

- WRITTEN EXAM SAMPLE PLAN ONLY -

ES-201

Examination Outline Quality Checklist

Form ES-201-2

Facility: <b>H.B. ROBINSON</b>		Date of Examination: <b>JULY 2013</b>		
Item	Task Description	Initials		
		a	b*	c#
1. W R I T T E N	a. Verify that the outline(s) fit(s) the appropriate model, in accordance with ES-401.	M	N/A	Rob
	b. Assess whether the outline was systematically and randomly prepared in accordance with Section D.1 of ES-401 and whether all K/A categories are appropriately sampled.	M	N/A	Rob
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	M	N/A	Rob
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	M	N/A	Rob
2. S I M U L A T O R	a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, technical specifications, and major transients.			
	b. Assess whether there are enough scenario sets (and spares) to test the projected number and mix of applicants in accordance with the expected crew composition and rotation schedule without compromising exam integrity, and ensure that each applicant can be tested using at least one new or significantly modified scenario, that no scenarios are duplicated from the applicants' audit test(s), and that scenarios will not be repeated on subsequent days.			
	c. To the extent possible, assess whether the outline(s) conform(s) with the qualitative and quantitative criteria specified on Form ES-301-4 and described in Appendix D.			
3. W / T	a. Verify that the systems walk-through outline meets the criteria specified on Form ES-301-2: (1) the outline(s) contain(s) the required number of control room and in-plant tasks distributed among the safety functions as specified on the form (2) task repetition from the last two NRC examinations is within the limits specified on the form (3) no tasks are duplicated from the applicants' audit test(s) (4) the number of new or modified tasks meets or exceeds the minimums specified on the form (5) the number of alternate path, low-power, emergency, and RCA tasks meet the criteria on the form.	N		A
	b. Verify that the administrative outline meets the criteria specified on Form ES-301-1: (1) the tasks are distributed among the topics as specified on the form (2) at least one task is new or significantly modified (3) no more than one task is repeated from the last two NRC licensing examinations			
	c. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on subsequent days.			
4. G E N E R A L	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam sections.	M	N/A	Rob
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	M	N/A	Rob
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	M	N/A	Rob
	d. Check for duplication and overlap among exam sections.	N/A	N/A	N/A
	e. Check the entire exam for balance of coverage.	M	N/A	Rob
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	M	N/A	Rob
a. Author: <b>MICHAEL MEERS</b> (Printed Name) <i>[Signature]</i> b. Facility Reviewer (*): <b>N/A</b> c. NRC Chief Examiner (#): <b>RICHARD S. BACOWIN</b> <i>[Signature]</i> d. NRC Supervisor: <b>MARK FRANKE</b> <i>[Signature]</i>		Date: <b>01/30/2013</b> N/A <b>1/31/2013</b> <b>1/31/13</b>		
Note: # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required. * Not applicable for NRC-prepared examination outlines				

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Facility: H.B. ROBINSON		Date of Exam: JULY 2013																
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				3	3			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	2	3	2	3	2	2	3	3	2	3	3	28	3	2	5		
	2	1	1	0	1	1	1	1	1	1	1	1	10	0	2	3		
	Tier Totals	3	4	2	4	3	3	4	4	3	4	4	38	5	3	8		
3. Generic Knowledge and Abilities Categories				1		2		3		4		10		1	2	3	4	7
				2		2		3		3				1	2	2	2	

Note:

- 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).
- 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  $\pm 1$  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.
- 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.
- 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.
- 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.
- Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
- \* 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.
- 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.
- 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	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
008AK2.03	Pressurizer Vapor Space Accident / 3	2.5	2.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Controllers and positioners
009EK1.02	Small Break LOCA / 3	3.5	4.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Use of steam tables
011EG2.4.21	Large Break LOCA / 3	4.0	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Knowledge of the parameters and logic used to assess the status of safety functions
022AK3.07	Loss of Rx Coolant Makeup / 2	3	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Isolating charging
025AK2.02	Loss of RHR System / 4	3.2	3.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LPI or Decay Heat Removal/RHR pumps
027AA1.02	Pressurizer Pressure Control System Malfunction / 3	3.1	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SCR-controlled heaters in manual mode
<input checked="" type="checkbox"/> 029EA1.04 1.02	ATWS / 1	3.9	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	BIT inlet valve switches
038EK3.08	Steam Gen. Tube Rupture / 3	4.1	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Criteria for securing RCP
040AA2.02	Steam Line Rupture - Excessive Heat Transfer / 4	4.6	4.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Conditions requiring a reactor trip
054AK1.01	Loss of Main Feedwater / 4	4.1	4.3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MFW line break depressurizes the S/G (similar to a steam line break)
055EG2.4.21	Station Blackout / 6	4.0	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the parameters and logic used to assess the status of safety functions

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
056AA1.15	Loss of Off-site Power / 6	2.7	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Service water booster pump <i>OR SVCS HLD pumps.</i>
057AA2.19	Loss of Vital AC Inst. Bus / 6	4	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The plant automatic actions that will occur on the loss of a vital ac electrical instrument bus
058AK1.01	Loss of DC Power / 6	2.8	3.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Battery charger equipment and instrumentation
077AK3.02	Generator Voltage and Electric Grid Disturbances / 6	3.6	3.9	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Actions contained in abnormal operating procedures for voltage and grid disturbances
WE04EK2.1	LOCA Outside Containment / 3	3.5	3.9	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Components and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes and automatic and manual features.
we05EG2.4.6	Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	3.7	4.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge symptom based EOP mitigation strategies.
WE11EA2.2	Loss of Emergency Coolant Recirc. / 4	3.4	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
028AA2.03	Pressurizer Level Malfunction / 2	2.8	3.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Charging subsystem flow indicator and controller
032AA1.01	Loss of Source Range NI / 7	3.1	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Manual restoration of power
033AG2.2.22	Loss of Intermediate Range NI / 7	4.0	4.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Knowledge of limiting conditions for operations and safety limits.
060AK3.02	Accidental Gaseous Radwaste Rel. / 9	3.3	3.5	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Isolation of the auxiliary building ventilation
067AK1.02	Plant Fire On-site / 8	3.1	3.9	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fire fighting
<input checked="" type="checkbox"/> 068AG2.2.35 2.2.2	Control Room Evac. / 8	3.1	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions of operations
076AA1.04	High Reactor Coolant Activity / 9	3.2	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Failed fuel-monitoring equipment
WE08EK1.2	RCS Overcooling - PTS / 4	3.4	4.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Normal, abnormal and emergency operating procedures associated with (Natural Circulation Operations).
WE10EK2.2	Natural Circ. With Seam Void / 4	3.6	3.9	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	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.

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
003A1.04	Reactor Coolant Pump	2.6	2.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCP oil reservoir levels
003K4.02	Reactor Coolant Pump	2.5	2.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Prevention of cold water accidents or transients
004K3.08	Chemical and Volume Control	3.6	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCP seal injection
004K6.26	Chemical and Volume Control	3.8	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Methods of pressure control of solid plant (PZR relief and water inventory)
005A2.04	Residual Heat Removal	2.9	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RHR valve malfunction
006A4.02	Emergency Core Cooling	4.0	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Valves
006K5.10	Emergency Core Cooling	2.5	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Theory of thermal stress
007K5.02	Pressurizer Relief/Quench Tank	3.1	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Method of forming a steam bubble in the PZR
008A2.07	Component Cooling Water	2.5	2.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Consequences of high or low CCW flow rate and temperature; the flow rate at which the CCW standby pump will start
010K1.08	Pressurizer Pressure Control	3.2	3.5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PZR LCS
012A3.04	Reactor Protection	2.8	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circuit breaker

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
013K2.01	Engineered Safety Features Actuation	3.6	3.8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ESFAS/safeguards equipment control
022A3.01	Containment Cooling	4.1	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initia tion of safeguards mode of operation
026G2.2.42	Containment Spray	3.9	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ability to recognize system parameters that are entry-level conditions for Technical Specifications
039A4.04	Main and Reheat Steam	3.8	3.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Emergency feedwater pump turbines
059A2.12	Main Feedwater	3.1	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Failure of feedwater regulating valves
061K6.02	Auxiliary/Emergency Feedwater	2.6	2.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pumps
062K3.03	AC Electrical Distribution	3.7	3.9	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DC system
063A1.01	DC Electrical Distribution	2.5	3.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Battery capacity as it is affected by discharge rate
064G2.1.27	Emergency Diesel Generator	3.9	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of system purpose and or function.
064K2.01	Emergency Diesel Generator	2.7	3.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Air compressor
073A4.01	Process Radiation Monitoring	3.9	3.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Effluent release

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
073K4.02	Process Radiation Monitoring	3.3	3.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Letdown isolation on high-RCS activity
076A1.02	Service Water	2.6	2.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Reactor and turbine building closed cooling water temperatures.
076K2.08	Service Water	3.1	3.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ESF-actuated MOVs
078G2.4.50	Instrument Air	4.2	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.
078K1.04	Instrument Air	2.6	2.9	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cooling water to compressor
103K4.04	Containment	2.5	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Personnel access hatch and emergency access hatch



KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
002A2.04	Reactor Coolant	4.3	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Loss of heat sinks
011K6.03	Pressurizer Level Control	2.9	3.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Relationship between PZR level and PZR heater control circuit
014G2.1.30	Rod Position Indication	4.4	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ability to locate and operate components, including local controls.
017A1.01	In-core Temperature Monitor	3.7	3.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Core exit temperature
027K2.01	Containment Iodine Removal	3.1	3.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fans
029A4.01	Containment Purge	2.5	2.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Containment purge flow rate
033K4.01	Spent Fuel Pool Cooling	2.9	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Maintenance of spent fuel level
035K5.01	Steam Generator	3.4	3.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Effect of secondary parameters, pressure and temperature on reactivity
055A3.03	Condenser Air Removal	2.5	2.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Automatic diversion of CARS exhaust
068K1.07	Liquid Radwaste	2.7	2.9	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sources of liquid wastes for LRS

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
G2.1.14	Conduct of operations	3.1	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trip, mode changes, etc.
G2.1.40	Conduct of operations	2.8	3.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of refueling administrative requirements
G2.2.12	Equipment Control	3.7	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of surveillance procedures.
G2.2.7	Equipment Control	2.9	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the process for conducting special or infrequent tests
G2.3.14	Radiation Control	3.4	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities
G2.3.15	Radiation Control	2.9	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of radiation monitoring systems
G2.3.4	Radiation Control	3.2	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of radiation exposure limits under normal and emergency conditions
G2.4.12	Emergency Procedures/Plans	4.0	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of general operating crew responsibilities during emergency operations.
G2.4.26	Emergency Procedures/Plans	3.1	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of facility protection requirements including fire brigade and portable fire fighting equipment usage.
G2.4.39	Emergency Procedures/Plans	3.9	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the RO's responsibilities in emergency plan implementation.

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
008AG2.1.7	Pressurizer Vapor Space Accident / 3	3.4	4.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior and instrument interpretation.
054AG2.4.35	Loss of Main Feedwater / 4	3.8	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of local auxiliary operator tasks during emergency and the resultant operational effects
055EA2.06	Station Blackout / 6	3.7	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Faults and lockouts that must be cleared prior to re-energizing buses
058AG2.1.19	Loss of DC Power / 6	3.9	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to use plant computer to evaluate system or component status.
077AA2.02	Generator Voltage and Electric Grid Disturbances / 6	3.5	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Voltage outside the generator capability curve
WE05EA2.2	Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	3.7	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
001AA2.05	Continuous Rod Withdrawal / 1	4.4	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Uncontrolled rod withdrawal from available indications
060AG2.2.37	Accidental Gaseous Radwaste Rel. / 9	3.6	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to determine operability and/or availability of safety related equipment
061AA2.02	ARM System Alarms / 7	2.9	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Normal radiation intensity for each ARM system channel
we14EG2.2.38	Loss of CTMT Integrity / 5	3.6	4.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of conditions and limitations in the facility license.

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
012G2.1.20	Reactor Protection	4.6	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to execute procedure steps.
<div>009G2.4.20</div> <i>061 Auxiliary / Emergency Feed</i>	Main and Reheat Steam	3.8	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of operational implications of EOP warnings, cautions and notes.
063A2.02	DC Electrical Distribution	2.3	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Loss of ventilation during battery charging
076A2.01	Service Water	3.5	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Loss of SWS
103A2.01	Containment	2.0	2.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Integrated leak rate test

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
028A2.01	Hydrogen Recombiner and Purge Control	3.4	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hydrogen recombinder power setting, determined by using plant data book
068A2.04	Liquid Radwaste	3.3	3.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Failure of automatic isolation
071G2.4.46	Waste Gas Disposal	4.2	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to verify that the alarms are consistent with the plant conditions.

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
G2.1.38	Conduct of operations	3.7	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the stations requirements for verbal communication when implementing procedures
G2.2.13	Equipment Control	4.1	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of tagging and clearance procedures.
G2.2.18	Equipment Control	2.6	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the process for managing maintenance activities during shutdown operations.
G2.3.13	Radiation Control	3.4	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of radiological safety procedures pertaining to licensed operator duties
G2.3.5	Radiation Control	2.9	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to use radiation monitoring systems
G2.4.23	Emergency Procedures/Plans	3.4	4.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations.
G2.4.30	Emergency Procedures/Plans	2.7	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of events related to system operations/status that must be reported to internal organizations or outside agencies.

Facility: <u>H B Robinson</u>		Date of Examination: <u>7/29/13</u>
Examination Level: RO <input checked="" type="checkbox"/> SRO		Operating Test Number: <u>ILC-13</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M, R	Determine Power Distribution Flux Limits
Conduct of Operations	N, S	Power Range Calorimetric During Power Operation
Equipment Control	D, S	Perform the monthly RVLIS Channel Check IAW OST-054 <i>SI RO</i>
Radiation Control	M, R	Calculate Low Dose Path
Emergency Procedures/Plan		N/A
<p>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.</p>		
<p>* Type Codes &amp; Criteria:</p> <p>(C)ontrol room, (S)imulator, or Class(R)oom          (D)irect from bank (<math>\leq 3</math> for ROs; <math>\leq 4</math> for SROs &amp; RO retakes)          (N)ew or (M)odified from bank (<math>\geq 1</math>)          (P)revious 2 exams (<math>\leq 1</math>; randomly selected)</p>		



## **ILC-13 NRC RO Admin JPM Summary**

### **ILC-13 NRC JPM Admin RO A1-1 – Determine Power Distribution Flux Limits**

G2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.  
(CFR: 41.5 / 43.5 / 45.12 / 45.13)

The plant is at 70% RTP with a Xenon transient in progress. The program that calculates penalty points is inoperable. The candidate will be provided the 100% Target Value and the Target Band range along with seven sets of Power Data and individual Power Range NI AFD readings over a 3 hour period. The candidate will be directed to manually calculate the Penalty Points in accordance with FMP-009, Power Distribution Control. Candidate will determine that a total of 105 penalty points have been accumulated over the course of the 3 hour power ascension. (Modified Admin JPM)

### **ILC-13 NRC JPM Admin RO A1-2 – Power Range Calorimetric During Power Operation**

G2.1.19 Ability to use plant computers to evaluate system or component status. (CFR 41.10 / 45.12)

The plant is at 100% RTP and the candidate is directed to perform OST-010, Power Range Calorimetric During Power Operation Daily, and to adjust all Power Range NI's that indicate greater than +/- 0.5% of 100%. During the calorimetric the candidate will determine that NI-44 is outside of the prescribed band and adjust NI-44 from 101% to 100%. (New Admin JPM)

### **ILC-13 NRC JPM Admin RO A2 – Perform the monthly RVLIS Channel Check IAW OST-054.**

#### **G2.2.12 Knowledge of Surveillance Procedures**

The plant is at 100% RTP and the candidate is directed to perform OST-054, Section 8.1, RVLIS Channel Check. During performance of the OST the candidate will identify that the deviation between RVLIS Channel I and Channel II exceed the allowed deviation of 12% and will determine that the OST is UNSAT. (Bank Admin JPM)

NO 6009  
17

### **ILC-13 NRC JPM Admin RO A3 – Calculate Low Dose Path**

G2.3.4 Knowledge of radiation exposure limits under normal or emergency conditions.  
(CFR: 41.12 / 43.4 / 45.10)

The candidate will be given a set of conditions and directed to determine the most efficient method of performing a job to receive the lowest dose for work in an RCA. The applicant will be given 2 possible paths to get to a work site and the option of using 1 or 2 workers. The candidates are also given the current annual dose of the two workers assigned to perform the work and have to determine if any dose limits will be exceeded. This JPM will be performed by both RO and SRO candidates. (Modified Admin JPM)

Facility: H B RobinsonDate of Examination: 7/29/13

Examination Level: RO

SRO X

Operating Test Number: ILC-13

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M, R	Determine Power Distribution Flux Limits
Conduct of Operations	M, R	Review a set of Hot Ops Log
Equipment Control	N, R	Review of Completed Surveillance Procedure (OST-151-4, Comprehensive Flow Test For Safety Injection Pump "A")
Radiation Control	M, R	Calculate Low Dose Path
Emergency Procedures/Plan	N, R	Perform an Emergency Action Level Classification and Recommended Protective Actions
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 ( $\leq 3$ for ROs; $\leq 4$ for SROs & RO retakes) (N)ew or (M)odified from bank ( $\geq 1$ ) (P)revious 2 exams ( $\leq 1$ ; randomly selected)		

## **ILC-13 NRC SRO Admin JPM Summary**

### **ILC-13 NRC JPM Admin SRO A1-1 – Determine Power Distribution Flux Limits**

G2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.  
(CFR: 41.5 / 43.5 / 45.12 / 45.13)

The plant is at 70% RTP with a Xenon transient in progress. The program that calculates penalty points is inoperable. The candidate will be provided the 100% Target Value and the Target Band range along with seven sets of Power Data and individual Power Range NI AFD readings over a 3 hour period. The candidate will be directed to manually calculate the Penalty Points in accordance with FMP-009, Power Distribution Control. Candidate will also determine if any ITS Surveillance requirements and LCOs are applicable. Candidate will determine that the ITS 3.2.3, Condition C limit of 60 penalty points was exceeded at time 1430 and that ITS 3.2.3 Condition D was met at 1500 due to power not being reduced below 50% RTP within 30 minutes. Candidate also determines that SR 3.2.3.2 is required due to the AFD monitor being out of service. (Modified Admin JPM)

### **ILC-13 NRC JPM Admin SRO A1-2 – Review a set of Hot Ops Logs**

G2.1.25 Ability to interpret reference materials, such as graphs, curves, tables, etc.

G2.1.18 Ability to make accurate, clear, and concise logs, records, status boards, and reports. (CFR: 41.10 / 45.12 / 45.13)

The candidate will be given a set of Hot Ops Logs to review following the 1600 readings. The candidate will be directed to review the logs in accordance with OMM-01-011, Logkeeping, and OPS-NGGC-1000, Fleet Conduct of Operations. Candidate will identify that "B" SI Accumulator's recorded level is high out of specification and request additional information. A cue will be given that will prompt the candidate that ITS SR 3.5.1.4 be performed to sample the accumulator for proper boron concentration. Candidate will also identify that "A" Boric Acid Storage Tank is low out of specification and determine that adequate volume exists between "A" and "B" BASTs to meet the requirements of TRM 3.6. Lastly the candidate will identify that the Primary Water Storage Tank is low out of specification per the logs. The candidate will review the station curve book and determine that adequate volume is available to meet the requirements of TRM 3.6. (Modified Admin JPM)

**ILC-13 NRC JPM Admin SRO A2 – Review of Completed Surveillance Procedure (OST-151-4, Comprehensive Flow Test For Safety Injection Pump “A”)**

G2.2.12 Knowledge of surveillance procedures. (CFR: 41.10 / 45.13)

The candidate will be directed to perform a review of a completed OST-151-4 prior to Shift Manager's approval. The candidate will identify a missing initial from a step and failure to circle SAT for performance of a section of the procedure. Candidate will identify that the differential pressure recorded on the data table is different than the differential pressure calculated from the field data. Candidate will identify that one of pump vibration readings was incorrectly labeled as in the Acceptable range when it should have been marked as in the Alert range. Candidate will note that position verification of a tested valve was marked as UNSAT due to not receiving the proper ERFIS indication. Candidate will review the associated note in the comments section and determine that the valve has been erroneously declared OOS due to the failed ERFIS reading. (New Admin JPM)

NO - GOOD FOR TRAINING

**ILC-13 NRC JPM Admin SRO A3 – Calculate Low Dose Path**

G2.3.4 Knowledge of radiation exposure limits under normal or emergency conditions. (CFR: 41.12 / 43.4 / 45.10)

The candidate will be given a set of conditions and directed to determine the most efficient method of performing a job to receive the lowest dose for work in an RCA. The applicant will be given 2 possible paths to get to a work site and the option of using 1 or 2 workers. The candidates are also given the current annual dose of the two workers assigned to perform the work and have to determine if any dose limits will be exceeded. This JPM will be performed by both RO and SRO candidates. (Modified Admin JPM)

**ILC-13 NRC JPM Admin SRO A4 – Perform an Emergency Action Level Classification and Recommended Protective Actions.**

G2.4.41 Knowledge of the emergency action level thresholds and classifications. (CFR: 41.10 / 43.5 / 45.11)

G2.4.44 Knowledge of emergency plan protective action recommendations. (CFR: 41.10 / 43.5 / 45.3 / 45.12)

The candidate will be given the necessary plant conditions to classify that an emergency event has occurred. This classification is time critical and is required to be determined within 15 minutes of the onset of the event. Once the classification is communicated to the examiner, the candidate will be directed to determine the Protective Action Recommendations based on the event and meteorological data. (New Admin JPM)

WHAT IS THE LVL - 44 - add para's

Facility: <u>H B Robinson</u>		Date of Examination: <u>7/29/13</u>
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U		Operating Test No.: <u>ILC-13</u>
Control Room Systems <sup>@</sup> (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a. 004 CVCS / Establishing RCS Cold Shutdown Boron Concentration	L, N, S	1
b. 010 PZR PCS / Place LTOP in Service	L, N, S	3
c. 002 RCS / Establish RCS Bleed and Feed	A, EN, L, M, S	4P
d. 039 MRSS / Reactor Trip Response – Excessive RCS Cooldown	A, D, L, S	4S
e. 103 Containment / Verify Phase B Containment Isolation and CV Spray Alignment	A, EN, L, M, P, S	5
f. 062 AC Elect. / Operation with High Switchyard Voltage	A, N, S	6
g. 008 CCW / Respond to a Loss of CCW	D, S	8
h. 006 ECCS / Fill a Safety Injection Accumulator IAW OP-202 (RO Only)	D, EN, S	2
In-Plant Systems <sup>@</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. 004 CVCS / Auxiliary Building Operator Actions IAW DSP-002, Att. 3	A, E, L, M, R	2
j. 061 AFW / Aligning SW Backup to SDAFW Pump Suction IAW DSP-007, Attachment 7	A, D, E, L, R	4S
k. 064 EDG / Align Backup Fuel Oil to the "B" EDG IAW EPP-28, Att. 5	D, E, L, R	6
<sup>@</sup> 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	- / - / $\geq 1$ (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	

**JPM A:** Establishing RCS Cold Shutdown Boron Concentration.

K/A 004 A4.18 Ability to manually operate and/or monitor in the control room:  
Emergency borate valve (CFR 41.7, 45.5 to 45.8)

(004 CVCS) Candidate will assume the watch with the plant in Mode 3 following a Rapid Plant Shutdown due to a 20 gpm leak on "A" S/G. The candidate will be directed to add 700 gallons of boric acid to the RCS in accordance with AOP-035, Att. 3, Establishing RCS Cold Shutdown Boron Concentration. This procedure will have the candidate use MOV-350, BA TO CHARGING PMP SUCT, as the boration flowpath. Candidate will have to utilize Boric Acid Flowrate information and calculate how long the addition must be in service to add the desired amount of boric acid. MOV-350 will be closed after the desired amount of boric acid has been added based on calculated time. (New CR JPM)

**JPM B:** Place LTOP in Service

K/A 010 A4.03 Ability to manually operate and/or monitor in the control room: PORV and Block Valves (CFR: 41.7 / 45.5 to 45.8)

(010 PZR PCS) Candidate will assume the watch as Operator at Controls with a cooldown to Cold Shutdown in progress. With RCS temperature between 350°F and 360°F the candidate will adjust PC-444J, PZR PRESS MASTER CONTROLLER, OR PZR Spray Valves in manual to lower RCS pressure to between 350 and 375 psig. Candidate will the proceed through a series of plant condition verification steps and then ultimately place both PZR PORV's Overpressure Selector Switches to the LOW PRESSURE position. This evolution will be performed in accordance with GP-007, Plant Cooldown from Hot Shutdown to Cold Shutdown, Step 8.3.10. (New CR JPM)

**JPM C:** Establish RCS Bleed and Feed

K/A 002 A2.04 Ability to (a) predict the impacts of the following malfunctions or operations on the RCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of heat sinks. (CFR: 41.5 / 43.5 / 45.3 / 45.5)

(002 RCS) The plant has experienced a loss of all feedwater along with failure of the reactor to be tripped from the control room. Upon exiting FRP-S.1, the crew has identified a RED terminus on the Heat Sink CSF and transitioned to FRP-H.1, Response to Loss of Secondary Heat Sink. The candidate will be directed to respond to the loss of secondary heat sink in accordance with FRP-H.1. The candidate will determine that RCS Bleed and Feed criteria have been met and take the necessary actions. During the implementation of RCS Bleed and Feed the candidate will determine that PZR PORV PCV-455C has failed at mid-position. The candidate will take alternative actions to open all RCS and PZR Vent Valves in an attempt to provide an adequate bleed path. (CR-075 Bank JPM Modified for Alternate Path)

**JPM D:** Reactor Trip Response – Excessive RCS Cooldown

K/A 007 EA1.03 / EA1.10 Ability to operate and monitor the following as they apply to a reactor trip: RCS pressure and temperature / S/G Pressure (CFR: 41.7 / 45.5 / 45.6)

(039 MRSS) The plant was manually tripped due to a loss of both Main Feed Pumps. The CRS has directed the candidate to stabilize the plant IAW EOP-ES-0.1. Candidate will identify that RCS Temperature is continuing to lower with all S/G PORVs and Steam Dumps closed and takes action to close the MSIVs. (Alternate Path) Based on a continuous action step the candidate will identify that RCS temperature is now rising and takes action to control RCS temperature by manually controlling the S/G PORVs and stabilizes RCS temperature at approximately 547°F. (CR-084 Bank JPM)



**JPM E:** Verify Phase B Containment Isolation and CV Spray Alignment

K/A 026 A4.01 Ability to manually operate and/or monitor in the control room: CSS Controls (CFR: 41.7 / 45.5 to 45.8)

K/A 103 A3.01 Ability to monitor automatic operation of the containment system, including: Containment Isolation (CFR: 41.7 / 45.5)

(103 Containment) The plant has tripped due to a Large Break LOCA. EOP-E-0 has been implemented up to Step 9. a. "CV pressure – HAS REMAINED LESS THAN 10 PISG." The candidate has been directed to perform the RNO actions for this step due to CV being greater than 10 psig. Candidate will determine that none of the CV Spray Pump Discharge Valves (SI-880s) are open and take manual actions to open them from the RTGB controls. The candidate will then determine that none of the Phase B valves are in the proper position and take manual action to close all the valves and then secure the RCPs. (CR-098 Bank JPM Modified for Alternate Paths)

**JPM F:** Operation with High Switchyard Voltage

K/A 062 A2.08 Ability to (a) predict the impacts of the following malfunctions or operations on the AC distribution system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Consequences of exceeding voltage limitations (CFR: 41.5 / 43.5 / 45.3 / 45.13)

(062 AC Dist.) The plant is in Mode 1 and Grid voltage has risen to the point that E-2 voltage is greater than 505 Volts. AOP-031, Operation with High Switchyard Voltage, has been performed up to step 21. The candidate will continue in AOP-031 and start loads on E-2 in an attempt to lower voltage and ultimately transfer 4Kv Bus 4 to the Start-Up Transformer. During the transfer, breaker 52/20 will fail to Auto-Open and require the candidate to perform an alternate path by manually opening breaker 52/20. (New CR JPM)

**JPM G:** Respond to a Loss of CCW IAW AOP-014

K/A 008 A3.01 Knowledge of the effect that a loss or malfunction of the CCWS will have on the following: RCP (CFR: 41.5 / 45.5)

(007 PRT) Candidate will assume the watch with the plant at 100% RTP and told to respond to plant alarms. The candidate will receive a CCW Surge Tank HI/LO Level alarm and determine that the CCW Surge Tank is lowering rapidly. Candidate will take actions IAW AOP-014, CCW System Malfunction, and trip the reactor and trip all RCPs. Candidate will then lockout all CCW Pumps to prevent Auto-Start on Low System Pressure and ultimately determine that the leak is in the CV and Isolate CCW to the RCPs. (CR-066 Bank JPM)

**JPM H:** Fill a Safety Injection Accumulator IAW OP-202 (RO Only)

K/A 006 A1.13 Ability to predict and / or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ECCS controls including: Accumulator pressure (level, boron concentration) (CFR 41.5 / 45.5)

(006 ECCS): Fill a Safety Injection Accumulator IAW OP-202. The candidate assumes the watch with a SI Accumulator Low level alarm with direction to fill the Accumulator IAW OP-202, SAFETY INJECTION AND CONTAINMENT VESSEL SPRAY SYSTEM, Section 8.2.1, to reset the low level alarm. The applicant will align ECCS valves and start a Safety Injection Pump to raise level above 69%, while maintaining pressure within band. (CR-019 Bank JPM) **(RO ONLY)**

**JPM I:** Auxiliary Building Operator Actions IAW DSP-002, Att. 3

K/A 004 G2.1.30 Ability to locate and operate components, including local controls with respect to CVCS. (CFR: 41.7 / 45.7)

(004 CVCS) The plant has been tripped and control room evacuated due to a fire on the RTGB. DSP-002, Hot Shutdown Using the Dedicated / Alternate Shutdown System, is being implemented. The candidate has been assigned to perform DSP-002, Attachment 3, Auxiliary Building Operator Actions, and directed to inform the SM when a Charging Pump is running at minimum speed and adequate seal injection flow is being supplied to the RCPs. The candidate will enter the Charging Pump Room and take local control of "A" Charging Pump, properly align a discharge and suction path, and then manually start "A" Charging Pump and adjust Charging Pump Speed. The candidate then manually throttles open the RCP Seal Water Flow Control Valves to raise seal injection flow to within the expected band. This JPM requires RCA entry. (IP-145 Bank JPM Modified)

**JPM J:** Aligning SW Backup to SDAFW Pump Suction IAW DSP-007, Att. 7

K/A 061 K4.01 Knowledge of AFW design feature(s) and/or interlock(s) which provide for the following: Water sources and priority of use. (CFR: 41.7)

(061 AFW) The plant has been shutdown and is preparing to cool down IAW DSP-007, Cold Shutdown Using the Dedicated / Alternate Shutdown System. The CRS has directed the candidate perform DSP-007, Att. 7 to align Service Water to the suction of the SDAFW pump. When Service Water is aligned the candidate is to start the SDAFW pump by manually opening the steam supply from "C" S/G (V1-8C). The candidate will determine that V1-8C is stuck in the closed position and have to open an alternate steam supply valve. This JPM has actions both inside and outside of the RCA. (IP-165 Bank JPM)

**JPM K:** Align Backup Fuel Oil to the "B" EDG IAW EDG IAW EPP-28, Att. 5

K/A 064 K1.03 Knowledge of the physical connections and / or cause-effect relationships between the ED/G system and the following systems: Diesel fuel oil supply system (CFR: 41.2 to 41.9 / 45.7 to 45.8)

(064 EDG) The plant has been shut down due to hostile action that has resulted in a loss of off-site power and a loss of Ultimate Heat Sink. EPP-028, Loss of Ultimate Heat Sink, has been implemented and "B" EDG is the only EDG operating. The candidate is directed to perform EPP-28, Attachment 5, Backup Fuel Oil Alignment. The candidate will enter the "B" EDG Room and perform manual valve operations to add fuel oil from the Alternate Fuel Oil Storage Tank and raise the EDG Fuel Oil Day Tank from ¼ full to ¾ full. This JPM requires RCA entry. (IP-151 Bank JPM)