

| Facility: <u>Fort Calhoun</u> | | Date of Examination: 5/19/2014 |
|---|---------------|--|
| Examination Level: RO | | Revision Number: 0 |
| Administrative Topic (see Note) | Type Code* | Describe activity to be performed |
| <u>A-1</u> Conduct of Operations | R,M | Title: Calculate Shutdown margin KA: 2.1.37 (RO Imp:4.3) |
| <u>A-2</u> Conduct of Operations | R,M | Title: Time to empty EFWST KA 2.1.25 (RO Imp: 3.9) |
| <u>A-3</u> Equipment Control | R,D | Title: Verify Boration Path with Equipment Out of Service KA 2.2.15 (RO Imp: 3.9) |
| <u>A-4</u> Radiation Control | R,M | Title: Read a survey map and apply RWP requirements KA 000000 2.3.7 (RO Imp: 3.5) |
| | | |
| 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) | | |

| Facility: <u>Fort Calhoun</u> | | Date of Examination: 5/19/2014 |
|--|---------------|---|
| Examination Level: SRO | | Revision Number: 0 |
| Administrative Topic (see Note) | Type Code* | Describe activity to be performed |
| <u>A-5</u> Conduct of Operations | R, M | Title: Review SDM calculation KA 2.1.37 (SRO Imp: 4.6) |
| <u>A-6</u> Conduct of Operations | R,D | Title: Determine Shift Staffing per SO-O-1 KA: 2.1.5 (SRO Imp: 3.9) |
| <u>A-7</u> Equipment Control | R, M | Title Determine allowed outage time for failed CS valve KA 2.2.23 (SRO Imp: 4.6) |
| <u>A-8</u> Radiation Control | R, M | Title: Authorize Waste Gas Decay Tank Release KA 2.3.6 (SRO Imp: 3.8) |
| <u>A-9</u> Emergency Procedures/Plan | R,M | Title: Classify EP Event and make PARs KA 2.4.41 (SRO Imp: 4.6) |
| 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) | | |

| Facility: <u>Fort Calhoun</u> | | Date of Examination: 5/19/2014 |
|--|------------|--------------------------------|
| Exam Level: ISRO | | Revision Number.: 0 |
| 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 |
| S-1. Emergency Boration from the Control Room K/A 004000 A4.07 (3.9/3.7) | A,C,D | 1 |
| S-2. Establish Charging Flow via the HPSI Header K/A 006000 A4.08 (34.0/3.8) | C,D | 2 |
| S-3 Reduce RCS Pressure using Auxiliary Spray K/A 010000 A4.01 (3.7/3.5) | A,C,M | 3 |
| S-4. Rotation of Shutdown Cooling Pumps K/A 005000 A4.01 (3.6/3.4) | C, N, L, A | 4P |
| S-5 Raw Water Pipe Rupture K/A 076000 A2.01 (3.5/3.7) | C, M | 4S |
| S-6 Operate Containment Hydrogen Analyzer K/A 028000 A1.01 (3.4/3.8) | C, E, EN | 5 |
| S-7 Restoration of Offsite Electrical Power Bus 1A4 & DG-2 K/A 064000 A4.07 (3.4/3.4) | C, A | 6 |
| | | |
| In-Plant Systems [®] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U) | | |
| P-1 Energize 480v bus from 13.8 kv K/A 000055 EA1.07 (4.3/4.5) | EN, | 6 |
| P-2 Initiate Air Compressor Backup Cooling K/A 078000 K1.04 (2.6/2.9) | E, M | 8 |
| P-3 Perform Concentrated Boric Acid Batching K/A 004000 A4.04 (3.2/3.6) | R, N, A | 1 |
| P-4 (Spare) Emergency Start of the Diesel Fire Pump | A | 8 |

@ 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 | $\leq 9 / \leq 8 / \leq 4$ |
| (E)mergency or abnormal in-plant | $\geq 1 / \geq 1 / \geq 1$ |
| (EN)gineered safety feature | - / - / ≥ 1 (control room system) |
| (L)ow-Power / Shutdown | $\geq 1 / \geq 1 / \geq 1$ |
| (N)ew or (M)odified from bank including 1(A) | $\geq 2 / \geq 2 / \geq 1$ |
| (P)revious 2 exams | $\leq 3 / \leq 3 / \leq 2$ (randomly selected) |
| (R)CA | $\geq 1 / \geq 1 / \geq 1$ |
| (S)imulator | |

| Facility: <u>Fort Calhoun</u> | | Date of Examination: 5/19/2014 |
|--|------------|--------------------------------|
| Exam Level: RO | | Revision Number.: 0 |
| 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 |
| S-1. Emergency Boration from the Control Room K/A 004000 A4.01 (3.9/3.7) | A,C,D | 1 |
| S-2. Establish Charging Flow via the HPSI Header K/A 006000 A4.08 (34.0/3.8) | C,D | 2 |
| S-3 Reduce RCS Pressure using Auxiliary Spray K/A 010000 A4.01 (3.7/3.5) | A,C,M | 3 |
| S-4. Rotation of Shutdown Cooling Pumps K/A 005000 A4.01 (3.6/3.4) | C, N, L,A | 4P |
| S-5 Raw Water Pipe Rupture K/A 076000 A2.01 (3.5/3.7) | C, M | 4S |
| S-6 Operate Containment Hydrogen Analyzer K/A 028000 A1.01 (3.4/3.8) | C, E, EN | 5 |
| S-7 Restoration of Offsite Electrical Power Bus 1A4 & DG-2 K/A 064000 A4.07 (3.4/3.4) | C, A | 6 |
| S-8. Verify Radiation Monitor Operation using Check Source K/A 073000 A4.03 (3.1/3.2) | C,D | 7 |
| In-Plant Systems [®] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U) | | |
| P-1 Energize 480v bus from 13.8 kv K/A 000055 EA1.07 (4.3/4.5) | EN, | 6 |
| P-2 Initiate Air Compressor Backup Cooling K/A 078000 2.1.23 (2.6/2.9) | E, M | 8 |
| P-3 Perform Concentrated Boric Acid Batching K/A 004000 A4.04 (3.2/3.6) | R, N, A | 1 |
| P-4 (Spare) Emergency Start of the Diesel Fire Pump | A | 8 |

@ 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 | $\leq 9 / \leq 8 / \leq 4$ |
| (E)mergency or abnormal in-plant | $\geq 1 / \geq 1 / \geq 1$ |
| (EN)gineered safety feature | - / - / ≥ 1 (control room system) |
| (L)ow-Power / Shutdown | $\geq 1 / \geq 1 / \geq 1$ |
| (N)ew or (M)odified from bank including 1(A) | $\geq 2 / \geq 2 / \geq 1$ |
| (P)revious 2 exams | $\leq 3 / \leq 3 / \leq 2$ (randomly selected) |
| (R)CA | $\geq 1 / \geq 1 / \geq 1$ |
| (S)imulator | |

Facility: Fort Calhoun

Printed: 04/23/2014

Date Of Exam: 05/27/2014

| 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 | 4 | 2 | 2 | N/A | | | 4 | 3 | N/A | | | 3 | 18 | 0 | 0 | 0 | |
| | 2 | 1 | 2 | 2 | | | | 1 | 1 | | | | 2 | 9 | 0 | 0 | 0 | |
| | Tier Totals | 5 | 4 | 4 | | | | 5 | 4 | | | | 5 | 27 | 0 | 0 | 0 | |
| 2. Plant Systems | 1 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | 28 | 0 | 0 | 0 | | |
| | 2 | 1 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 10 | 0 | 0 | 0 | | |
| | Tier Totals | 4 | 3 | 2 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 3 | 38 | 0 | 0 | 0 | | |
| 3. Generic Knowledge And Abilities Categories | | | | | 1 | | 2 | | 3 | | 4 | | 10 | 1 | 2 | 3 | 4 | 0 |
| | | | | | 2 | | 3 | | 2 | | 3 | | | 0 | 0 | 0 | 0 | |

Note:

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/evolutions 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 K/As.
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.

Facility: Fort Calhoun

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-2

| E/APE # / Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---|----|----|----|----|----|---|--|------|--------|
| 000007 Reactor Trip - Stabilization - Recovery / 1 | | | | | X | | EA2.02 - Proper actions to be taken if the automatic safety functions have not taken place | 4.3 | 1 |
| 000008 Pressurizer Vapor Space Accident / 3 | | | X | | | | AK3.05 - ECCS termination or throttling criteria | 4.0 | 1 |
| 000011 Large Break LOCA / 3 | X | | | | | | EK1.01 - Natural circulation and cooling, including reflux boiling | 4.1 | 1 |
| 000015/000017 RCP Malfunctions / 4 | | X | | | | | AK2.07 - RCP seals | 2.9 | 1 |
| 000022 Loss of Rx Coolant Makeup / 2 | | | | X | | | AA1.08 - VCT level | 3.4 | 1 |
| 000025 Loss of RHR System / 4 | | | | | | X | 2.4.21 - Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc. | 4.0 | 1 |
| 000026 Loss of Component Cooling Water / 8 | | | | X | | | AA1.03 - SWS as a backup to the CCWS | 3.6* | 1 |
| 000029 ATWS / 1 | | | | | | X | 2.1.28 - Knowledge of the purpose and function of major system components and controls. | 4.1 | 1 |
| 000038 Steam Gen. Tube Rupture / 3 | X | | | | | | EK1.01 - Use of steam tables | 3.1 | 1 |
| 000040 Steam Line Rupture - Excessive Heat Transfer / 4 | | | | | X | | AA2.04 - Conditions requiring ESFAS initiation | 4.5 | 1 |
| 000054 Loss of Main Feedwater / 4 | X | | | | | | AK1.01 - MFW line break depressurizes the S/G (similar to a steam line break) | 4.1 | 1 |
| 000055 Station Blackout / 6 | | | | X | | | EA1.04 - Reduction of loads on the battery | 3.5 | 1 |
| 000056 Loss of Off-site Power / 6 | X | | | | | | AK1.03 - Definition of subcooling: use of steam tables to determine it | 3.1* | 1 |
| 000057 Loss of Vital AC Inst. Bus / 6 | | | X | | | | AK3.01 - Actions contained in EOP for loss of vital ac electrical instrument bus | 4.1 | 1 |
| 000058 Loss of DC Power / 6 | | | | X | | | AA1.03 - Vital and battery bus components | 3.1 | 1 |
| 000062 Loss of Nuclear Svc Water / 4 | | | | | X | | AA2.03 - The valve lineups necessary to restart the SWS while bypassing the portion of the system causing the abnormal condition | 2.6 | 1 |
| 000065 Loss of Instrument Air / 8 | | | | | | X | 2.4.35 - Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects. | 3.8 | 1 |

PWR RO Examination Outline

Printed: 04/23/2014

Facility: Fort Calhoun

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-2

| E/APE # / Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---|-----------|-----------|-----------|-----------|-----------|----------|--------------------------------------|-------------|---------------|
| 000077 Generator Voltage and Electric Grid Disturbances / 6 | | X | | | | | AK2.07 - Turbine / Generator control | 3.6 | 1 |
| K/A Category Totals: | 4 | 2 | 2 | 4 | 3 | 3 | Group Point Total: | 18 | |

PWR RO Examination Outline

Printed: 04/23/2014

Facility: Fort Calhoun

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-2

| E/APE # / Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---|-----------|-----------|-----------|-----------|-----------|----------|--|-------------|---------------|
| 000001 Continuous Rod Withdrawal / 1 | | | X | | | | AK3.02 - Tech-Spec limits on rod operability | 3.2 | 1 |
| 000005 Inoperable/Stuck Control Rod / 1 | | | | | | X | 2.1.32 - Ability to explain and apply system limits and precautions. | 3.8 | 1 |
| 000037 Steam Generator Tube Leak / 3 | | | X | | | | AK3.07 - Actions contained in EOP for S/G tube leak | 4.2 | 1 |
| 000051 Loss of Condenser Vacuum / 4 | | | | | X | | AA2.02 - Conditions requiring reactor and/or turbine trip | 3.9 | 1 |
| 000060 Accidental Gaseous Radwaste Rel. / 9 | X | | | | | | AK1.02 - Biological effects on humans of the various types of radiation, exposure levels that are acceptable for personnel in a nuclear reactor power plant; the units used for radiation intensity measurements and for radiation exposure levels | 2.5 | 1 |
| 000067 Plant Fire On-site / 9 | | | | | | X | 2.4.34 - Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects. | 4.2 | 1 |
| 000069 Loss of CTMT Integrity / 5 | | X | | | | | AK2.03 - Personnel access hatch and emergency access hatch | 2.8* | 1 |
| 000076 High Reactor Coolant Activity / 9 | | | | X | | | AA1.03 - CVCS letdown flow rate and temperature | 2.3* | 1 |
| CE/A16 Excess RCS Leakage / 2 | | X | | | | | EK2.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features | 3.2 | 1 |
| K/A Category Totals: | 1 | 2 | 2 | 1 | 1 | 2 | Group Point Total: | 9 | |

PWR RO Examination Outline

Printed: 04/23/2014

Facility: Fort Calhoun

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

| Sys/Evol # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|--|----|----|----|----|----|----|----|----|----|----|---|---|------|--------|
| 003 Reactor Coolant Pump | | | | | | | X | | | | | A1.03 - RCP motor stator winding temperatures | 2.6 | 1 |
| 003 Reactor Coolant Pump | | | | | | | | | X | | | A3.05 - RCP lube oil and bearing lift pumps | 2.7* | 1 |
| 004 Chemical and Volume Control | | | X | | | | | | | | | K3.05 - PZR LCS | 3.8 | 1 |
| 004 Chemical and Volume Control | | | | | X | | | | | | | K5.01 - Importance of oxygen control in RCS | 2.7 | 1 |
| 005 Residual Heat Removal | | | | | | | | X | | | | A2.02 - Pressure transient protection during cold shutdown | 3.5 | 1 |
| 006 Emergency Core Cooling | | | | | | X | | | | | | K6.05 - HPI/LPI cooling water | 3.0 | 1 |
| 007 Pressurizer Relief/Quench Tank | | | | | | | | | | X | | A4.10 - Recognition of leaking PORV/code safety | 3.6 | 1 |
| 008 Component Cooling Water | X | | | | | | | | | | | K1.05 - Sources of makeup water | 3.0 | 1 |
| 008 Component Cooling Water | | | | | | | | | | X | | A4.09 - CCW temperature control valve | 3.0* | 1 |
| 010 Pressurizer Pressure Control | | | | | | X | | | | | | K6.03 - PZR sprays and heaters | 3.2 | 1 |
| 012 Reactor Protection | | X | | | | | | | | | | K2.01 - RPS channels, components, and interconnections | 3.3 | 1 |
| 013 Engineered Safety Features Actuation | | | | | | | X | | | | | A1.07 - Containment radiation | 3.6 | 1 |
| 022 Containment Cooling | | | | | | | | X | | | | A2.04 - Loss of service water | 2.9* | 1 |
| 022 Containment Cooling | | | | X | | | | | | | | K4.03 - Automatic containment isolation | 3.6* | 1 |
| 026 Containment Spray | | | | | | | | | X | | | A3.02 - Verification that cooling water is supplied to the containment spray heat exchanger | 3.9* | 1 |
| 026 Containment Spray | | | | X | | | | | | | | K4.09 - Prevention of path for escape of radioactivity from containment to the outside (interlock on RWST isolation after swapover) | 3.7* | 1 |
| 039 Main and Reheat Steam | | | | | X | | | | | | | K5.01 - Definition and causes of steam/water hammer | 2.9 | 1 |
| 059 Main Feedwater | | | | X | | | | | | | | K4.08 - Feedwater regulatory valve operation (on basis of steam flow, feed flow mismatch) | 2.5 | 1 |
| 061 Auxiliary/Emergency Feedwater | | X | | | | | | | | | | K2.02 - AFW electric driven pumps | 3.7* | 1 |
| 062 AC Electrical Distribution | | | X | | | | | | | | | K3.03 - DC system | 3.7 | 1 |

Facility: Fort Calhoun

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

| Sys/Evol # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|-----------|--------|
| 063 DC Electrical Distribution | | | | | | | X | | | | | A1.01 - Battery capacity as it is affected by discharge rate | 2.5 | 1 |
| 064 Emergency Diesel Generator | | | | | | | | | | | X | 2.4.6 - Knowledge of EOP mitigation strategies. | 3.7 | 1 |
| 073 Process Radiation Monitoring | X | | | | | | | | | | | K1.01 - Those systems served by PRMs | 3.6 | 1 |
| 073 Process Radiation Monitoring | | | | | | | | X | | | | A2.02 - Detector failure | 2.7 | 1 |
| 076 Service Water | | X | | | | | | | | | | K2.04 - Reactor building closed cooling water | 2.5* | 1 |
| 078 Instrument Air | X | | | | | | | | | | | K1.03 - Containment air | 3.3* | 1 |
| 103 Containment | | | | | | | | | | | X | 2.2.39 - Knowledge of less than or equal to one hour Technical Specification action statements for systems. | 3.9 | 1 |
| 103 Containment | | | | | | | | | | X | | A4.01 - Flow control, pressure control, and temperature control valves, including pneumatic valve controller | 3.2* | 1 |
| K/A Category Totals: | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | Group Point Total: | 28 | |

PWR RO Examination Outline

Printed: 04/23/2014

Facility: Fort Calhoun

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-2

| Sys/Evol # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|---------------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|---|------|--------|
| 002 Reactor Coolant | | | | | | | | X | | | | A2.03 - Loss of forced circulation | 4.1 | 1 |
| 014 Rod Position Indication | X | | | | | | | | | | | K1.01 - CRDS | 3.2* | 1 |
| 017 In-core Temperature Monitor | | | | | | X | | | | | | K6.01 - Sensors and detectors | 2.7 | 1 |
| 027 Containment Iodine Removal | | | | | X | | | | | | | K5.01 - Purpose of charcoal filters | 3.1* | 1 |
| 033 Spent Fuel Pool Cooling | | | | X | | | | | | | | K4.02 - Maintenance of spent fuel cleanliness | 2.5 | 1 |
| 041 Steam Dump/Turbine Bypass Control | | | | | | X | | | | | | K6.03 - Controller and positioners, including ICS, S/G, CRDS | 2.7 | 1 |
| 045 Main Turbine Generator | | | | | | | | | X | | | A3.05 - Electrohydraulic control | 2.6 | 1 |
| 068 Liquid Radwaste | | | | | | | | | | | X | 2.1.28 - Knowledge of the purpose and function of major system components and controls. | 4.1 | 1 |
| 071 Waste Gas Disposal | | | | | | | X | | | | | A1.06 - Ventilation system | 2.5 | 1 |
| 079 Station Air | | | | | | | | | | X | | A4.01 - Cross-tie valves with IAS | 2.7 | 1 |
| K/A Category Totals: | 1 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | Group Point Total: 10 | | |

Generic Knowledge and Abilities Outline (Tier 3)

PWR RO Examination Outline

Printed: 04/23/2014

Facility: Fort Calhoun

Form ES-401-3

| <u>Generic Category</u> | <u>KA</u> | <u>KA Topic</u> | <u>Imp.</u> | <u>Points</u> |
|----------------------------------|------------------------|---|-------------|---------------|
| Conduct of Operations | 2.1.8 | Ability to coordinate personnel activities outside the control room. | 3.4 | 1 |
| | 2.1.38 | Knowledge of the station's requirements for verbal communications when implementing procedures. | 3.7* | 1 |
| | Category Total: | | | 2 |
| Equipment Control | 2.2.1 | Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity. | 4.5 | 1 |
| | 2.2.14 | Knowledge of the process for controlling equipment configuration or status. | 3.9 | 1 |
| | 2.2.35 | Ability to determine Technical Specification Mode of Operation. | 3.6 | 1 |
| | Category Total: | | | 3 |
| Radiation Control | 2.3.4 | Knowledge of radiation exposure limits under normal or emergency conditions. | 3.2 | 1 |
| | 2.3.11 | Ability to control radiation releases. | 3.8 | 1 |
| | Category Total: | | | 2 |
| Emergency Procedures/Plan | 2.4.17 | Knowledge of EOP terms and definitions. | 3.9 | 1 |
| | 2.4.21 | Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc. | 4.0 | 1 |
| | 2.4.32 | Knowledge of operator response to loss of all annunciators. | 3.6 | 1 |
| | Category Total: | | | 3 |

Generic Total: 10

| Tier / Group | Randomly Selected K/A | Reason for Rejection |
|---|-----------------------|--|
| FCS Changes from the initial outline provided by NRC | | |
| 1/1 | 000007 EA2.02 | Overlap with SRO Outline – Kept original K/A after discussion with CE. |
| 1/1 | 000038 EK1.04 | Reflux boiling not an expected phenomena for SGTR Replaced with 000038 EK1.01 |
| 1/1 | 000054 AK1.02 | No procedural Guidance for feeding a dry S/G Replaced with 000054 AK1.01 |
| 1/2 | 000001 AK3.01 | Action is not taken by Technical Specifications or FCS Procedures Replaced with 000001 AK3.02 |
| 1/2 | 000076 AA1.04 | No Failed fuel radiation monitor at FCS Replaced with 000076 AA1.03 |
| 1/2 | A16 AK2.01 | Overlap with SRO outline Kept original K/A after discussion with CE |
| 2/1 | 006000 K1.05 | No RCP Seal Injection at FCS Replaced with 006 K6.05 |
| 2/1 | 022000 K4.02 | FCS has single speed Containment Cooler Fans and dampers are failed in accident position – Replaced with 022000 K4.01 |
| 2/1 | 026000 K4.04 | Containment Spray System is not used to mitigate a LOCA at FCS. Modification was made to address GL 2004-2 Replaced with 026000 K4.09 |
| 2/1 | 026000 A3.01 | No MOVs in CS system at FCS Replaced with 026000 A3.02 |
| 2/1 | 073000 K5.02 | K/A addresses GET Radiation Fundamentals Replaced with 073000 K1.01 |
| 2/1 | 073000 A2.02 | Overlap with SRO outline Replaced with 073000 A4.02 |
| 2/1 | 076000 K2.04 | No Reactor Building Closed Cooling Water System at FCS Kept original K/A after discussion with CE. Address CCW pump power supply. |

| | | |
|-----|---------------|--|
| 2/1 | 103000 A4.04 | Overlap with SRO Outline Replaced with 103000 A4.01 |
| 2/1 | 078000 A3.01 | Overlaps with K/A 079000 A4.01 Replaced with 003000 A3.05 |
| 2/2 | 017000 K6.01 | Overlap with SRO Outline. Keep original K/A after discussion with CE. |
| 3 | 000000 2.4.39 | No RO ERO duties at FCS Replaced with 000000 2.4.21 |
| 3 | 000000 2.2.14 | Duplicated in SRO Outline. Keep original K/A after discussion with CE. |

Facility: Fort Calhoun

Printed: 04/03/2014

Date Of Exam: 05/27/2014

| 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 | 0 | 0 | 0 | N/A | | | 0 | 0 | N/A | | | 0 | 0 | 4 | | 2 | 6 |
| | 2 | 0 | 0 | 0 | | | | 0 | 0 | | | | 0 | 0 | 2 | | 2 | 4 |
| | Tier Totals | 0 | 0 | 0 | | | | 0 | 0 | | | | 0 | 6 | | 4 | 10 | |
| 2. Plant Systems | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | | 1 | 5 | |
| | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | |
| | Tier Totals | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | | 2 | 8 | |
| 3. Generic Knowledge And Abilities Categories | | | | 1 | | 2 | | 3 | | 4 | | 0 | | 1 | 2 | 3 | 4 | 7 |
| | | | | 0 | | 0 | | 0 | | 0 | | | | 2 | 1 | 2 | 2 | |

Note:

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/evolutions 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 K/As.
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.

PWR SRO Examination Outline

Printed: 04/03/2014

Facility: Fort Calhoun

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-2

| E/APE # / Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|--|-----------|-----------|-----------|-----------|-----------|----------|---|-------------|---------------|
| 000007 Reactor Trip - Stabilization - Recovery / 1 | | | | | X | | EA2.02 - Proper actions to be taken if the automatic safety functions have not taken place | 4.6 | 1 |
| 000009 Small Break LOCA / 3 | | | | | | X | 2.1.7 - Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. | 4.7 | 1 |
| 000038 Steam Gen. Tube Rupture / 3 | | | | | X | | EA2.07 - Plant conditions, from survey of control room indications | 4.8 | 1 |
| 000056 Loss of Off-site Power / 6 | | | | | | X | 2.1.19 - Ability to use plant computers to evaluate system or component status. | 3.8 | 1 |
| 000058 Loss of DC Power / 6 | | | | | X | | AA2.03 - DC loads lost; impact on to operate and monitor plant systems | 3.9 | 1 |
| 000065 Loss of Instrument Air / 8 | | | | | X | | AA2.08 - Failure modes of air-operated equipment | 3.3 | 1 |
| K/A Category Totals: | 0 | 0 | 0 | 0 | 4 | 2 | Group Point Total: | 6 | |

PWR SRO Examination Outline

Printed: 04/03/2014

Facility: Fort Calhoun

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-2

| E/APE # / Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---|-----------|-----------|-----------|-----------|-----------|----------|--|-------------|---------------|
| 000036 Fuel Handling Accident / 8 | | | | | X | | AA2.02 - Occurrence of a fuel handling incident | 4.1 | 1 |
| CE/A11 RCS Overcooling - PTS / 4 | | | | | | X | 2.4.18 - Knowledge of the specific bases for EOPs. | 4.0 | 1 |
| CE/A16 Excess RCS Leakage / 2 | | | | | | X | 2.2.36 - Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations. | 4.2 | 1 |
| CE/E09 Functional Recovery | | | | | X | | EA2.2 - Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments | 4.0 | 1 |
| K/A Category Totals: | 0 | 0 | 0 | 0 | 2 | 2 | Group Point Total: | 4 | |

Facility: Fort Calhoun

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

| Sys/Evol # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|----------|--------|
| 005 Residual Heat Removal | | | | | | | | X | | | | A2.01 - Failure modes for pressure, flow, pump motor amps, motor temperature, and tank level instrumentation | 2.9* | 1 |
| 010 Pressurizer Pressure Control | | | | | | | | | | | X | 2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation. | 4.4 | 1 |
| 013 Engineered Safety Features Actuation | | | | | | | | | | | X | 2.2.12 Surveillance Procedures | 4.1 | 1 |
| 026 Containment Spray | | | | | | | | X | | | | A2.03 - Failure of ESF | 4.4 | 1 |
| 073 Process Radiation Monitoring | | | | | | | | X | | | | A2.02 - Detector failure | 3.2 | 1 |
| K/A Category Totals: | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | Group Point Total: | 5 | |

PWR SRO Examination Outline

Printed: 04/03/2014

Facility: Fort Calhoun

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-2

| Sys/Evol # / Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|---------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|----------|--------|
| 017 In-core Temperature Monitor | | | | | | | | X | | | | A2.01 - Thermocouple open and short circuits | 3.5 | 1 |
| 056 Condensate | | | | | | | | X | | | | A2.05 - Condenser tube leakage | 2.5* | 1 |
| 072 Area Radiation Monitoring | | | | | | | | | | | X | 2.4.4 - Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures. | 4.7 | 1 |
| K/A Category Totals: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | Group Point Total: | 3 | |

Generic Knowledge and Abilities Outline (Tier 3)

PWR SRO Examination Outline

Printed: 04/03/2014

Facility: Fort Calhoun

Form ES-401-3

| <u>Generic Category</u> | <u>KA</u> | <u>KA Topic</u> | <u>Imp.</u> | <u>Points</u> |
|----------------------------------|------------------------|---|-------------|---------------|
| Conduct of Operations | 2.1.2 | Knowledge of operator responsibilities during all modes of plant operation. | 4.4 | 1 |
| | 2.1.40 | Knowledge of refueling administrative requirements. | 3.9 | 1 |
| | Category Total: | | | 2 |
| Equipment Control | 2.2.14 | Knowledge of the process for controlling equipment configuration or status. | 4.3 | 1 |
| | Category Total: | | | 1 |
| Radiation Control | 2.3.7 | Ability to comply with radiation work permit requirements during normal or abnormal conditions. | 3.6 | 1 |
| | 2.3.14 | Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities. | 3.8 | 1 |
| | Category Total: | | | 2 |
| Emergency Procedures/Plan | 2.4.27 | Knowledge of "fire in the plant" procedure. | 3.9 | 1 |
| | 2.4.30 | Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator. | 4.1 | 1 |
| | Category Total: | | | 2 |
| Generic Total: | | | | 7 |

| Tier / Group | Randomly Selected K/A | Reason for Rejection |
|--------------|-----------------------|--|
| 1/1 | 000009 2.1.7 | Could not develop SRO level question to address K/A Replaced with 000009 2.1.17 |
| 1/1 | 000027 2.4.46 | Could not develop SRO level question to address K/A Replaced with 000007 EA2.02 |
| 1/1 | 000065 AA2.08 | Could not develop SRO level question to address K/A Replaced with 000057 2.4.21 |
| 1/2 | 000028 AA2.11 | Could not develop SRO level question to address K/A Replaced with E09 EA 2.2 |
| 1/2 | A13 2.2.44 | Could not develop SRO level question to address K/A Replaced with A16 2.2.36 |
| 2/1 | 010000 2.1.23 | Could not develop SRO level question to address K/A Replaced with 062000 2.4.9 |
| 2/1 | 013000 2.2.12 | Could not develop SRO level question to address K/A Replaced with 013000 2.1.32 |
| 2/2 | 011000 2.1.25 | Could not develop SRO level question to address K/A Replaced with 017000 A2.01 |
| 3/2 | 000000 2.2.41 | Could not develop SRO level question to address K/A Replaced with 000000 2.1.40 |
| 3/3 | 000000 2.3.7 | Not linked to 10 CFR 55.43 Replaced with 000000 2.1.13 |
| 3/3 | 000000 2.2.41 | Not linked to 10 CFR 55.43 Replaced with 000000 2.1.40 |
| 3/3 | 000000 2.3.7 | Not linked to 10 CFR 55.43 Replaced with 000000 2.3.13 |
| | | |
| | | |
| | | |