Facility: Palisades Date of Examination: Sept 2014

Examination Level: RO ☒ SRO ☐ Operating Test Number: 1

| Administrative Topic (See Note) | Type Code* | Describe activity to be performed |
|---|---|---|
| Conduct of Operations | S, D, P | (2.1.7) Calculate the Excore Quadrant Power Tilt |
| Conduct of Operations | R, N | (2.1.20) Estimation of RIA-0631, Condenser Off Gas Monitor, Count Rate Using Predetermined Primary to Secondary Leakrate |
| Equipment Control | S, D | (2.2.12) Perform TSST MO-8 Comparison of Delta-T Power vs Actual Power |
| Radiation Control | | |
| Emergency Procedures/Plan | R, D | (2.4.39) Obtain Meteorological Data for Emergency Notification Form |

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 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: Palisades Date of Examination: Sept 2014

Examination Level: RO ☐ SRO ☒ Operating Test Number: 1

| Administrative Topic (See Note) | Type Code* | Describe activity to be performed |
|---|---|---|
| Conduct of Operations | S, D | (2.1.7) Determine Average Qualified CET Temperature and Sub-cooling Value |
| Conduct of Operations | S, D | (2.1.19) Monitor PCS Heatup Rate via PPC |
| Equipment Control | R, D, P | (2.2.12) Review and Approve Completed TSST (MO-29) |
| Radiation Control | S, D | (2.3.8) Authorize Waste Gas Release Alarm Setpoint |
| Emergency Procedures/Plan | R, N | (2.4.41) Classify Event |

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 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: Palisades Date of Examination: Sept 2014

Exam Level: RO ☒ SRO-I ☐ SRO-U ☐ Operating Test Number: 1

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. CVCS/ Gravity Feed Boration While Shutdown | A, L, N | 1 |
| b. ESS/Manually Initiate Containment Isolation | EN, D | 2 |
| c. PPCS/Perform Post RAS step 54 of EOP-4.0, "Loss of Coolant Accident" | N | 3 |
| d. MSS/Bypass MSIV Closure | A, L, D, P | 4s |
| e. CAC/Align Containment Air Coolers | A, D, P | 5 |
| f. EDG/Perform a Diesel Generator Voltage Regulator Test on 1-1 D/G | D | 6 |
| g. RWS/Adjust Liquid Radwaste Discharge Monitor, RIA-1049 Setpoint | D, P | 7 |
| h. SCS/Transfer Shield Cooling Coils | A, D | 8 |
| In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U) | | |
| i. SPS/Energize Bus 1C from Start Up Transformer 1-2 locally | A, D, E | 6 |
| j. FPS/Manually Start P-9A Fire Pump | A, D, E | 8 |
| k. AFW/Alt Suction to AFW Pump P-8C | D, R, E | 4s |

@ 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 (control room system) |
| (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 | |

Facility: Palisades Date of Examination: Sept 2014

Exam Level: RO ☐ SRO-I ☒ SRO-U ☐ Operating Test Number: 1

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. CVCS/ Gravity Feed Boration While Shutdown | A, L, N | 1 |
| b. ESS/Manually Initiate Containment Isolation | EN, D | 2 |
| c. PPCS/Perform Post RAS step 54 of EOP-4.0, “Loss of Coolant Accident” | N | 3 |
| d. | | |
| e. CAC/Align Containment Air Coolers | A, D, P | 5 |
| f. EDG/Perform a Diesel Generator Voltage Regulator Test on 1-1 D/G | D | 6 |
| g. RWS/Adjust Liquid Radwaste Discharge Monitor, RIA-1049 Setpoint | D, P | 7 |
| h. SCS/Transfer Shield Cooling Coils | A, D | 8 |
| In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U) | | |
| i. SPS/Energize Bus 1C from Start Up Transformer 1-2 locally | A, D, E | 6 |
| j. FPS/Manually Start P-9A Fire Pump | A, D, E | 8 |
| k. AFW/Alt Suction to AFW Pump P-8C | D, R, E | 4s |

@ 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 (control room system) |
| (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 | |

Facility: Palisades Date of Examination: Sept 2014

Exam Level: RO ☐ SRO-I ☐ SRO-U ☒ Operating Test Number: 1

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. CVCS/ Gravity Feed Boration While Shutdown | A, L, N | 1 |
| b. ESS/Manually Initiate Containment Isolation | EN, D | 2 |
| c. | | |
| d. | | |
| e. CAC/Align Containment Air Coolers | A, D, P | 5 |
| f. | | |
| g. | | |
| h. | | |

In-Plant Systems[@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)

| | | |
|---|---|---|
| i. SPS/Energize Bus 1C from Start Up Transformer 1-2 locally | A, D, E | 6 |
| j. | | |
| k. AFW/Alt Suction to AFW Pump P-8C | D, R, E | 4s |

@ 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 (control room system) |
| (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 | |

**ES-301** **Transient and Event Checklist** **Form ES-301-5**

Facility: **Palisades** Date of Exam: **September 2014** Operating Test No.: **1**

| APPLICANT | EVENT TYPE | Scenarios | | | | | | | | | | | | TOTAL | MINIMUM (*) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | | | 2 | | | 3 | | | SPARE (#) | | | | | | |
| | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | | | | |
| | | SRO | ATC | BOP | SRO | ATC | BOP | SRO | ATC | BOP | SRO | ATC | BOP | | R | I | U |
| SRO-U | RX | -- | | | -- | | | | | | -- | *2* | -- | 0 | | | 0 |
| | NOR | -- | | | 2 | | | | | | *2* | -- | *12* | 1 | | | 1 |
| | I/C | 2345 | | | 345 | | | | | | *34578* | *58* | *457* | 7 | | | 2 |
| | MAJ | 6 | | | 7 | | | | | | *6* | *6* | *6* | 2 | | | 1 |
| | TS | 245 | | | 345 | | | | | | *345* | -- | -- | 6 | | | 2 |
| RO | RX | | 2 | | | | -- | | | | -- | *2* | -- | 1 | 1 | | |
| | NOR | | -- | | | | 12 | | | | *2* | -- | *12* | 2 | 1 | | |
| | I/C | | 457 | | | | 346 | | | | *34578* | *58* | *457* | 6 | 4 | | |
| | MAJ | | 6 | | | | 7 | | | | *6* | *6* | *6* | 2 | 2 | | |
| | TS | | -- | | | | -- | | | | *345* | -- | -- | 0 | 0 | | |
| RO | RX | | | -- | | 2 | | | | | | *2* | -- | 1 | 1 | | |
| | NOR | | | 1 | | -- | | | | | | -- | *12* | 1 | 1 | | |
| | I/C | | | 23 | | 458 | | | | | | *58* | *457* | 5 | 4 | | |
| | MAJ | | | 6 | | 7 | | | | | | *6* | *6* | 2 | 2 | | |
| | TS | | | -- | | -- | | | | | | -- | -- | 0 | 0 | | |

Notes: (1) The above three candidates will form one operating crew (**Crew 1**).

(2) # The spare scenario is not counted toward the total.

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.

2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.

3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

Facility: **Palisades** Date of Exam: **September 2014** Operating Test No.: **1**

| APPLICANT | EVENT TYPE | Scenarios | | | | | | | | | | | | TOTAL | MINIMUM (*) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | | | 2 | | | 3 | | | SPARE (#) | | | | | | |
| | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | | | | |
| | | SRO | ATC | BOP | SRO | ATC | BOP | SRO | ATC | BOP | SRO | ATC | BOP | | R | I | U |
| SRO-I | RX | -- | | | | 2 | | | | -- | -- | *2* | -- | 1 | | 1 | |
| | NOR | -- | | | | -- | | | | 1 | *2* | -- | *12* | 1 | | 1 | |
| | I/C | 2345 | | | | 458 | | | | 27 | *34578* | *58* | *457* | 9 | | 4 | |
| | MAJ | 6 | | | | 7 | | | | 6 | *6* | *6* | *6* | 3 | | 2 | |
| | TS | 245 | | | | -- | | | | -- | *345* | -- | -- | 3 | | 2 | |
| SRO-I | RX | | 2 | | -- | | | -- | | | -- | *2* | -- | 1 | | 1 | |
| | NOR | | -- | | 2 | | | 1 | | | *2* | -- | *12* | 2 | | 1 | |
| | I/C | | 457 | | 345 | | | 235 | | | *34578* | *58* | *457* | 9 | | 4 | |
| | MAJ | | 6 | | 7 | | | 6 | | | *6* | *6* | *6* | 3 | | 2 | |
| | TS | | -- | | 345 | | | 24 | | | *345* | -- | -- | 5 | | 2 | |
| RO | RX | | | -- | | | -- | | 1 | | | *2* | -- | 1 | 1 | | |
| | NOR | | | 1 | | | 12 | | -- | | | -- | *12* | 3 | 1 | | |
| | I/C | | | 23 | | | 346 | | 358 | | | *58* | *457* | 8 | 4 | | |
| | MAJ | | | 6 | | | 7 | | 6 | | | *6* | *6* | 3 | 2 | | |
| | TS | | | -- | | | -- | | -- | | | -- | -- | 0 | 0 | | |

Notes: (1) The above three candidates will form one operating crew (**Crew 2**).

(2) # The spare scenario is not counted toward the total.

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.

2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.

3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

**ES-301** **Transient and Event Checklist** **Form ES-301-5**

Facility: **Palisades** Date of Exam: **September 2014** Operating Test No.: **1**

| APPLICANT | EVENT TYPE | Scenarios | | | | | | | | | | | | TOTAL | MINIMUM (*) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | | | 2 | | | 3 | | | SPARE (#) | | | | | | |
| | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | | | | |
| | | SRO | ATC | BOP | SRO | ATC | BOP | SRO | ATC | BOP | SRO | ATC | BOP | | R | I | U |
| SURR | RX | -- | | | | | -- | | | | -- | *2* | -- | 0 | | | |
| | NOR | -- | | | | | 12 | | | | *2* | -- | *12* | 2 | | | |
| | I/C | 2345 | | | | | 346 | | | | *34578* | *58* | *457* | 7 | | | |
| | MAJ | 6 | | | | | 7 | | | | *6* | *6* | *6* | 2 | | | |
| | TS | 245 | | | | | -- | | | | *345* | -- | -- | 3 | | | |
| SRO-I | RX | | 2 | | -- | | | | | | -- | *2* | -- | 1 | | 1 | |
| | NOR | | -- | | 2 | | | | | | *2* | -- | *12* | 2 | | 1 | |
| | I/C | | 457 | | 345 | | | | | | *34578* | *58* | *457* | 6 | | 4 | |
| | MAJ | | 6 | | 7 | | | | | | *6* | *6* | *6* | 2 | | 2 | |
| | TS | | -- | | 345 | | | | | | *345* | -- | -- | 3 | | 2 | |
| RO | RX | | | -- | | 2 | | | | | | *2* | -- | 1 | 1 | | |
| | NOR | | | 1 | | -- | | | | | | -- | *12* | 1 | 1 | | |
| | I/C | | | 23 | | 458 | | | | | | *58* | *457* | 5 | 4 | | |
| | MAJ | | | 6 | | 7 | | | | | | *6* | *6* | 2 | 2 | | |
| | TS | | | -- | | -- | | | | | | -- | -- | 0 | 0 | | |

Notes: (1) The above two candidates and one surrogate will form one operating crew (**Crews 3 and 4**).

(2) # The spare scenario is not counted toward the total.

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.

2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.

3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

A.1.a Applicant will determine the quadrant power tilt ratio using the power range nuclear instruments channels per PO-3, “Alternate Incore and Excore Applications.” Critical tasks include obtaining individual channel readings and performing calculation correctly.

A.1.b NEW. Applicant will estimate RIA-0631, Condenser Off Gas Monitor count rate per AOP-24, “Steam Generator Tube Leak.” The critical tasks include correctly performing the calculation for the current Action Level.

A.2 Applicant will perform a comparison of $\Delta$T Power verses Actual Power using MO-8, “Palisades Plant Computer (PPC) - PDIL and PPDIL Check and Control Rod Out-Of-Sequence Alarm.” Critical tasks include proper completion of surveillance data sheet.

A.4 Applicant will determine meteorological data for the Shift Manager’s emergency notification using a backup method. Critical tasks include interpreting provided printout to determine actual meteorological data.

A.1.a Applicant will determine the average qualified CET temperature and subcooling value per SOP-34, “Palisades Plant Computer (PPC) System.” Critical tasks include performing calculation correctly.

A.1.b Applicant will setup the Palisades Plant Computer (PPC) to monitor PCS heatup rate per PO-2, “PCS Heatup/Cooldown Operations.” Critical tasks include setup of PPC screen and determination of entry into LCO Action statement.

A.2 Applicant will review and approve a completed Technical Specification Surveillance test. Critical tasks include determining component is inoperable and entry into LCO Action statement.

A.3 Applicant will review Waste Gas Release Authorization. Critical tasks include determining high alarm setpoint is incorrect.

A.4 NEW. Applicant will determine the emergency classification for a given event per EI-1, “Emergency Classifications and Actions.” Critical task includes completing emergency form properly.

Sys A NEW. Applicant will perform actions to borate the primary coolant system using the gravity feed method per SOP-2A, “Chemical and Volume Control Systems.” The alternate path includes failure of the operating Charging Pump requiring starting of a Charging Pump.

Sys B Applicant will manually initiate Containment Isolation per EOP 4.0, "Loss of Coolant Accident Recovery." Critical tasks include actions in response to a Containment Isolation Valve that failed to close.

Sys C NEW. Applicant will perform actions of EOP-4.0, Loss of Coolant Accident Recovery,” to verify HPSI flow post RAS. Critical tasks include recognizing HPSI flow being less than required and tripping of Charging Pumps.

Sys D Applicant will attempt to bypass automatic MSIV closure during a normal plant cooldown per GOP-9, “MODE 3 ≥ 525°F to MODE 4 or MODE 5.” The alternate path includes opening the MSIV Bypass Valves to maintain steam to the secondary system.

Sys E Applicant will align Containment Air Coolers per SOP-5, “Containment Air Cooling.” The alternate path includes diagnosing inadequate Service Water flow and the need to start a third Service Water Pump.

Sys F Applicant will perform Diesel Generator Voltage Regulator test per MO-7A-1, “Emergency Diesel Generator 1-1.” Critical tasks include correct operation of D/G controls.

Sys G Applicant will adjust setpoint for RIA-1049, Liquid Radwaste Discharge Monitor, per SOP-37, “Process Liquid Monitor System.” Critical tasks include correct operation of radiation monitor controls.

Sys H Applicant will perform actions to transfer Shield Cooling coils in operation per SOP-29, “Shield Cooling System.” The alternate path includes response to tripping of in-service Shield Cooling Pump requiring starting of alternate train pump.

Sys I Applicant will perform actions for energizing Bus 1C from Startup Transformer 1-2 locally per EOP Supplement 29, “Restore Buses 1C, 1D, 1E From Offsite Power.” The alternate path includes responding to a tripped DC control power breaker.

Sys J Applicant will perform actions to start Electric Fire Pump P-9A locally per SOP-21, “Fire Protection System.” The alternate path includes failure of pump to start and use of the alternate manual start method.

Sys K Applicant will perform actions to provide alternate suction to Auxiliary Feedwater Pump P-8C per EOP Supplement 31, “Supply AFW Pumps from Alternate Sources.” Critical tasks include locating equipment and simulating operation of valves.