Facility: FARLEY Date of Examination: 10/05/15

Examination Level: RO [X] SRO [ ] Operating Test Number: FA2015-301

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
A.1.a Conduct of Operations RO&SRO	R, D	**Title:** Monitor CSFST. Given a set of conditions, the applicant will be required to use FNP-1-CSF-0.0, Critical Safety Function Status Trees, to determine which FRP entry is required. **G2.1.7 – 4.4 / 4.7** **G2.1.20 – 4.6 / 4.6**
A.1.b Conduct of Operations RO	R, D	**Title:** Determine maximum RHR flowrate and time to saturation for a loss of RHR event. Given a set of conditionsthe applicant will : Determine maximum RHR flowrate and time to saturation for a loss of RHR event. **G2.1.25 – 3.9 / 4.2**
A.2 Equipment Control RO	R, M	**Title**: Perform a QPTR. Given a set of conditions, determine the QPTR using STP-7.0, Quadrant Tilt Power Ratio. **G2.2.12 – 3.7 /4.1**
A.3 Radiation Control RO&SRO	R, D	**Title:** Determine RWP, dose, valve location and determination of task completions. Given a set of conditions, determine the correct RWP, Total Projected Dose And Determine if an Oil Addition and venting can be performed to the 2A RHR pump without exceeding limits defined **G2.3.4 – 3.2 / 3.7** **G2.3.7 – 3.5 / 3.6**
Emergency Plan		**NONE SELECTED**

NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).

* 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: FARLEY Date of Examination: 10/05/15

Examination Level: RO ☐ SRO ☒ Operating Test Number: FA2015-301

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
A.1.a Conduct of Operations RO&SRO	R, D	**Title:** Monitor CSFST. Given a set of conditions, the applicant will be required to use FNP-1-CSF-0.0, Critical Safety Function Status Trees, to determine which FRP entry is required. **G2.1.7 – 4.4 / 4.7** **G2.1.20 – 4.6 / 4.6**
A.1.b Conduct of Operations SRO	R, M	**Title:** Determine Active License Status. Given a set of conditions, the applicant will have to determine the status of 3 individual's license. **G2.1.4 - 3.3 / 3.8**
A.2 Equipment Control SRO	R, D	**Title**: Perform a QPTR. Given a set of conditions, determine the QPTR using STP-7.0, Quadrant Tilt Power Ratio. Determine what Tech Specs actions, if any, are required. **G2.2.12 – 3.7 / 4.1 G2.2.40 – 3.4 / 4.7** **G2.2.42 – 3.9 / 4.6**
A.3 Radiation Control RO&SRO	R, D	**Title:** Determine RWP, dose, valve location and determination of task completions. Given a set of conditions, determine the correct RWP, Total Projected Dose And Determine if an Oil Addition and venting can be performed to the 2A RHR pump without exceeding limits defined **G2.3.4 – 3.2 / 3.7** **G2.3.7 – 3.5 / 3.6**
A.4 Emergency Plan SRO	R, M	**Title:** Classify an emergency event and complete selected sections of the emergency notification form. **G2.4.40 – 2.7 / 4.5** **G2.4.41 – 2.9 / 4.6**

NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).

* 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: FARLEY Date of Examination: 10/05/15

Exam Level: RO [X] SRO-I [X] SRO-U [X] Operating Test No.: FA2015-301

Control Room Systems:* 8 for RO; 7 for SRO-I; 2 or 3 for SRO-U

System / JPM Title	Type Code*	Safety Function
a. CRO-074: Fill the 1A SIS Accumulator: the 1A Accumulator low and will be filled using SOP-8.0, Safety Injection – Accumulators. **006A1.13 – 3.5 / 3.7** **006A4.02 – 4.0 / 3.8**	D, S	2
b. CRO-333: Perform the required actions for Cold Leg Recirculation. During the performance of the procedure, a valve will not close requiring an alternate path. **011EA1.11 - 4.2 / 4.2** **011EA1.13 - 4.1 / 4.2**	A, D, EN, L, S	3 (SRO-U)
c. 343G: Restore Service water to normal in response to a spurious Safety Injection - Applicant will restore Service Water using ESP-1.1, SI Termination. **062AA1.02 - 3.2 / 3.3** **076A4.02 – 2.6 / 2.6**	D, L, S	4S
d. CRO-043B: Start the 1A RCP – After starting the 1A RCP, a high bearing temp alarm will be received requiring the 1A RCP to be secured. **003A1.02 – 2.9 / 2.9** **003A2.03 – 2.7 / 3.1**	A, D, S	4P
e. CRO-406B (MOD): Verify Phase B Containment Isolation and Containment Spray Initiation. Containment pressure will be above 27psig and Phase B / Containment Spray will not have actuated. Requires manual actions to start Containment spray and isolate valves. **WE14EA1.1 – 3.7 / 3.7** **103A3.01 – 3.9 / 4.2**	A, M, S	5 (SRO-U)
f. CRO-NEW: Perform Corrective Actions to a trip of the On Service CCW pump. The plant is in Mode 3 and the loss of the On Service train of CCW occurs while shifting Heat Exchangers. **008A2.01 - 3.3 / 3.6** **026AA1.02 - 3.2 / 3.3**	A, N, L, S	8
g. CRO-033 (MOD): Perform step 5.2 of STP-5.0, Full Length Control Rod Operability Test. Applicant will insert Shutdown Bank A 10 steps and when the Rod Control Switch is released, the rods will continue to move. When rods are placed in AUTO, they will continue to move requiring a trip. **001A2.11 – 4.4 / 4.7** **001A3.02 – 3.7 / 3.6** **001AA1.05 – 4.3 / 4.2**	A, M, S	1 (SRO-U)
h. CRO-039A: Adjust Setpoint of the N-16 Primary to Secondary Leak Detection System (R-70B). Applicant will change the R-70B setpoint to 75 gpd. **073A4.02 – 3.7 / 3.7**	D, S	7 (RO ONLY)

In-Plant Systems* (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. CRO- 607A (UNIT 1) : Perform the required actions to minimize DC loads. ECP-0.0 is in progress and the applicant is required to minimize DC loads in the Non-Rad Aux Building. **055EA1.04 – 3.5 / 3.9**	D, E, L	6 (SRO-U)
j. SO-444 (UNIT 1): Restore Compressed Air Systems After an Auto Isolation. Unit 1 has an extra valve that is operated by this JPM. **065AA1.03 – 2.9 / 3.1**	D	8
k. SO-368A: Align RCDT Discharge to the WHT – Applicant is required to reduce RCT level from 50% to 10% per SOP-50.0, Liquid Waste Processing. **068K1.07 – 2.7 / 2.9**	D, R	9 (SRO-U)

* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all five 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 **5 / 5 / 3**
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4 **8 / 7 / 3**
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1 **1 / 1 / 1**
(EN)gineered safety feature	≥1 / ≥1 / ≥ 1 (control room system) **1 / 1 / 1**
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1 **4 / 4 / 2**
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1 **3 / 3 / 2**
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected) **0 / 0 / 0**
(R)CA	≥ 1 / ≥ 1 / ≥ 1 **1 / 1 / 1**
(S)imulator	

Facility: **Farley** Date of Exam: **October, 2015**

Tier	Group	RO K/A Category Points												SRO-Only Points						
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	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	2	1	1				2	1			2	9	2		2		4		
	Tier Totals	5	4	4				5	4			5	27	5		5		10		
2. Plant Systems	1	3	3	2	3	2	3	3	2	3	2	2	28	3		2		5		
	2	1	1	1	1	1	1	1	1	1	0	1	10	-	2	1		3		
	Tier Totals	4	4	3	4	3	4	4	3	4	2	3	38	5		3		8		
3. Generic Knowledge and Abilities Categories		1			2			3			4		10	1	2	3	4	7		
		2			3			2			3			1	2	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). (One Tier 3 Radiation Control K/A is allowed if the K/A is replaced by a K/A from another Tier 3 Category).
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 with justification; 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 a category 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.

G* Generic K/As

ES-401	PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO / SRO)						Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A2	G	K/A Topic(s)	IR	#
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1					X		007EA2.03; Ability to determine or interpret the following as they apply to a reactor trip: Reactor trip breaker position.	4.4	
000008 Pressurizer Vapor Space Accident / 3						X	008G.2.1.32; Ability to explain and apply system limits and precautions.	3.8	
000009 Small Break LOCA / 3				X			009EA1.17; Ability to operate and monitor the following as they apply to a small break LOCA: PRT	3.4	
000011 Large Break LOCA / 3			X				011EK3.05; Knowledge of the reasons for the following responses as they apply to the Large Break LOCA: Injection into cold leg.	4.0	
000015/17 RCP Malfunctions / 4					X		015AA2.08; Ability to determine and interpret the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): When to secure RCPs on high bearing temperature.	3.4	
000022 Loss of Rx Coolant Makeup / 2					X		022AA2.02; Ability to determine and interpret the following as they apply to the Loss of Reactor Coolant Makeup: Charging pump problems.	3.2	
000025 Loss of RHR System / 4						X	025AG2.4.2; Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.	4.5	
000026 Loss of Component Cooling Water / 8						X	026AG2.4.46; Ability to verify that the alarms are consistent with the plant conditions.	4.2	
000027 Pressurizer Pressure Control System Malfunction / 3		X					027AK2.03; Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following: Controllers and positioners.	2.6	
000029 ATWS / 1		X					029EK2.06; Knowledge of the interrelations between the following and the following an ATWS: Breakers, relays, and disconnects.	2.9	
000038 Steam Gen. Tube Rupture / 3	X						038EK1.02; Knowledge of the operational implications of the following concepts as they apply to the SGTR: Leak rate vs. pressure drop.	3.2	
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4	X						WE12EK1.3; Knowledge of the operational implications of the following concepts as they apply to the (Uncontrolled Depressurization of all Steam Generators) Annunciators and conditions indicating signals, and remedial actions associated with the (Uncontrolled Depressurization of all Steam Generators).	3.4	
000054 (CE/E06) Loss of Main Feedwater / 4				X			054AA1.04 ; Ability to operate and / or monitor the following as they apply to the Loss of Main Feedwater (MFW): HPI, under total feedwater loss conditions.	4.4	
000055 Station Blackout / 6			X				055EK3.02; Knowledge of the reasons for the following responses as they apply to the Station Blackout: Actions contained in EOP for loss of offsite and onsite power.	4.3	
000056 Loss of Off-site Power / 6						X	056AG2.2.44; Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.	4.4	
000057 Loss of Vital AC Inst. Bus / 6					X		057AA2.16; Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: Normal and abnormal PZR level for various modes of plant operation.	3.0	
000058 Loss of DC Power / 6				X			058AA1.02; Ability to operate and / or monitor the following as they apply to the Loss of DC Power: Static inverter dc input breaker, frequency meter, ac output breaker, and ground fault detector.	3.1	

000062 Loss of Nuclear Svc Water / 4			X				062AK3.01; Knowledge of the reasons for the following responses as they apply to the Loss of Nuclear Service Water: The conditions that will initiate the automatic opening and closing of the SWS isolation valves to the nuclear service water coolers.	3.2	
000065 Loss of Instrument Air / 8					X		065AA2.06; Ability to determine and interpret the following as they apply to the Loss of Instrument Air: When to trip reactor if instrument air pressure is de-creasing.	4.2	
W/E04 LOCA Outside Containment / 3						X X	WE04EG2.2.4; (multi-unit license) Ability to explain the variations in control board/control room layouts, systems, instrumentation, and procedural actions between units at a facility. WE04EG2.1.2; Knowledge of operator responsibilities during all modes of plant operation.	3.6 4.4	
W/E11 Loss of Emergency Coolant Recirc. / 4	X						WE11EK1.3; Knowledge of the operational implications of the following concepts as they apply to the (Loss of Emergency Coolant Recirculation): Annunciators and conditions indicating signals, and remedial actions associated with the (Loss of Emergency Coolant Recirculation).	3.6	
BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4					X		WE05EA2.1; Ability to determine and interpret the following as they apply to the (Loss of Secondary Heat Sink): Facility conditions and selection of appropriate procedures during abnormal and emergency operations.	4.4	
000077 Generator Voltage and Electric Grid Disturbances / 6		X					077AK2.01; Knowledge of the interrelations between Generator Voltage and Electric Grid Disturbances and the following: Motors.	3.1	
K/A Category Totals:	3	3	3	3	3/3	3/3	Group Point Total:		18/6

ES-401	PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO / SRO)						Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A2	G	K/A Topic(s)	IR	#
000001 Continuous Rod Withdrawal / 1						X	001AG2.1.32; Ability to explain and apply system limits and precautions.	3.8	
000003 Dropped Control Rod / 1						X	003AG2.1.23; Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.4	
000005 Inoperable/Stuck Control Rod / 1									
000024 Emergency Boration / 1					X		024AA2.05; Ability to determine and interpret the following as they apply to the Emergency Boration: Amount of boron to add to achieve required SDM.	3.9	
000028 Pressurizer Level Malfunction / 2						X	028AG2.1.25; Ability to interpret reference materials, such as graphs, curves, tables, etc.	4.2	
000032 Loss of Source Range NI / 7									
000033 Loss of Intermediate Range NI / 7									
000036 (BW/A08) Fuel Handling Accident / 8									
000037 Steam Generator Tube Leak / 3	X						037AK1.02; Knowledge of the operational implications of the following concepts as they apply to Steam Generator Tube Leak: Leak rate vs. pressure drop.	3.5	
000051 Loss of Condenser Vacuum / 4						X	051G2.2.38; Knowledge of conditions and limitations in the facility license.	3.6	
000059 Accidental Liquid RadWaste Rel. / 9									
000060 Accidental Gaseous Radwaste Rel. / 9		X					060AK2.01; Knowledge of the interrelations between the Accidental Gaseous Radwaste Release and the following: ARM system, including the normal radiation-level indications and the operability status.	2.6	
000061 ARM System Alarms / 7									
000067 Plant Fire On-site / 8				X			067AA1.06; Ability to operate and / or monitor the following as they apply to the Plant Fire on Site: Fire alarm.	3.5	
000068 (BW/A06) Control Room Evac. / 8			X				068AK3.03; Knowledge of the reasons for the following responses as they apply to the Control Room Evacuation: Transfer of AFW flow control valves and pumps to local control.	3.7	
000069 (W/E14) Loss of CTMT Integrity / 5									
000074 (W/E06&E07) Inad. Core Cooling / 4									
000076 High Reactor Coolant Activity / 9					X		076AA2.03; Ability to determine and interpret the following as they apply to the High Reactor Coolant Activity: RCS radioactivity level meter.	2.5	
W/EO1 & E02 Rediagnosis & SI Termination / 3									
W/E13 Steam Generator Over-pressure / 4									

W/E15 Containment Flooding / 5	X						WE15EK1.2; Knowledge of the operational implications of the following concepts as they apply to the (Containment Flooding): Normal, abnormal and emergency operating procedures associated with (Containment Flooding).	2.7	
W/E16 High Containment Radiation / 9									
BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4					X		WE10EA2.2; Ability to determine and interpret the following as they apply to the (Natural Circulation with Steam Void in Vessel with/without RVLIS): Adherence to appropriate procedures and operation within the limitations in the Facility's license and amendments.	3.9	
CE/A11; W/E08 RCS Overcooling - PTS / 4				X			WE08EA1.1; Ability to operate and / or monitor the following as they apply to the (Pressurized Thermal Shock): Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.	3.8	
K/A Category Point Totals:	2	1	1	2	1/2	2/2	Group Point Total:		9/4

ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO / SRO)											Form ES-401-2	
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G	K/A Topic(s)	IR	#
003 Reactor Coolant Pump								X				003A2.03; Ability to (a) predict the impacts of the following malfunctions or operations on the RCPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Problems associated with RCP motors, including faulty motors and current, and winding and bearing temperature problems.	2.7	
											X	003G2.4.45; Ability to prioritize and interpret the significance of each annunciator or alarm.	4.3	
004 Chemical and Volume Control								X				004A2.24; Ability to (a) predict the impacts of the following malfunctions or operations on the CVCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Isolation of both letdown filters at one time: down-stream relief lifts.	2.8	
							X					004A1.05; Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CVCS controls including: S/G pressure and level.	2.9	
005 Residual Heat Removal							X					005A1.03; Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RHRS controls including: Closed cooling water flow rate and temperature.	2.5	
			X									005K3.06; Knowledge of the effect that a loss or malfunction of the RHRS will have on the following: CSS.	3.1	
006 Emergency Core Cooling					X							006K5.07; Knowledge of the operational implications of the following concepts as they apply to ECCS: Expected temperature levels in various locations of the RCS due to various plant conditions.	2.7	
						X						006K6.05; Knowledge of the effect of a loss or malfunction on the following will have on the ECCS: HPI/LPI cooling water.	3.0	

007 Pressurizer Relief/Quench Tank								X		X	007G2.2.44; Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions. 007A2.03; Ability to (a) predict the impacts of the following malfunctions or operations on the P S; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Overpressurization of the PZR.	4.2 3.9	
008 Component Cooling Water		X									008K2.02; Knowledge of bus power supplies to the following: CCW pump, including emergency backup.	3.0	
010 Pressurizer Pressure Control						X				X	010K6.04; Knowledge of the effect of a loss or malfunction of the following will have on the PZR PCS: PRT. 010G2.2.44; Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.	2.9 4.4	
012 Reactor Protection				X							012K4.09; Knowledge of RPS design feature(s) and/or interlock(s) which provide for the following: Separation of control and protection circuits.	2.8	
013 Engineered Safety Features Actuation									X		013A4.01; Ability to manually operate and/or monitor in the control room: ESFAS-initiated equipment which fails to actuate.	4.5	
022 Containment Cooling				X							022K4.01; Knowledge of PRTS design feature(s) and/or interlock(s) which provide for the following: Quench tank cooling.	2.6	
025 Ice Condenser													
026 Containment Spray							X X				026A1.03; Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CSS controls including: Containment sump level. 026A2.03; Ability to (a) predict the impacts of the following malfunctions or operations on the CSS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Failure of ESF.	3.5 4.4	
039 Main and Reheat Steam					X						039K5.08; Knowledge of the operational implications of the following concepts as they apply to the MRSS: Effect of steam removal on reactivity.	3.6	
059 Main Feedwater								X			059A3.03; Ability to monitor automatic operation of the MFW, including: Feedwater pump suction flow pressure.	2.5	
061 Auxiliary/Emergency Feedwater		X									061K2.03; Knowledge of bus power supplies to the following: AFW diesel driven pump.	4.0	

062 AC Electrical Distribution		X						X			062A3.01; Ability to monitor automatic operation of the ac distribution system, including: Vital ac bus amperage. 062K2.01; Knowledge of bus power supplies to the following: Major system loads.	3.0 3.3	
063 DC Electrical Distribution			X								063K3.01; Knowledge of the effect that a loss or malfunction of the DC electrical system will have on the following: ED/G.	3.7	
064 Emergency Diesel Generator						X					064K6.07; Knowledge of the effect of a loss or malfunction of the following will have on the ED/G system: Air receivers.	2.7	
073 Process Radiation Monitoring	X										073K1.01; Knowledge of the physical connections and/or cause effect relationships between the RPS and the following systems: 120V vital/instrument power system. 073A2.01; Ability to (a) predict the impacts of the following malfunctions or operations on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Faulty bistable operation.	3.4 3.6	
076 Service Water								X			076A3.02; Ability to monitor automatic operation of the SWS, including: Emergency heat loads. 076A4.04; Ability to manually operate and/or monitor in the control room: Emergency heat loads.	3.7 3.5	
078 Instrument Air	X										078G2.4.34; Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects. 078K1.05; Knowledge of the physical connections and/or cause-effect relationships between the IAS and the following systems: MSIV air.	4.2 3.4	
103 Containment	X			X							103K1.08; Knowledge of the physical connections and/or cause/effect relationships between the containment system and the following systems: SIS, including action of safety injection reset. 103K4.01; Knowledge of containment system design feature(s) and/or interlock(s) which provide for the following: Vacuum breaker protection.	3.6 3.0	
K/A Category Point Totals:	3	3	2	3	2	3	3	2/3	3	2	2/2	Group Point Total:	28/5

ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 2 (RO / SRO)											Form ES-401-2		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G	K/A Topic(s)	IR	#
001 Control Rod Drive					X							001K5.47; Knowledge of the following operational implications as they apply to the CRDS: Factors affecting SUR: β_{eff} , ℓ/ρ.	2.9	
002 Reactor Coolant														
011 Pressurizer Level Control		X										011K2.02; Knowledge of bus power supplies to the following: PZR heaters.	3.1	
014 Rod Position Indication	X											014K1.01; Knowledge of the physical connections and/or cause/effect relationships between the RPIS and the following systems: CRDS.	3.2	
015 Nuclear Instrumentation														
016 Non-nuclear Instrumentation														
017 In-core Temperature Monitor						X						017K6.01; Knowledge of the effect of a loss or malfunction of the following ITM system components: Sensors and detectors.	2.7	
027 Containment Iodine Removal														
028 Hydrogen Recombiner and Purge Control														
029 Containment Purge									X			029A3.01; Ability to monitor automatic operation of the Containment Purge System including: CPS isolation.	3.8	
033 Spent Fuel Pool Cooling														
034 Fuel Handling Equipment											X	034G2.4.30; 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	
035 Steam Generator							X					035A1.02; Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the S/GS controls including: S/G pressure.	3.5	
041 Steam Dump/Turbine Bypass Control														
045 Main Turbine Generator								X				045A2.17; Ability to (a) predict the impacts of the following malfunctions or operation on the MT/G system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Malfunction of electrohydraulic control.	2.7	
055 Condenser Air Removal			X									055K3.01; Knowledge of the effect that a loss or malfunction of the CARS will have on the following: Main condenser.	2.5	
056 Condensate											X	056G2.1.28; Knowledge of the purpose and function of major system components and controls.	4.1	

068 Liquid Radwaste				X							068K4.01; Knowledge of design feature(s) and/or interlock(s) which provide for the following: Safety and environmental precautions for handling hot, acidic, and radioactive liquids.	3.4	
071 Waste Gas Disposal													
072 Area Radiation Monitoring							X				072A2.03; Ability to (a) predict the impacts of the following malfunctions or operations on the ARM system- and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Blown power-supply fuses.	2.9	
075 Circulating Water													
079 Station Air							X				079A2.01; Ability to (a) predict the impacts of the following malfunctions or operations on the SAS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Cross-connection with IAS.	3.2	
086 Fire Protection													
K/A Category Point Totals:	1	1	1	1	1	1	1	1/2	1	0	1/1	Group Point Total:	10/3

Facility: **Farley** Date of Exam: **October, 2015**

Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.18	Ability to make accurate, clear, and concise logs, records, status boards, and reports.	3.6			
	2.1.8	Ability to coordinate personnel activities outside the control room.	3.4			
	2.1.41	Knowledge of the refueling process.			3.7	
	Subtotal		2		1	
2. Equipment Control	2.2.21	Knowledge of pre- and post-maintenance operability requirements.	2.9			
	2.2.22	Knowledge of limiting conditions for operations and safety limits.	4.0			
	2.2.35	Ability to determine Technical Specification Mode of Operation.	3.6			
	2.2.13	Knowledge of tagging and clearance procedures.			4.3	
	2.2.40	Ability to apply Technical Specifications for a system.			4.7	
	Subtotal		3		2	
3. Radiation Control	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.	3.2			
	2.3.15	Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	2.9			
	2.3.12	Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.			3.7	
	2.3.14	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.			3.8	
	Subtotal		2		2	
4. Emergency Procedures / Plan	2.4.18	Knowledge of the specific bases for EOPs.	3.3			
	2.4.27	Knowledge of “fire in the plant” procedures.	3.4			
	2.4.43	Knowledge of emergency communications systems and techniques.	3.2			
	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
	2.4.35	Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects.				4.0
	Subtotal		3		2	
Tier 3 Point Total			10		7	

Tier / Group	Randomly Selected K/A	Reason for Rejection
1/1	011EA2.01	Oversampled. Changed to 007EA2.03.
1/1	025AA2.05	Oversampled. Changed to WE5EA2.1.
1/2	028AK1.01	Oversampled. Changed to 037AK1.02.
1/2	068AA2.11	Oversampled. Changed to 024AA2.05.
1/2	WE09G2.2.38	Oversampled. Changed to 051G2.2.38.
2/1	005A1.05	Oversampled. Changed to 004A1.05.
2/1	022K4.04	Oversampled. Changed to 103K4.01.
2/1	061K2.02	Oversampled. Changed to 062K2.01
2/1	073K3.01	Oversampled. Changed to 005K3.06.
3	G2.3.14	Oversampled. Changed to G2.2.22