) The amount of BA to be entered into the BA integrator to be 48 gallons ± 1 gallon.

4.) The amount of PW to be entered into the PW integrator to be 318 gallons ± 1 gallon.

Critical Steps:

CALCULATE total VCT addition volume needed for desired level. (Rounded to the nearest whole number.)

CALCULATE 1-FC-62-139, BA TO BLENDER FCV-62-140 CONTROL, flow setpoint.

CALCULATE TOTAL flow rate.

CALCULATE [Y] BA Fraction.

CALCULATE 1-FQ-62-139, BA BATCH COUNTER Setting.

CALCULATE [Z] PW Fraction.

CALCULATE 1-FQ-62-142, PW BATCH COUNTER Setting.

The applicant will perform actions of the following procedures:

SOI-62.02, "Boron Concentration Control."

TI-59, "Boron Tables."

2 Task/KA/Safety Function:

DETERMINE AFW PUMP REQUIREMENTS / 2.1.32 Ability to explain and apply system limits and precautions (3.8/4.0) (CFR 41.10/43.2/45.12) / 2.1 Conduct of Operations.

Task Standard:

The applicant determines:

1. NO motor start limitations have been violated based on the history provided
2. 1B-B AFW pump can be started at 2125 on October 15, 2013. The 1A-A AFW pump cannot be restarted on October 15, 2013.
3. Electrical Maintenance (EM) must be notified to perform 2500-volt megger, bridge, and dc high-potential tests after the 1B-B AFW pump tripped by instantaneous overcurrent relay operation.
4. LCO 3.7.5, Auxiliary Feedwater (AFW) System, Action B is applicable, and the 1B-B AFW pump must be declared INOPERABLE, and restored to OPERABLE status within 72 hours.

Critical Steps:

Applicant determines that the 1B-B MD AFW Pump may be started immediately, or at 2125.

Applicant determines the 1A-A MD AFW pump cannot be restarted on October 15, 2013.

Applicant determines that Electrical Maintenance (EM) must be notified to perform 2500-volt megger, bridge, and dc high-potential tests after a 6,900-volt motor has been tripped by relay operation.

Applicant refers to LCO 3.7.5, and determines that CONDITION B applies

The applicant will perform actions of the following procedures:

GOI-7, “Generic Equipment Operating Guidelines.”

LCO 3.7.5, Auxiliary Feedwater (AFW) System.

3. Task/KA/Safety Function:

DETERMINE RISK LEVEL, CDF AND LERF MULTIPLIERS USING EOOS SOFTWARE/2.2.14 Knowledge of the process for controlling equipment configuration or status. **(**3.9/4.3) (41.10/43.3/45.13) /2.2 Equipment Control.

Task Standard:

The applicant determines:

1. Removing the 1A-A Diesel Generator from service in the WBN EOOS program results in a CDF of 4.36, a LERF of 4.57, and RISK remains GREEN for CDF and LERF.
2. Removing the 2B-B ERCW Strainer from service in addition to the 1A-A Diesel Generator in the WBN EOOS program results in a CDF of 25.9, Risk changes to ORANGE, and the LERF changes to 8.1, and Risk changes to YELLOW.

Critical Steps:

Calculate Core Damage Frequency (CDF) and Large Early Release Frequency (LERF) Multiplier for the unit configuration using EOOS (Calculate Risk Measure(s) Button) for the 1A-A Diesel Generator out of service. Removing the 1A-A Diesel Generator from service in the WBN EOOS program results in a CDF of 4.36, a LERF of 4.57, and RISK remains GREEN for CDF and LERF.

Calculate Core Damage Frequency (CDF) and Large Early Release Frequency (LERF) Multiplier for the unit configuration using EOOS (Calculate Risk Measure(s) Button) for the 1A-A Diesel Generator and 2B-B ERCW Strainer out of service. Removing the 2B-B ERCW Strainer from service in addition to the 1A-A Diesel Generator in the WBN EOOS program results in a CDF of 25.9, Risk changes to ORANGE, and the LERF changes to 8.1, and Risk changes to YELLOW

The applicant will perform actions of the following procedures/equipment:

NPG-SPP-09.11.1, “Equipment Out of Service (EOOS) Management.”

WBN EOOS Computer Program

4 Task/KA/Safety Function:

CALCULATE STAY TIME FOR EMERGENCY EXPOSURE / 2.3.4 Knowledge of radiation exposure limits under normal or emergency conditions. (3.2/3.7) (CFR 41.12/43.4/45.10) / 2.3 Radiation Control.

Task Standard:

The applicant determines:

1. The exposure expected to be received by the AB AUO during the completion of Tasks 1 through 3 to be 19.8 REM TEDE and 180 REM Extremities.
2. The Shift Manager as the SED must authorize the exposure in writing using EPIP-15, "Emergency Exposure Guidelines," Appendix B, "Authorization to Exceed Occupational Dose Limits Form."
3. Determines the restrictions contained in EPIP-15, Emergency Exposure Guidelines," Section 3.1.4, "Post Exposure Evaluations," are to be applied to the AB AUO.

Critical Steps:

The exposure expected to be received by the AB AUO during the completion of Tasks 1 through 3.

Determine that the SITE EMERGENCY DIRECTOR is the ONLY person that can authorize the Emergency Exposure.

Determine the restrictions, if any, that are imposed on the AB AUO after receipt of the emergency exposure.

The applicant will perform actions of the following procedures:

EPIP-15, Emergency Exposure Guidelines."

5. Task/KA/Safety Function:

CLASSIFY THE EVENT. / 2.4.40 Knowledge of SRO responsibilities in emergency plan implementation.(2.5/3.3) (CFR 41.10 / 43.5 / 45.11) / 2.4 Emergency Procedures / Plan.

Task Standard:

The applicant :

1.) Within 15 minutes, classifies the event as a GENERAL EMERGENCY per EALs 1.1.2 Loss, 1.2.2, Potential Loss and 1.3.2 Loss.

2.) INITIATES EPIP-5, "GENERAL EMERGENCY" Appendix A, "General Emergency Initial Notification Form," and completes:

a. Item 3. - EAL Designators - 1.1.2 Loss, 1.2.2, Potential Loss and 1.3.2 Loss.

b. Item 4. - Brief Description of the Event - Fuel Clad barrier breach, with a concurrent loss of coolant greater than the capacity of the CCP and indications of a LOCA Outside Containment. (Applicant description will vary)

c. Item 5. - Radiological Conditions - EITHER "Minor releases within federally approved limits" OR "Release Information not known" checked or otherwise indicated on form.

d, Item 6. - Time that applicant declared the event and the date.

e. Item 7. - Meteorological Conditions. Wind Speed and direction correctly entered. (15 mph and 125 degrees).

f. Item 8. - Recommendation 2 selected, and the proper area to be evacuated indicated on the form (110-170 degrees indicated).

3.) INITIATES EPIP-5, "GENERAL EMERGENCY" Appendix H, "Initial - Protective Action Recommendations," and determines that RECOMMENDATION 2 is applicable,

Critical Steps:

Within 15 minutes, classifies the event as a GENERAL EMERGENCY per EALs 1.1.2 Loss, 1.2.2, Potential Loss and 1.3.2 Loss.

INITIATES EPIP-5, "GENERAL EMERGENCY" Appendix A, "General Emergency Initial Notification Form," and completes:

Item 3. - EAL Designators - 1.1.2 Loss, 1.2.2, Potential Loss and 1.3.2 Loss.

Item 4. - Brief Description of the Event - Fuel Clad barrier breach, with a concurrent loss of coolant greater than the capacity of the CCP and indications of a LOCA Outside Containment. (Applicant description will vary)

Item 5. - Radiological Conditions - EITHER "Minor releases within federally approved limits" OR "Release Information not known" checked or otherwise indicated on form.

Item 6. - Time that applicant declared the event and the date.

Item 7. - Meteorological Conditions. Wind Speed and direction correctly entered. (15 mph and 125 degrees).

Item 8. - Recommendation 2 selected, and the proper area to be evacuated indicated on the form (110-170 degrees indicated).

INITIATES EPIP-5, "GENERAL EMERGENCY" Appendix H, "Initial - Protective Action Recommendations," and determines that RECOMMENDATION 2 is applicable,

The applicant will perform actions of the following procedures:

EPIP-1 "Emergency Plan Classification Flowpath."

EPIP-5 "General Emergency."

Reactor Operator

Facility: **Watts Bar** Date of Examination: **October 2013**

Exam Level: **RO** ☒ SRO-I ☐ SRO-U ☐ Operating Test Number:**302**

Control Room Systems@ **(8 for RO)**; (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
A. Aux Feedwater LCV to Bypass Reg Transfer During Plant Startup. 059 A4.08 3.0/2.9 CFR 41.7/45.5 to 45.8	A,L,N	4S
B Perform ES-1.3, "Transfer to Containment Sump." EA1.11 4.2/4.2 CFR 41.7/45.5 / 45.6	A, EN, M	3
C. Return N43 Power Range To Service. 015 A4.02 3.9/3.9 CFR 41.7 / 45.5 to 45.8	M	7
D. Perform a Manual Makeup to the VCT. 004 A4.12 3.8/3.3 CFR 41.7 / 45.5 to 45.8	A, M	2
E. Transfer 1A RCP Board from Alternate to Normal. 062 A4.01 3.3/3.1 CFR 41.4/45.5 to 45.8	D	6
F. Align 1B-B CCS Pump to 1B Supply Header. 008 A4.01 3.3/3.1 CFR: 41.7 / 45.5	M	8
G. Complete 1-SI-85-2, Reactivity Control Systems Movable Control Assemblies (Modes 1 and 2). 001 A4.03 4.0/3.7 CFR 41.7/45.5 to 45.8	A, M	1
H. Respond to RHR Pump Trip Per AOI-14. 025 AA1.09 3.1/3.2 CFR: 41.7 / 45.5 / 45.6	D	4P
In-Plant Systems@ **(3 for RO)**; (3 for SRO-I); (3 or 2 for SRO-U)		
I. Bypassing 1-PCV-62-81, CVCS LETDOWN HX PRESS CNTL, For Local Control 004 A1.11 3.0/ 3.0 CFR 41.5/45.5	D,E,R	2
J. Local Restart of C&SS Air Compressors. 065 AK3.08 3.7/3.9 CFR 41.5,41.10 / 45.6 / 45.13	A,D,E	8
K. Transfer 250v DC TURB BLDG DIST BD #1 from Normal to Alternate. 063 A4.02 2.8/2.9 CFR 41.7	D	6

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

*Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥ 1
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Summary

A. Task/KA/Safety Function:

TRANSFER FROM AUX FEEDWATER LCV TO BYPASS REG VALVE DURING STARTUP / 059 A4.08 Ability to manually operate and/or monitor in the control room: Feed regulating valve controller (3.0/2.9) CFR: 41.7/45.5 to 45.8/ Safety Function 4S

Task Standard:

The applicant:

1.) Performs the actions required to transfer feedwater supply from 1-1-LIC-3-156A, SG 2 SUPPLY FRM PMP A-A to 1-LIC-3-103A, SG 4 MFW BYPASS REG CONTROL.

2.) Diagnoses the failure of 1-LCV-3-156A, SG 2 SUPPLY FRM PMP A-A OPEN and places 1-HS-3-118AAFW PMP A-A in STOP, PULL-TO-LOCK to terminate the overfill of SG 2.

Critical Steps:

PLACE SG 2 Bypass Reg Valve in MANUAL **AND SLOWLY OPEN** valve

ENSURE 1-LIC-3-156A, SG 2 SUPPLY FRM PMP A-A closes as required to maintain SG 2 level on program.

Applicant locates 1-HS-3-118A, A-A MD AFWP, and rotates the handswitch to the LEFT to the STOP position. Applicant may pull the handswitch out to the STOP, PULL-TO-LOCK position.

Alternate Path:

During transfer from Auxiliary Feedwater to Main Feedwater level control, 1-LCV-3-156, SG 2 SUPPLY FRM PMP A-A fails OPEN, requiring the 1A-A MD AFW Pump to be stopped from the MCR.

List of Steps that Constitute an Alternate Path

Applicant locates 1-HS-3-118A, A-A MD AFWP, and rotates the handswitch to the LEFT to the STOP position. Applicant may pull the handswitch out to the STOP, PULL-TO-LOCK position.

If similar to an event in the Dynamic Scenario, then an explanation of how it is different. Not applicable

The applicant will perform actions of the following procedures:

SOI-3.02, “Auxiliary Feedwater System."

Documentation justifying classification of Engineered Safety Function, when applicable:

Not Applicable

B. Task/KA/Safety Function

ALIGN ECCS PUMPS BY PERFORMING ES-1.3, “TRANSFER TO CONTAINMENT SUMP.” / EA1.11 Ability to operate and monitor the following as they apply to a Large Break LOCA: Long-term core cooling (4.2/4.2) CFR 41.7 / 45.5 / 45.6 / Safety Function 3.

Task Standard:

Applicant performs aligns the ECCS pumps for containment sump recirculation using ES-1.3, “Transfer to Containment Sump.”

List of Critical Steps

ENSURE cntmt sump valves 1-FCV-63-72 and 1-FCV-63-73 **OPEN. IF** ONE cntmt sump valve can **NOT** be fully opened, **THEN STOP** and **PULL TO LOCK** RHR pump on the associated train.

ISOLATE SI pump miniflow.

ISOLATE RHR crossties.

ALIGN charging pump and SI pump supply from RHR.

ISOLATE charging pump suction from RWST.

ISOLATE SI pump suction from RWST.

CLOSE 1-FCV-63-1.

Alternate Path:

During performance of ES-1.3, Transfer to Containment Sump,” the applicant will be unable to fully open 1-FCV-63-73, requiring the 1B-B RHR Pump to be placed in STOP, PULL-TO-LOCK.

List of Steps that Constitute an Alternate Path

ENSURE cntmt sump valves 1-FCV-63-72 and 1-FCV-63-73 **OPEN.**

IF ONE cntmt sump valve can **NOT** be fully opened, **THEN STOP** and **PULL TO LOCK** RHR pump on the associated train.

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Scenario contains a loss of recirculation sump due to the failure of both RHR pumps, and an immediate transition from ES-1.3, “Transfer to Containment Sump,” Step 1 RNO to 1-ECA-1.1, Loss of RHR Sump Recirculation.”

Procedure Name/Number and Section pertaining to the task.

ES-1.3, “Transfer to Containment Sump.”

Documentation justifying classification of Engineered Safety Function, when applicable:

Task is associated with ECCS alignment to establish long term core cooling.

C. Task/KA/Safety Function

RETURN N43 POWER RANGE TO SERVICE / 015 A4.02 Ability to manually operate and/or monitor in the control room: NIS indicators (3.9/3.9) CFR 41.7 / 45.5 to 45.8/ Safety Function 7

Task Standard:

The applicant :

1.) Returns the following switches from the N43 position to the NORMAL.

a. DETECTOR CURRENT COMPARATOR switch for UPPER SECTION

b. DETECTOR CURRENT COMPARATOR switch for LOWER SECTION.

c. COMPARATOR CHANNEL DEFEAT

2.) Returns the following switches from the N43 position to the OPERATE position:

a. ROD STOP BYPASS,

b. POWER MISMATCH BYPASS.

3.) Performs actions of SOI-98.01, "DISTRIBUTED CONTROL SYSTEM," to RESTORE 1LPY0920412R from BYPASS to NORMAL.

List of Critical Steps

1.) Returns the following switches from the N43 position to the NORMAL.

a. DETECTOR CURRENT COMPARATOR switch for UPPER SECTION

b. DETECTOR CURRENT COMPARATOR switch for LOWER SECTION.

c. COMPARATOR CHANNEL DEFEAT

2.) Returns the following switches from the N43 position to the OPERATE position:

a. ROD STOP BYPASS,

b. POWER MISMATCH BYPASS.

3.) Performs actions of SOI-98.01, "DISTRIBUTED CONTROL SYSTEM," to RESTORE 1LPY0920412R from BYPASS to NORMAL.

List of Steps that Constitute an Alternate Path

Not Applicable.

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Scenario removes a different power range channel (N41) from service. And does not encompass performance of SOI-98.01, "Distributed Control System."

Procedure Name/Number and Section pertaining to the task.

1-AOI-4, "Nuclear Instrumentation Malfunctions."

SOI-98.01, "Distributed Control System."

Documentation justifying classification of Engineered Safety Function, when applicable:

Not applicable

D. Task/KA/Safety Function

ESTABLISH MANUAL MAKEUP TO THE VCT / 004 A4.12 Ability to manually operate and/or monitor in the control room: Boration/dilution batch control (3.8/3.3) CFR 41/7 / 45.5 to 45.8/ Safety Function 2.

Task Standard:

The applicant

1.) Aligns the makeup control system to perform a MANUAL makeup of 97 gallons, and raises VCT level from 35% to approximately 40%.

2.) After the controls fail, terminates the boration by placing 1-HS-62-230A BA PMP A and 1-HS-62-232A BA PMP B in the STOP position per AOI-3, “Malfunction of Reactor Makeup Control.”

List of Critical Steps

TURN 1-HS-62-140A, VCT MAKEUP CONTROL, to START.

OPEN 1-FCV-62-128, MAKEUP TO VCT INLET, **OR** 1-FCV-62-144, MAKEUP TO VCT OUTLET.

STOP boric acid transfer pumps.

Alternate Path:

When manual makeup is begun, 1-FCV-62-140, BA TO BLENDER and 1-FCV-62-128, MAKEUP TO VCT INLET or 1-FCV-62-144, MAKEUP TO VCT OUTLET fail open and cannot be closed. 1-FC-62-139, BA TO BLENDER FCV-62-140 CONTROL fails, causing boric acid flow rate to go to maximum. Requires stopping of the boric acid transfer pumps to terminate the boration.

List of Steps that Constitute an Alternate Path

STOP boric acid transfer pumps.

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Not Applicable.

Procedure Name/Number and Section pertaining to the task.

SOI-62.02, “Boron Concentration Control.”

AOI-3, “Malfunction of Reactor Makeup Control.”

Documentation justifying classification of Engineered Safety Function, when applicable:

Not applicable

E. Task/KA/Safety Function:

TRANSFER 6.9 KV RCP BOARD 1A FROM ALTERNATE TO NORMAL / 062 A4.01 Ability to manually operate and/or monitor in the control room: All breakers (including available switchyard) (3.3/3.1) CFR 41.4/45.5 to 45.8 / Safety Function 6.

Task Standard:

The applicant performs actions in accordance with SOI-202.1 Section 8.1 to transfer 1A RCP Board from its ALTERNATE to NORMAL power supply and restore the RCP control switches to a normal alignment

List of Critical Steps:

ENSURE 1-HS-68-8BA, RCP 1 ALTERNATE BKR & XFER SELECTOR [1-M-5], PUSHED IN to place ACB 2522 auto transfer in MANUAL**.**

PLACE AND HOLD 1-HS-68-8AA, RCP 1 NORMAL BKR & LIFT PMP, in START**, AND PLACE 1**-HS-68-8BA, RCP 1 ALTERNATE BKR & XFER SELECTOR, in STOP**.**

Alternate Path:

Not applicable

List of Steps that Constitute an Alternate Path

Not applicable

If similar to an event in the Dynamic Scenario, then an explanation of how it is different:

Not Applicable

Procedure Name/Number and Section pertaining to the task:

SOI-202.1, “6.9KV Reactor Coolant Pump Board 1A.”

Documentation justifying classification of Engineered Safety Function, when applicable:

Not Applicable

F. Task/KA/Safety Function

ALIGN 1B-B CCS PUMP TO 1B SUPPLY HEADER/008 A4.01 Ability to manually operate and/or monitor in the control room: CCW indications and controls (3.3/3.1)(CFR: 41.7 / 45.5)/Safety Function 8

Task Standard:

The applicant:

1.) Performs valve manipulations to align CCS Pump 1B-B to the 1B Supply header.

2.) Performs actions required to start CCS Pump 1B-B.

List of Critical Steps

Applicant locates.1-HS-70-38A, CCS PMP 1B-B, and rotates the handswitch to the STOP position, then pulls the handswitch out to the PULL-TO-LOCK position.

Applicant contacts the Console Operator and directs the Console Operator (as an AUO) to place the listed breakers to “ON.”

The applicant locates 1-HS-70-34A, CCS PMPS 1A & 1B SUCT XTIE and rotates the handswitch to the LEFT to the CLOSE position.

Applicant locates 1-HS-70-34A, CCS PMPS 1A & 1B SUCT XTIE and rotates the handswitch to the LEFT to the CLOSE position.

Applicant locates 1-HS-70-26A, CCS PMP 1B TO C-S DISCH XTIE, and rotates the handswitch to the RIGHT to the OPEN position.

Applicant locates 1-HS-70-27A, CCS PMP 1B TO C-S DISCH XTIE, and rotates the handswitch to the RIGHT to the OPEN position.

Applicant locates 1-HS-70-64A, CCS PMP 1B TO C-S SUCT XTIE, and rotates the handswitch to the RIGHT to the OPEN position.

Applicant locates 1-HS-70-74A, CCS PMP 1B TO C-S SUCT XTIE, and rotates the handswitch to the RIGHT to the OPEN position

Applicant contacts the Console Operator as an AUO and directs the Console Operator (as an AUO) to place the listed breakers to “OFF.

Applicant locates 1-HS-70-38A, CCS PMP 1B-B, and rotates the handswitch to the START position.

List of Steps that Constitute an Alternate Path

Not Applicable

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Similar to Scenario 4, Event 1, which alternates 1B-B and 1A-A CCS pumps but the pumps remain aligned to CCS Header A. This JPM requires operation of multiple valves to support alignment.

Procedure Name/Number and Section pertaining to the task.

SOI-70.01, “Component Cooling Water (CCS) System,” Section 8.1, “Align Pump 1B-B to Supply Header 1B.”

Documentation justifying classification of Engineered Safety Function, when applicable:

Not Applicable

G. Task/KA/Safety Function:

COMPLETE 1-SI-85-2, REACTIVITY CONTROL SYSTEMS MOVABLE CONTROL ASSEMBLIES (MODES 1 AND 2)/ 001 A4.03 Ability to manually operate and/or monitor in the control room: CRDS mode control (4.0 / 3.7) CFR 41.7/45.5 to 45.8 / Safety Function 1

Task Standard:

The applicant:

1. Selects the CBC position on 1-RBSS, ROD BANK SELECT.
2. Inserts, then withdraws Control Bank C rods 10 steps.
3. Selects the CBD position on 1-RBSS, ROD BANK SELECT.
4. Inserts, then withdraws Control Bank D rods 10 steps.
5. Diagnoses the continuous insertion of Control Bank D Group 2 rods.
6. Performs a reactor trip in response to the continuous insertion of the Group 2 rods.

List of Critical Steps:

PLACE 1-RBSS, ROD BANK SELECT, in CBC.

(ρ) MOVE Control Bank C at least ten Steps in any one direction, as indicated on the appropriate Step Counter, and **VERIFY** movement of the rods in the proper direction is indicated on the appropriate RPIs.

PLACE 1-RBSS, ROD BANK SELECT, in CBD.

(ρ) MOVE Control Bank D at least ten Steps in any one direction, as indicated on the appropriate Step Counter, and **VERIFY** movement of the rods in the proper direction is indicated on the appropriate RPIs.

After it has been determined that the rod insertion cannot be stopped, **TRIP** the reactor

Alternate Path

After Control bank D is inserted to 210 steps, when the applicant attempts to withdraw Control Bank D to its previous position Control Bank D Group 2 rods insert. Upon diagnosis of the continuous rod insertion, the applicant trips the reactor.

List of Steps that Constitute an Alternate Path

1-AOI-2, “Malfunction of Reactor Control System,” Section 3.2, “Uncontrolled Rod Bank Movement,” IMMEDIATE ACTION STEP, Step 1.

If similar to an event in the Dynamic Scenario, then an explanation of how it is different:

Not Applicable.

Procedure Name/Number and Section pertaining to the task:

1-SI-85-2,”Reactivity Control Systems Movable Control Assemblies (Modes 1 and 2).”

1-AOI-2, “Malfunction of Reactor Control System,” Section 3.2, “Uncontrolled Rod Bank Movement.”

Documentation justifying classification of Engineered Safety Function, when applicable:

Not Applicable

H. Task/KA/Safety Function

RESPOND TO RHR PUMP TRIP PER AOI-14/ 025 AA1.09 Ability to operate and / or monitor the following as they apply to the Loss of Residual Heat Removal System: LPI pump switches, ammeter, discharge pressure gauge, flow meter, and indicators (3.2/3.1) CFR: 41.7 / 45.5 / 45.6 /Safety Function 4P

Task Standard:

The applicant responds to the trip of 1A RHR pump in accordance with AOI-14, “Loss of RHR Shutdown Cooling,” Section 3.5, “RHR Pump 1A-A Trip” and places the 1B RHR pump in service.

List of Critical Steps

CLOSE RHR Hx outlets and bypass.

ALIGN RHR pump 1B-B discharge.

START RHR pump 1B-B.

ADJUST 1-FCV-74-28 to establish RHR flow within the RHR Pump operating flow limits in SOI-74.01 Appendix A.

ALIGN RHR Hx bypass flow.

ALIGN RHR pump 1B-B to CVCS.

List of Steps that Constitute an Alternate Path

Not Applicable

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Not applicable.

Procedure Name/Number and Section pertaining to the task.

SOI-74.01, “Residual Heat Removal System.”

AOI-14 “Loss Of RHR Shutdown Cooling.”

Documentation justifying classification of Engineered Safety Function, when applicable:

Not applicable.

I. Task/KA/Safety Function

BYPASSING 1-PCV-62-81, CVCS LETDOWN HX PRESS CNTL, FOR LOCAL CONTROL /004 A1.11 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the cvcs controls including: Letdown and Charging Flows (3.0/ 3.0) CFR 41.5/45.5 /Safety Function 2

Task Standard:

Applicant performs SOI-62.01, "CVCS - Charging and Letdown," Section 8.15, "Bypass 1-PCV-62-81, CVCS LETDOWN HX PRESS CNTL, for Local Control," and stabilizes pressure.

List of Critical Steps

THROTTLE CLOSED 1-ISV-62-673, CVCS LETDOWN HEADER ISOLATION [A5U/737] until pressure rise indicated in MCR or Aux Cntl Rm

THROTTLE OPEN 1-BYV-62-672, CVCS LETDOWN PCV-62-81 BYPASS [A5U/737] while CLOSING 1-ISV-62-673, CVCS LETDOWN HEADER ISOLATION.

List of Steps that Constitute an Alternate Path

Not applicable.

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Not applicable

Procedure Name/Number and Section pertaining to the task.

SOI-62.01, "CVCS - Charging and Letdown."

Documentation justifying classification of Engineered Safety Function, when applicable:

Not applicable.

J. Task/KA/Safety Function

LOCAL RESTART OF C&SS AIR COMPRESSORS / 065 AK3.08 Actions contained in EOP for loss of instrument air (3.7/3.9) (CFR 41.5,41.10 / 45.6 / 45.13) / Safety Function 8

Task Standard:

The applicant has aligned and started “A” and “B” Air Compressors using AOI-10, “Loss of Control Air,” Attachment 1, “Local Restart of C&SS Air Compressors.” Control Air (Non-Essential) pressure has been re-established.

List of Critical Steps

RESET high oil temp switches at each air compressor (0-TS-32-40, -35, and -30).

RESET Common Alarm using 0-HS-32-25B, COMPRESSOR A, B, C RESET [0-L-240, yellow PB].

PLACE the following C&SS Compressors to HAND [0-L-240]:

START Compressor A by pushing 0-HS-32-25E.

IF Compressor A does **NOT** Auto load, **THEN PLACE** 0-HS-32-43A and -43B to ON (Local 0-JB-291-226).

IF Compressor A does **NOT** load from local panel, **THEN**:

a. **CLOSE** 0-ISV-32-578, STATION AIR COMPR A UNLOADING HDR ISOL.

b. **VENT** 0-TV-32-579, STATION AIR COMPR A UNLOADING HDR TEST

START Compressor B by pushing, 0-HS-32-26B.

List of Steps that Constitute an Alternate Path

IF Compressor A does **NOT** Auto load, **THEN PLACE** 0-HS-32-43A and -43B to ON (Local 0-JB-291-226).

IF Compressor A does **NOT** load from local panel, **THEN**:

a. **CLOSE** 0-ISV-32-578, STATION AIR COMPR A UNLOADING HDR ISOL.

b. **VENT** 0-TV-32-579, STATION AIR COMPR A UNLOADING HDR TEST

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Not applicable

Procedure Name/Number and Section pertaining to the task.

1-AOI-10 “Loss of Control Air.”

Documentation justifying classification of Engineered Safety Function, when applicable:

Not applicable.

K. Task/KA/Safety Function

TRANSFER 250V DC TURB BLDG DIST BD #1 FROM NORMAL TO ALTERNATE/ 063 A4.02 Ability to manually operate and/or monitor in the control room: Major breakers and control power fuses (2.8 / 2.9) CFR 41.7/45.5 to 45.8/ Safety Function 6.

Task Standard:

The applicant transfers the 250V DC Turbine Building Distribution Board #1 from its Normal to Alternate supply per SOI-239.01, “250V Battery Board 1,” Section 8.7.1, “Transfer from Normal to Alternate.”

List of Critical Steps

PLACE AUTO/MANUAL SUPPLY XFER SWITCH CS-101, to the MAN position.

CLOSE and **HOLD** ALT SUPPLY FROM 250V BATTERY BD 2, control switch until transfer is complete.

PLACE NORM SUPPLY FROM 250V BATTERY BD 1, control switch in the TRIP position.

List of Steps that Constitute an Alternate Path

Not Applicable

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Not applicable.

Procedure Name/Number and Section pertaining to the task.

SOI-239.01, “250V Battery Board 1.”

Documentation justifying classification of Engineered Safety Function, when applicable:

Not applicable.

Instant Senior Reactor Operator

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

Facility: **Watts Bar** Date of Examination: **October 2013**

Exam Level: RO ☐ **SRO-I** ☒ SRO-U ☐ Operating Test Number: **302**

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
A. Aux Feedwater LCV to Bypass Reg Transfer During Plant Startup. 059 A4.08 3.0/2.9 CFR 41.7/45.5 to 45.8	A,L,N	4S
B Perform ES-1.3, "Transfer to Containment Sump." EA1.11 4.2/4.2 CFR 41.7/45.5 / 45.6	A, EN, M	3
C. Return N43 Power Range To Service. 015 A4.02 3.9/3.9 CFR 41.7 / 45.5 to 45.8	M	7
D. Perform a Manual Makeup to the VCT. 004 A4.12 3.8/3.3 CFR 41.7 / 45.5 to 45.8	A, M	2
E. Transfer 1A RCP Board from Alternate to Normal. 062 A4.01 3.3/3.1 CFR 41.4/45.5 to 45.8	D	6
F. Align 1B-B CCS Pump to 1B Supply Header. 008 A4.01 3.3/3.1 CFR: 41.7 / 45.5	M	8
G. Complete 1-SI-85-2, Reactivity Control Systems Movable Control Assemblies (Modes 1 and 2). 001 A4.03 4.0/3.7 CFR 41.7/45.5 to 45.8	A, M	1
H. N/A		
In-Plant Systems@ **(3 for RO)**; (3 for SRO-I); (3 or 2 for SRO-U)		
I. Bypassing 1-PCV-62-81, CVCS LETDOWN HX PRESS CNTL, For Local Control 004 A1.11 3.0/ 3.0 CFR 41.5/45.5	D,E,R	2
J. Local Restart of C&SS Air Compressors. 065 AK3.08 3.7/3.9 CFR 41.5,41.10 / 45.6 / 45.13	A,D,E	8
K. Transfer 250v DC TURB BLDG DIST BD #1 from Normal to Alternate. 063 A4.02 2.8/2.9 CFR 41.7	D	6

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

*Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥ 1
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Summary

A. Task/KA/Safety Function:

TRANSFER FROM AUX FEEDWATER LCV TO BYPASS REG VALVE DURING STARTUP / 059 A4.08 Ability to manually operate and/or monitor in the control room: Feed regulating valve controller (3.0/2.9) CFR: 41.7/45.5 to 45.8/ Safety Function 4S

Task Standard:

The applicant:

1.) Performs the actions required to transfer feedwater supply from 1-1-LIC-3-156A, SG 2 SUPPLY FRM PMP A-A to 1-LIC-3-103A, SG 4 MFW BYPASS REG CONTROL.

2.) Diagnoses the failure of 1-LCV-3-156A, SG 2 SUPPLY FRM PMP A-A OPEN and places 1-HS-3-118AAFW PMP A-A in STOP, PULL-TO-LOCK to terminate the overfill of SG 2.

Critical Steps:

PLACE SG 2 Bypass Reg Valve in MANUAL **AND SLOWLY OPEN** valve

ENSURE 1-LIC-3-156A, SG 2 SUPPLY FRM PMP A-A closes as required to maintain SG 2 level on program.

Applicant locates 1-HS-3-118A, A-A MD AFWP, and rotates the handswitch to the LEFT to the STOP position. Applicant may pull the handswitch out to the STOP, PULL-TO-LOCK position.

Alternate Path:

During transfer from Auxiliary Feedwater to Main Feedwater level control, 1-LCV-3-156, SG 2 SUPPLY FRM PMP A-A fails OPEN, requiring the 1A-A MD AFW Pump to be stopped from the MCR.

List of Steps that Constitute an Alternate Path

Applicant locates 1-HS-3-118A, A-A MD AFWP, and rotates the handswitch to the LEFT to the STOP position. Applicant may pull the handswitch out to the STOP, PULL-TO-LOCK position.

If similar to an event in the Dynamic Scenario, then an explanation of how it is different. Not applicable

The applicant will perform actions of the following procedures:

SOI-3.02, “Auxiliary Feedwater System."

Documentation justifying classification of Engineered Safety Function, when applicable:

Not Applicable

B. Task/KA/Safety Function

ALIGN ECCS PUMPS BY PERFORMING ES-1.3, “TRANSFER TO CONTAINMENT SUMP.” / EA1.11 Ability to operate and monitor the following as they apply to a Large Break LOCA: Long-term core cooling (4.2/4.2) CFR 41.7 / 45.5 / 45.6 / Safety Function 3.

Task Standard:

Applicant performs aligns the ECCS pumps for containment sump recirculation using ES-1.3, “Transfer to Containment Sump.”

List of Critical Steps

ENSURE cntmt sump valves 1-FCV-63-72 and 1-FCV-63-73 **OPEN.**

IF ONE cntmt sump valve can **NOT** be fully opened, **THEN STOP** and **PULL TO LOCK** RHR pump on the associated train.

ISOLATE SI pump miniflow.

ISOLATE RHR crossties.

ALIGN charging pump and SI pump supply from RHR.

ISOLATE charging pump suction from RWST.

ISOLATE SI pump suction from RWST.

CLOSE 1-FCV-63-1.

Alternate Path:

During performance of ES-1.3, Transfer to Containment Sump,” the applicant will be unable to fully open 1-FCV-63-73, requiring the 1B-B RHR Pump to be placed in STOP, PULL-TO-LOCK.

List of Steps that Constitute an Alternate Path

ENSURE cntmt sump valves 1-FCV-63-72 and 1-FCV-63-73 **OPEN.**

IF ONE cntmt sump valve can **NOT** be fully opened, **THEN STOP** and **PULL TO LOCK** RHR pump on the associated train.

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Scenario contains a loss of recirculation sump due to the failure of both RHR pumps, and an immediate transition from ES-1.3, “Transfer to Containment Sump,” Step 1 RNO to 1-ECA-1.1, Loss of RHR Sump Recirculation.”

Procedure Name/Number and Section pertaining to the task.

ES-1.3, “Transfer to Containment Sump.”

Documentation justifying classification of Engineered Safety Function, when applicable:

Task is associated with ECCS alignment to establish long term core cooling.

C. Task/KA/Safety Function

RETURN N43 POWER RANGE TO SERVICE / 015 A4.02 Ability to manually operate and/or monitor in the control room: NIS indicators (3.9/3.9) CFR 41.7 / 45.5 to 45.8/ Safety Function 7

Task Standard:

The applicant :

1.) Returns the following switches from the N43 position to the NORMAL.

a. DETECTOR CURRENT COMPARATOR switch for UPPER SECTION

b. DETECTOR CURRENT COMPARATOR switch for LOWER SECTION.

c. COMPARATOR CHANNEL DEFEAT

2.) Returns the following switches from the N43 position to the OPERATE position:

a. ROD STOP BYPASS,

b. POWER MISMATCH BYPASS.

3.) Performs actions of SOI-98.01, "DISTRIBUTED CONTROL SYSTEM," to RESTORE 1LPY0920412R from BYPASS to NORMAL.

List of Critical Steps

1.) Returns the following switches from the N43 position to the NORMAL.

a. DETECTOR CURRENT COMPARATOR switch for UPPER SECTION

b. DETECTOR CURRENT COMPARATOR switch for LOWER SECTION.

c. COMPARATOR CHANNEL DEFEAT

2.) Returns the following switches from the N43 position to the OPERATE position:

a. ROD STOP BYPASS,

b. POWER MISMATCH BYPASS.

3.) Performs actions of SOI-98.01, "DISTRIBUTED CONTROL SYSTEM," to RESTORE 1LPY0920412R from BYPASS to NORMAL.

List of Steps that Constitute an Alternate Path

Not Applicable.

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Scenario removes a different power range channel (N41) from service. And does not encompass performance of SOI-98.01, "Distributed Control System."

Procedure Name/Number and Section pertaining to the task.

1-AOI-4, "Nuclear Instrumentation Malfunctions."

SOI-98.01, "Distributed Control System."

Documentation justifying classification of Engineered Safety Function, when applicable:

Not applicable

D. Task/KA/Safety Function

ESTABLISH MANUAL MAKEUP TO THE VCT / 004 A4.12 Ability to manually operate and/or monitor in the control room: Boration/dilution batch control (3.8/3.3) CFR 41/7 / 45.5 to 45.8/ Safety Function 2.

Task Standard:

The applicant

1.) Aligns the makeup control system to perform a MANUAL makeup of 97 gallons, and raises VCT level from 35% to approximately 40%.

2.) After the controls fail, terminates the boration by placing 1-HS-62-230A BA PMP A and 1-HS-62-232A BA PMP B in the STOP position per AOI-3, “Malfunction of Reactor Makeup Control.”

List of Critical Steps

TURN 1-HS-62-140A, VCT MAKEUP CONTROL, to START.

OPEN 1-FCV-62-128, MAKEUP TO VCT INLET, **OR** 1-FCV-62-144, MAKEUP TO VCT OUTLET.

STOP boric acid transfer pumps.

Alternate Path:

When manual makeup is begun, 1-FCV-62-140, BA TO BLENDER and 1-FCV-62-128, MAKEUP TO VCT INLET or 1-FCV-62-144, MAKEUP TO VCT OUTLET fail open and cannot be closed. 1-FC-62-139, BA TO BLENDER FCV-62-140 CONTROL fails, causing boric acid flow rate to go to maximum. Requires stopping of the boric acid transfer pumps to terminate the boration.

List of Steps that Constitute an Alternate Path

STOP boric acid transfer pumps.

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Not Applicable.

Procedure Name/Number and Section pertaining to the task.

SOI-62.02, “Boron Concentration Control.”

AOI-3, “Malfunction of Reactor Makeup Control.”

Documentation justifying classification of Engineered Safety Function, when applicable:

Not applicable

E. Task/KA/Safety Function:

TRANSFER 6.9 KV RCP BOARD 1A FROM ALTERNATE TO NORMAL / 062 A4.01 Ability to manually operate and/or monitor in the control room: All breakers (including available switchyard) (3.3/3.1) CFR 41.4/45.5 to 45.8 / Safety Function 6.

Task Standard:

The applicant performs actions in accordance with SOI-202.1 Section 8.1 to transfer 1A RCP Board from its ALTERNATE to NORMAL power supply and restore the RCP control switches to a normal alignment

List of Critical Steps:

ENSURE 1-HS-68-8BA, RCP 1 ALTERNATE BKR & XFER SELECTOR [1-M-5], PUSHED IN to place ACB 2522 auto transfer in MANUAL**.**

PLACE AND HOLD 1-HS-68-8AA, RCP 1 NORMAL BKR & LIFT PMP, in START**, AND PLACE 1**-HS-68-8BA, RCP 1 ALTERNATE BKR & XFER SELECTOR, in STOP**.**

Alternate Path:

Not applicable

List of Steps that Constitute an Alternate Path

Not applicable

If similar to an event in the Dynamic Scenario, then an explanation of how it is different:

Not Applicable

Procedure Name/Number and Section pertaining to the task:

SOI-202.1, “6.9KV Reactor Coolant Pump Board 1A.”

Documentation justifying classification of Engineered Safety Function, when applicable:

Not Applicable

F. Task/KA/Safety Function

ALIGN 1B-B CCS PUMP TO 1B SUPPLY HEADER/008 A4.01 Ability to manually operate and/or monitor in the control room: CCW indications and controls (3.3/3.1)(CFR: 41.7 / 45.5)/Safety Function 8

Task Standard:

The applicant:

1.) Performs valve manipulations to align CCS Pump 1B-B to the 1B Supply header.

2.) Performs actions required to start CCS Pump 1B-B.

List of Critical Steps

Applicant locates.1-HS-70-38A, CCS PMP 1B-B, and rotates the handswitch to the STOP position, then pulls the handswitch out to the PULL-TO-LOCK position.

Applicant contacts the Console Operator and directs the Console Operator (as an AUO) to place the listed breakers to “ON.”

The applicant locates 1-HS-70-34A, CCS PMPS 1A & 1B SUCT XTIE and rotates the handswitch to the LEFT to the CLOSE position.

Applicant locates 1-HS-70-34A, CCS PMPS 1A & 1B SUCT XTIE and rotates the handswitch to the LEFT to the CLOSE position.

Applicant locates 1-HS-70-26A, CCS PMP 1B TO C-S DISCH XTIE, and rotates the handswitch to the RIGHT to the OPEN position.

Applicant locates 1-HS-70-27A, CCS PMP 1B TO C-S DISCH XTIE, and rotates the handswitch to the RIGHT to the OPEN position.

Applicant locates 1-HS-70-64A, CCS PMP 1B TO C-S SUCT XTIE, and rotates the handswitch to the RIGHT to the OPEN position.

Applicant locates 1-HS-70-74A, CCS PMP 1B TO C-S SUCT XTIE, and rotates the handswitch to the RIGHT to the OPEN position

Applicant contacts the Console Operator as an AUO and directs the Console Operator (as an AUO) to place the listed breakers to “OFF.

Applicant locates 1-HS-70-38A, CCS PMP 1B-B, and rotates the handswitch to the START position.

List of Steps that Constitute an Alternate Path

Not Applicable

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Similar to Scenario 4, Event 1, which alternates 1B-B and 1A-A CCS pumps but the pumps remain aligned to CCS Header A. This JPM requires operation of multiple valves to support alignment.

Procedure Name/Number and Section pertaining to the task.

SOI-70.01, “Component Cooling Water (CCS) System,” Section 8.1, “Align Pump 1B-B to Supply Header 1B.”

Documentation justifying classification of Engineered Safety Function, when applicable:

Not Applicable

G. Task/KA/Safety Function:

COMPLETE 1-SI-85-2, REACTIVITY CONTROL SYSTEMS MOVABLE CONTROL ASSEMBLIES (MODES 1 AND 2)/ 001 A4.03 Ability to manually operate and/or monitor in the control room: CRDS mode control (4.0 / 3.7) CFR 41.7/45.5 to 45.8 / Safety Function 1

Task Standard:

The applicant:

1. Selects the CBC position on 1-RBSS, ROD BANK SELECT.
2. Inserts, then withdraws Control Bank C rods 10 steps.
3. Selects the CBD position on 1-RBSS, ROD BANK SELECT.
4. Inserts, then withdraws Control Bank D rods 10 steps.
5. Diagnoses the continuous insertion of Control Bank D Group 2 rods.
6. Performs a reactor trip in response to the continuous insertion of the Group 2 rods.

List of Critical Steps:

PLACE 1-RBSS, ROD BANK SELECT, in CBC.

(ρ) MOVE Control Bank C at least ten Steps in any one direction, as indicated on the appropriate Step Counter, and **VERIFY** movement of the rods in the proper direction is indicated on the appropriate RPIs.

PLACE 1-RBSS, ROD BANK SELECT, in CBD.

(ρ) MOVE Control Bank D at least ten Steps in any one direction, as indicated on the appropriate Step Counter, and **VERIFY** movement of the rods in the proper direction is indicated on the appropriate RPIs.

After it has been determined that the rod insertion cannot be stopped, **TRIP** the reactor

Alternate Path

After Control bank D is inserted to 210 steps, when the applicant attempts to withdraw Control Bank D to its previous position Control Bank D Group 2 rods insert. Upon diagnosis of the continuous rod insertion, the applicant trips the reactor.

List of Steps that Constitute an Alternate Path

1-AOI-2, “Malfunction of Reactor Control System,” Section 3.2, “Uncontrolled Rod Bank Movement,” IMMEDIATE ACTION STEP, Step 1.

If similar to an event in the Dynamic Scenario, then an explanation of how it is different:

Not Applicable.

Procedure Name/Number and Section pertaining to the task:

1-SI-85-2,”Reactivity Control Systems Movable Control Assemblies (Modes 1 and 2).”

1-AOI-2, “Malfunction of Reactor Control System,” Section 3.2, “Uncontrolled Rod Bank Movement.”

Documentation justifying classification of Engineered Safety Function, when applicable:

Not Applicable

H. Not applicable.

I. Task/KA/Safety Function

BYPASSING 1-PCV-62-81, CVCS LETDOWN HX PRESS CNTL, FOR LOCAL CONTROL /004 A1.11 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the cvcs controls including: Letdown and Charging Flows (3.0/ 3.0) CFR 41.5/45.5 /Safety Function 2

Task Standard:

Applicant performs SOI-62.01, "CVCS - Charging and Letdown," Section 8.15, "Bypass 1-PCV-62-81, CVCS LETDOWN HX PRESS CNTL, for Local Control," and stabilizes pressure.

List of Critical Steps

THROTTLE CLOSED 1-ISV-62-673, CVCS LETDOWN HEADER ISOLATION [A5U/737] until pressure rise indicated in MCR or Aux Cntl Rm

THROTTLE OPEN 1-BYV-62-672, CVCS LETDOWN PCV-62-81 BYPASS [A5U/737] while CLOSING 1-ISV-62-673, CVCS LETDOWN HEADER ISOLATION.

List of Steps that Constitute an Alternate Path

Not applicable.

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Not applicable

Procedure Name/Number and Section pertaining to the task.

SOI-62.01, "CVCS - Charging and Letdown."

Documentation justifying classification of Engineered Safety Function, when applicable:

Not applicable.

J. Task/KA/Safety Function

LOCAL RESTART OF C&SS AIR COMPRESSORS / 065 AK3.08 Actions contained in EOP for loss of instrument air (3.7/3.9) (CFR 41.5,41.10 / 45.6 / 45.13) / Safety Function 8

Task Standard:

The applicant has aligned and started "A" and "B" Air Compressors using AOI-10, "Loss of Control Air," Attachment 1, "Local Restart of C&SS Air Compressors." Control Air (Non-Essential) pressure has been re-established.

List of Critical Steps

RESET high oil temp switches at each air compressor (0-TS-32-40, -35, and -30).

RESET Common Alarm using 0-HS-32-25B, COMPRESSOR A, B, C RESET [0-L-240, yellow PB].

PLACE the following C&SS Compressors to HAND [0-L-240]:

START Compressor A by pushing 0-HS-32-25E.

IF Compressor A does **NOT** Auto load, **THEN PLACE** 0-HS-32-43A and -43B to ON (Local 0-JB-291-226).

IF Compressor A does **NOT** load from local panel, **THEN**:

a. **CLOSE** 0-ISV-32-578, STATION AIR COMPR A UNLOADING HDR ISOL.

b. **VENT** 0-TV-32-579, STATION AIR COMPR A UNLOADING HDR TEST

START Compressor B by pushing, 0-HS-32-26B.

List of Steps that Constitute an Alternate Path

IF Compressor A does **NOT** Auto load, **THEN PLACE** 0-HS-32-43A and -43B to ON (Local 0-JB-291-226).

IF Compressor A does **NOT** load from local panel, **THEN**:

a. **CLOSE** 0-ISV-32-578, STATION AIR COMPR A UNLOADING HDR ISOL.

b. **VENT** 0-TV-32-579, STATION AIR COMPR A UNLOADING HDR TEST

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Not applicable

Procedure Name/Number and Section pertaining to the task.

1-AOI-10 "Loss of Control Air."

Documentation justifying classification of Engineered Safety Function, when applicable:

Not applicable.

K. Task/KA/Safety Function

TRANSFER 250V DC TURB BLDG DIST BD #1 FROM NORMAL TO ALTERNATE/ 063 A4.02 Ability to manually operate and/or monitor in the control room: Major breakers and control power fuses (2.8 / 2.9) CFR 41.7/45.5 to 45.8/ Safety Function 6.

Task Standard:

The applicant transfers the 250V DC Turbine Building Distribution Board #1 from its Normal to Alternate supply per SOI-239.01, “250V Battery Board 1,” Section 8.7.1, “Transfer from Normal to Alternate.”

List of Critical Steps

PLACE AUTO/MANUAL SUPPLY XFER SWITCH CS-101, to the MAN position.

CLOSE and **HOLD** ALT SUPPLY FROM 250V BATTERY BD 2, control switch until transfer is complete.

PLACE NORM SUPPLY FROM 250V BATTERY BD 1, control switch in the TRIP position.

List of Steps that Constitute an Alternate Path

Not Applicable

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Not applicable.

Procedure Name/Number and Section pertaining to the task.

SOI-239.01, “250V Battery Board 1.”

Documentation justifying classification of Engineered Safety Function, when applicable:

Not applicable.

Upgrade Senior Reactor Operator

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

Facility: **Watts Bar** Date of Examination: **October 2013**

Exam Level: RO ☐ SRO-I ☐ **SRO-U** ☒ Operating Test Number: **302**

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
A. Aux Feedwater LCV to Bypass Reg Transfer During Plant Startup. 059 A4.08 3.0/2.9 CFR 41.7/45.5 to 45.8	A,L,N	4S
B Perform ES-1.3, "Transfer to Containment Sump." EA1.11 4.2/4.2 CFR 41.7/45.5 / 45.6	A, EN, M	3
C. Not Applicable		
D. Not Applicable		
E. Not Applicable		
F. Not Applicable		
G. Not Applicable		
H. Not Applicable		
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
I. Bypassing 1-PCV-62-81, CVCS LETDOWN HX PRESS CNTL, For Local Control 004 A1.11 3.0/ 3.0 CFR 41.5/45.5	D,E,R	2
J. Local Restart of C&SS Air Compressors. 065 AK3.08 3.7/3.9 CFR 41.5,41.10 / 45.6 / 45.13	A,D,E	8
K. Transfer 250v DC TURB BLDG DIST BD #1 from Normal to Alternate. 063 A4.02 2.8/2.9 CFR 41.7	D	6

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

*Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥ 1
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Summary

A. Task/KA/Safety Function:

TRANSFER FROM AUX FEEDWATER LCV TO BYPASS REG VALVE DURING STARTUP / 059 A4.08 Ability to manually operate and/or monitor in the control room: Feed regulating valve controller (3.0/2.9) CFR: 41.7/45.5 to 45.8/ Safety Function 4S

Task Standard:

The applicant:

1.) Performs the actions required to transfer feedwater supply from 1-1-LIC-3-156A, SG 2 SUPPLY FRM PMP A-A to 1-LIC-3-103A, SG 4 MFW BYPASS REG CONTROL.

2.) Diagnoses the failure of 1-LCV-3-156A, SG 2 SUPPLY FRM PMP A-A OPEN and places 1-HS-3-118AAFW PMP A-A in STOP, PULL-TO-LOCK to terminate the overfill of SG 2.

Critical Steps:

PLACE SG 2 Bypass Reg Valve in MANUAL **AND SLOWLY OPEN** valve

ENSURE 1-LIC-3-156A, SG 2 SUPPLY FRM PMP A-A closes as required to maintain SG 2 level on program.

Applicant locates 1-HS-3-118A, A-A MD AFWP, and rotates the handswitch to the LEFT to the STOP position. Applicant may pull the handswitch out to the STOP, PULL-TO-LOCK position.

Alternate Path:

During transfer from Auxiliary Feedwater to Main Feedwater level control, 1-LCV-3-156, SG 2 SUPPLY FRM PMP A-A fails OPEN, requiring the 1A-A MD AFW Pump to be stopped from the MCR.

List of Steps that Constitute an Alternate Path

Applicant locates 1-HS-3-118A, A-A MD AFWP, and rotates the handswitch to the LEFT to the STOP position. Applicant may pull the handswitch out to the STOP, PULL-TO-LOCK position.

If similar to an event in the Dynamic Scenario, then an explanation of how it is different. Not applicable

The applicant will perform actions of the following procedures:

SOI-3.02, “Auxiliary Feedwater System.”

Documentation justifying classification of Engineered Safety Function, when applicable:

Not Applicable

B. Task/KA/Safety Function

ALIGN ECCS PUMPS BY PERFORMING ES-1.3, “TRANSFER TO CONTAINMENT SUMP.” / EA1.11 Ability to operate and monitor the following as they apply to a Large Break LOCA: Long-term core cooling (4.2/4.2) CFR 41.7 / 45.5 / 45.6 / Safety Function 3.

Task Standard:

Applicant performs aligns the ECCS pumps for containment sump recirculation using ES-1.3, “Transfer to Containment Sump.”

List of Critical Steps

ENSURE cntmt sump valves 1-FCV-63-72 and 1-FCV-63-73 **OPEN.**

IF ONE cntmt sump valve can **NOT** be fully opened, **THEN STOP** and **PULL TO LOCK** RHR pump on the associated train.

ISOLATE SI pump miniflow.

ISOLATE RHR crossties.

ALIGN charging pump and SI pump supply from RHR.

ISOLATE charging pump suction from RWST.

ISOLATE SI pump suction from RWST.

CLOSE 1-FCV-63-1.

Alternate Path:

During performance of ES-1.3, Transfer to Containment Sump,” the applicant will be unable to fully open 1-FCV-63-73, requiring the 1B-B RHR Pump to be placed in STOP, PULL-TO-LOCK.

List of Steps that Constitute an Alternate Path

ENSURE cntmt sump valves 1-FCV-63-72 and 1-FCV-63-73 **OPEN.**

IF ONE cntmt sump valve can **NOT** be fully opened, **THEN STOP** and **PULL TO LOCK** RHR pump on the associated train.

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Scenario contains a loss of recirculation sump due to the failure of both RHR pumps, and an immediate transition from ES-1.3, “Transfer to Containment Sump,” Step 1 RNO to 1-ECA-1.1, Loss of RHR Sump Recirculation.”

Procedure Name/Number and Section pertaining to the task.

ES-1.3, “Transfer to Containment Sump.”

Documentation justifying classification of Engineered Safety Function, when applicable:

Task is associated with ECCS alignment to establish long term core cooling.

C. Not Applicable

D. Not Applicable

E. Not Applicable

F. Not Applicable

G. Not Applicable

H. Not Applicable

I. Task/KA/Safety Function

BYPASSING 1-PCV-62-81, CVCS LETDOWN HX PRESS CNTL, FOR LOCAL CONTROL /004 A1.11 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the cvcs controls including: Letdown and Charging Flows (3.0/ 3.0) CFR 41.5/45.5 /Safety Function 2

Task Standard:

Applicant performs SOI-62.01, “CVCS - Charging and Letdown,” Section 8.15, “Bypass 1-PCV-62-81, CVCS LETDOWN HX PRESS CNTL, for Local Control,” and stabilizes pressure.

List of Critical Steps

THROTTLE CLOSED 1-ISV-62-673, CVCS LETDOWN HEADER ISOLATION [A5U/737] until pressure rise indicated in MCR or Aux Cntl Rm

THROTTLE OPEN 1-BYV-62-672, CVCS LETDOWN PCV-62-81 BYPASS [A5U/737] while CLOSING 1-ISV-62-673, CVCS LETDOWN HEADER ISOLATION.

List of Steps that Constitute an Alternate Path

Not applicable.

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Not applicable

Procedure Name/Number and Section pertaining to the task.

SOI-62.01, “CVCS - Charging and Letdown.”

J. Task/KA/Safety Function

LOCAL RESTART OF C&SS AIR COMPRESSORS / 065 AK3.08 Actions contained in EOP for loss of instrument air (3.7/3.9) (CFR 41.5,41.10 / 45.6 / 45.13) / Safety Function 8

Task Standard:

The applicant has aligned and started “A” and “B” Air Compressors using AOI-10, “Loss of Control Air,” Attachment 1, “Local Restart of C&SS Air Compressors.” Control Air (Non-Essential) pressure has been re-established.

List of Critical Steps

RESET high oil temp switches at each air compressor (0-TS-32-40, -35, and -30).

RESET Common Alarm using 0-HS-32-25B, COMPRESSOR A, B, C RESET [0-L-240, yellow PB].

PLACE the following C&SS Compressors to HAND [0-L-240]:

START Compressor A by pushing 0-HS-32-25E.

IF Compressor A does **NOT** Auto load, **THEN PLACE** 0-HS-32-43A and -43B to ON (Local 0-JB-291-226).

IF Compressor A does **NOT** load from local panel, **THEN**:

a. **CLOSE** 0-ISV-32-578, STATION AIR COMPR A UNLOADING HDR ISOL.

b. **VENT** 0-TV-32-579, STATION AIR COMPR A UNLOADING HDR TEST

START Compressor B by pushing, 0-HS-32-26B.

List of Steps that Constitute an Alternate Path

IF Compressor A does **NOT** Auto load, **THEN PLACE** 0-HS-32-43A and -43B to ON (Local 0-JB-291-226).

IF Compressor A does **NOT** load from local panel, **THEN**:

a. **CLOSE** 0-ISV-32-578, STATION AIR COMPR A UNLOADING HDR ISOL.

b. **VENT** 0-TV-32-579, STATION AIR COMPR A UNLOADING HDR TEST

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Not applicable

Procedure Name/Number and Section pertaining to the task.

1-AOI-10 “Loss of Control Air.”

K. Task/KA/Safety Function

TRANSFER 250V DC TURB BLDG DIST BD #1 FROM NORMAL TO ALTERNATE/ 063 A4.02 Ability to manually operate and/or monitor in the control room: Major breakers and control power fuses (2.8 / 2.9) CFR 41.7/45.5 to 45.8/ Safety Function 6.

Task Standard:

The applicant transfers the 250V DC Turbine Building Distribution Board #1 from its Normal to Alternate supply per SOI-239.01, “250V Battery Board 1,” Section 8.7.1, “Transfer from Normal to Alternate.”

List of Critical Steps

PLACE AUTO/MANUAL SUPPLY XFER SWITCH CS-101, to the MAN position.

CLOSE and **HOLD** ALT SUPPLY FROM 250V BATTERY BD 2, control switch until transfer is complete.

PLACE NORM SUPPLY FROM 250V BATTERY BD 1, control switch in the TRIP position.

List of Steps that Constitute an Alternate Path

Not Applicable

If similar to an event in the Dynamic Scenario, then an explanation of how it is different.

Not applicable.

Procedure Name/Number and Section pertaining to the task.

SOI-239.01, “250V Battery Board 1.”

Documentation justifying classification of Engineered Safety Function, when applicable:

Not applicable.

Facility: WATTS BAR Date of Exam: OCTOBER 2013

Tier	Group	RO K/A Category Points											SRO-Only Points		
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G* / Total	A2	G*	Total
1. Emergency & Abnormal Plant Evolutions	1	3	3	3	N/A			3	3	N/A		3 / 18	3	3	6
	2	1	1	2				2	2			1 / 9	2	2	4
	Tier Totals	4	4	5				5	5			4 / 27	5	5	10
2. Plant Systems	1	3	2	3	3	2	2	3	2	2	3	3 / 28	3	2	5
	2	1	1	1	1	1	1	1	1	1	1	0 / 10	1 | 1	1	3
	Tier Totals	4	3	4	4	3	3	4	3	3	4	3 / 38	5	3	8
3. Generic Knowledge and Abilities Categories		1			2			3			4	10	1	2	3	4	7
		3			2			2			3		1	2	2	2	

1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ±1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to section D.1.b of ES-401 for guidance regarding the elimination of inappropriate K/A statements.
4. Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.
5. Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.
6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
7. *The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system. Refer to section D.1.b of ES-401 for the applicable KAs.
8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IRs) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above; if fuel handling equipment is sampled in other than Category A2 or G* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note # 1 does not apply). Use duplicate pages for RO and SRO-only exams.
9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43..

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
007EK1.02	Reactor Trip - Stabilization - Recovery / 1	3.4	3.8	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Shutdown margin
008AK2.01	Pressurizer Vapor Space Accident / 3	2.7	2.7	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Valves
009EK1.02	Small Break LOCA / 3	3.5	4.2	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Use of steam tables
015AK2.08	RCP Malfunctions / 4	2.6	2.6	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	CCWS
022AK1.01	Loss of Rx Coolant Makeup / 2	2.8	3.2	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Consequences of thermal shock to RCP seals
026AA2.03	Loss of Component Cooling Water / 8	2.6	2.9	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	The valve lineups necessary to restart the CCWS while bypassing the portion of the system causing the abnormal condition
029EK2.06	ATWS / 1	2.9	3.1	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Breakers, relays, and disconnects.
040AA1.19	Steam Line Rupture - Excessive Heat Transfer / 4	3.8	3.9	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Postaccident monitoring panel indicators
054AK3.04	Loss of Main Feedwater / 4	4.4	4.6	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Actions contained in EOPs for loss of MFW
055EA2.03	Station Blackout / 6	3.9	4.7	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Actions necessary to restore power
056AG2.1.7	Loss of Off-site Power / 6	4.4	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior and instrument interpretation.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
058AK3.01	Loss of DC Power / 6	3.4	3.7	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Use of dc control power by D/Gs
062AA1.01	Loss of Nuclear Svc Water / 4	3.1	3.1	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Nuclear service water temperature indications
065AK3.03	Loss of Instrument Air / 8	2.9	3.4	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Knowing effects on plant operation of isolating certain equipment from instrument air
077AG2.4.45	Generator Voltage and Electric Grid Disturbances / 6	4.1	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to prioritize and interpret the significance of each annunciator or alarm.
WE04EA1.3	LOCA Outside Containment / 3	3.8	4.0	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Desired operating results during abnormal and emergency situations.
WE05EA2.2	Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	3.7	4.3	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.
we11EG2.1.2	Loss of Emergency Coolant Recirc. / 4	3.9	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to interpret reference materials such as graphs, monographs and tables which contain performance data.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
001AG2.4.49	Continuous Rod Withdrawal / 1	4.6	4.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.
036AA1.04	Fuel Handling Accident / 8	3.1	3.7	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Fuel handling equipment during an incident
037AK3.05	Steam Generator Tube Leak / 3	3.7	4	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Actions contained in procedures for radiation monitoring, RCS water inventory balance, S/G tube failure and plant shutdown
051AA2.02	Loss of Condenser Vacuum / 4	3.9	4.1	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Conditions requiring reactor and/or turbine trip
068AA1.12	Control Room Evac. / 8	4.4	4.4	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Auxiliary shutdown panel controls and indicators
076AK3.06	High Reactor Coolant Activity / 9	3.2	3.8	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Actions contained in EOP for high reactor coolant activity
WE06EK2.2	Degraded Core Cooling / 4	3.8	4.1	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems and relations between the proper operation of these systems to the operation of the facility.
WE08EK1.1	RCS Overcooling - PTS / 4	3.5	3.8	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Components, capacity, and function of emergency systems.
WE09EA2.2	Natural Circ. / 4	3.4	3.8	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
003A4.07	Reactor Coolant Pump	2.6	2.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	RCP seal bypass
003K5.04	Reactor Coolant Pump	3.2	3.5	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Effects of RCP shutdown on secondary parameters, such as steam pressure, steam flow and feed flow
004G2.1.23	Chemical and Volume Control	4.3	4.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to perform specific system and integrated plant procedures during all modes of plant operation.
005A1.07	Residual Heat Removal	2.5	3.1	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Determination of test acceptability by comparison of recorded valve response times with Tech-Spec requirements
005K2.03	Residual Heat Removal	2.7	2.8	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	RCS pressure boundary motor-operated valves
006A3.03	Emergency Core Cooling	4.1	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	ESFAS-operated valves
007K4.01	Pressurizer Relief/Quench Tank	2.6	2.9	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Quench tank cooling
008G2.4.11	Component Cooling Water	4.0	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of abnormal condition procedures.
010A3.01	Pressurizer Pressure Control	3.0	3.2	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	PRT temperature and pressure during PORV testing
012K5.01	Reactor Protection	3.3	3.8	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	DNB
013K6.01	Engineered Safety Features Actuation	2.7	3.1	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Sensors and detectors

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
022A1.02	Containment Cooling	3.6	3.8	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Containment pressure
025A1.03	Ice Condenser	2.5	2.5	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Glycol flow to ice condenser air handling units
025A4.01	Ice Condenser	3.0	2.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	Ice condenser isolation valves
026A2.03	Containment Spray	4.1	4.4	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Failure of ESF
039K3.05	Main and Reheat Steam	3.6	3.7	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	RCS
059K1.04	Main Feedwater	3.4	3.4	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	S/GS water level control system
061K4.04	Auxiliary/Emergency Feedwater	3.1	3.4	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Prevention of AFW runout by limiting AFW flow
061K6.02	Auxiliary/Emergency Feedwater	2.6	2.7	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Pumps
062K4.07	AC Electrical Distribution	2.7	3.1	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	One-line diagram of 4kV to 480V distribution, including sources of normal and alternative power
063K2.01	DC Electrical Distribution	2.9	3.1	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Major DC loads
064A2.05	Emergency Diesel Generator	3.1	3.2	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Loading the ED/G

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
064K1.02	Emergency Diesel Generator	3.1	3.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	D/G cooling water system
073K3.01	Process Radiation Monitoring	3.6	4.2	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Radioactive effluent releases
076G2.1.28	Service Water	4.1	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the purpose and function of major system components and controls.
078A4.01	Instrument Air	3.1	3.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	Pressure gauges
078K3.03	Instrument Air	3.0	3.4	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Cross-tied units
103K1.08	Containment	3.6	3.8	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	SIS, including action of safety injection reset

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
002K1.17	Reactor Coolant	3.5	3.8	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	MT/G
011K2.02	Pressurizer Level Control	3.1	3.2	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	PZR heaters
014K3.02	Rod Position Indication	2.5	2.8	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Plant computer
017A3.01	In-core Temperature Monitor	3.6	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Indications of normal, natural and interrupted circulation of RCS
029K4.02	Containment Purge	2.9	3.1	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Negative pressure in containment
033A1.02	Spent Fuel Pool Cooling	2.8	3.3	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Radiation monitoring systems
035K6.02	Steam Generator	3.1	3.5	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Secondary PORV
045K5.17	Main Turbine Generator	2.5	2.7	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Relationship between moderator temperature coefficient and boron concentration in RCS as T/G load increases
068A2.02	Liquid Radwaste	2.7	2.8	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Lack of tank recirculation prior to release
079A4.01	Station Air	2.7	2.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	Cross-tie valves with IAS

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
G2.1.43	Conduct of operations	4.1	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to use procedures to determine the effects on reactivity of plant changes
G2.1.45	Conduct of operations	4.3	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to identify and interpret diverse indications to validate the response of another indication
G2.1.8	Conduct of operations	3.4	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to coordinate personnel activities outside the control room.
G2.2.1	Equipment Control	4.5	4.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.
G2.2.7	Equipment Control	2.9	3.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the process for conducting special or infrequent tests
G2.3.15	Radiation Control	2.9	3.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of radiation monitoring systems
G2.3.4	Radiation Control	3.2	3.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of radiation exposure limits under normal and emergency conditions
G2.4.20	Emergency Procedures/Plans	3.8	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of operational implications of EOP warnings, cautions and notes.
G2.4.28	Emergency Procedures/Plans	3.2	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of procedures relating to emergency response to sabotage.
G2.4.29	Emergency Procedures/Plans	3.1	4.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the emergency plan.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
008AA2.02	Pressurizer Vapor Space Accident / 3	3.9	4.1	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	PZR spray valve position indicators and acoustic monitors
054AA2.08	Loss of Main Feedwater / 4	2.9	3.3	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Steam flow-feed trend recorder
055EG2.2.36	Station Blackout / 6	3.1	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions of operations
058AA2.01	Loss of DC Power / 6	3.7	4.1	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	That a loss of dc power has occurred; verification that substitute power sources have come on line
077AG2.2.37	Generator Voltage and Electric Grid Disturbances / 6	3.6	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to determine operability and/or availability of safety related equipment
we05EG2.1.2	Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	4.6	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to execute procedure steps.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
028AG2.4.21	Pressurizer Level Malfunction / 2	4.0	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the parameters and logic used to assess the status of safety functions
068AG2.1.7	Control Room Evac. / 8	4.4	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior and instrument interpretation.
076AA2.06	High Reactor Coolant Activity / 9	2.2	2.5	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Response of PZR LCS to changes in the letdown flow rate
WE15EA2.2	Containment Flooding / 5	2.9	3.3	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
004G2.2.12	Chemical and Volume Control	3.7	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of surveillance procedures.
013G2.2.40	Engineered Safety Features Actuation	3.4	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to apply technical specifications for a system.
059A2.05	Main Feedwater	3.1	3.4	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Rupture in MFW suction or discharge line
061A2.06	Auxiliary/Emergency Feedwater	2.7	3.0	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Back leakage of MFW
064A2.09	Emergency Diesel Generator	3.1	3.3	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Synchronization of the ED/G with other electric power supplies

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
001G2.1.31	Control Rod Drive	4.6	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the desired plant lineup.
015A2.04	Nuclear Instrumentation	3.3	3.8	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Effects on axial flux density of control rod alignment and sequencing, xenon production and decay, and boron vs. control rod reactivity changes
034A3.01	Fuel Handling Equipment	2.5	3.1	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Travel limits

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
G2.1.38	Conduct of operations	3.7	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the stations requirements for verbal communication when implamenting procedures
G2.2.21	Equipment Control	2.9	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of pre- and post-maintenance operability requirements.
G2.2.23	Equipment Control	3.1	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to track Technical Specification limiting conditions for operations.
G2.3.14	Radiation Control	3.4	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities
G2.3.6	Radiation Control	2.0	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to aprove release permits
G2.4.18	Emergency Procedures/Plans	3.3	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the specific bases for EOPs.
G2.4.43	Emergency Procedures/Plans	3.2	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of emergency communications systems and techniques.