Facility: Date of Exam:

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	4	3	4	N/A			3	2	N/A		4	20	4		3		7		
	2	2	1	1				1	1			1	7	2		1		3		
	Tier Totals	6	4	5				4	3			5	27	6		4		10		
2. Plant Systems	1	4	2	3	2	2	3	2	2	2	2	2	26	3		2		5		
	2	2	1	1	1	1	1	1	1	1	1	1	12	0	2	1		3		
	Tier Totals	6	3	4	3	3	4	3	3	3	3	3	38	5		3		8		
3. Generic Knowledge and Abilities Categories		1		2		3		4		10				1	2	3	4	7		
		2		2		3		3						2	2	2	1			

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 ATier Totals@ in each K/A category shall not be less than two).
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ∀1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to ES-401, Attachment 2, 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.
8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics= importance ratings (IRs) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above; if fuel handling equipment is sampled in other than Category A2 or G* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note # 1 does not apply). Use duplicate pages for RO and SRO-only exams.
9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
295001AA1.02	Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4	3.3	3.3	☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ Ability to operate and / or monitor the following as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.7 / 45.5 / 45.6)	RPS.....
295003AK1.03	Partial or Complete Loss of AC / 6	2.9	3.2	☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the operational implications of the following concepts as they apply to the (ABNORMAL PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)	Under voltage/degraded voltage effects on electrical loads.....
295004AK3.02	Partial or Total Loss of DC Pwr / 6	2.9	3.3	☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the reasons for the following responses as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)	Ground isolation/fault determination.....
295005G2.4.21	Main Turbine Generator Trip / 3	4.0	4.6	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge of the parameters and logic used to assess the status of safety functions
295006AK2.02	SCRAM / 1	3.8	3.8	☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the interrelations between (ABNORMAL PLANT EVOLUTION) and the following:(CFR: 41.7 / 45.7 / 45.8)	Reactor water level control system.....
295016G2.4.30	Control Room Abandonment / 7	2.7	4.1	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge of events related to system operations/status that must be reported to internal orginizations or outside agencies.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
295018AA1.02	Partial or Total Loss of CCW / 8	3.3	3.4	☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ Ability to operate and / or monitor the following as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.7 / 45.5 / 45.6)	System loads.....
295019AK2.18	Partial or Total Loss of Inst. Air / 8	3.5	3.5	☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the interrelations between (ABNORMAL PLANT EVOLUTION) and the following:(CFR: 41.7 / 45.7 / 45.8)	ADS: Plant-Specific.....
295021G2.2.4	Loss of Shutdown Cooling / 4	3.6	3.6	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	(multi-unit) Ability to explain the variations in control board layouts, systems, instrumentation and procedural actions between units at a facility.
295023AA1.04	Refueling Acc Cooling Mode / 8	3.4	3.7	☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ Ability to operate and / or monitor the following as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.7 / 45.5 / 45.6)	Radiation monitoring equipment.....
295024EA2.03	High Drywell Pressure / 5	3.8	3.8	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	Suppression pool level.....
295025EK2.04	High Reactor Pressure / 3	3.9	4.1	☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the interrelations between (EMERGENCY PLANT EVOLUTION) and the following:(CFR: 41.7 / 45.7 / 45.8)	ARI/RPT/ATWS: Plant-Specific.....

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
295027EK3.02	High Containment Temperature / 5	3.2	3.2	☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the reasons for the following responses as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)	Containment spray: Plant-Specific.....
295028EK1.01	High Drywell Temperature / 5	3.5	3.7	☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the operational implications of the following concepts as they apply to the EMERGENCY PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)	Reactor water level measurement.....
295030EK3.03	Low Suppression Pool Wtr Lvl / 5	3.6	3.7	☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the reasons for the following responses as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)	RCIC operation: Plant-Specific.....
295031EA2.03	Reactor Low Water Level / 2	4.2	4.2	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	Reactor pressure.....
295037G2.2.12	SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1	3.7	4.1	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge of surveillance procedures.
295038EK1.01	High Off-site Release Rate / 9	2.5	3.1	☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the operational implications of the following concepts as they apply to the EMERGENCY PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)	Biological effects of radioisotope ingestion.....

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
600000AK3.04	Plant Fire On Site / 8	2.8	3.4	☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the reasons for the following responses as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)	Actions contained in the abnormal procedure for plant fire on site
700000AK1.01	Generator Voltage and Electric Grid Distrurbancecs	3.3	3.5	☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the operational implications of the following concepts as they apply to the (ABNORMAL PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)	Definition of the terms: volts, watts, amps, VARS, power factor

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
295009AK2.04	Low Reactor Water Level / 2	2.6	2.6	☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the interrelations between (ABNORMAL PLANT EVOLUTION) and the following:(CFR: 41.7 / 45.7 / 45.8)	Reactor water cleanup.....
295010G2.4.49	High Drywell Pressure / 5	4.6	4.4	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.
295012AK1.01	High Drywell Temperature / 5	3.3	3.5	☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the operational implications of the following concepts as they apply to the (ABNORMAL PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)	Pressure/temperature relationship.....
295017AK3.03	High Off-site Release Rate / 9	3.3	4.5	☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the reasons for the following responses as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)	Implementation of site emergency plan.....
295022AA2.03	Loss of CRD Pumps / 1	3.1	3.2	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	CRD mechanism temperatures.....
295029EA1.04	High Suppression Pool Wtr Lvl / 5	3.4	3.5	☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ Ability to operate and / or monitor the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.7 / 45.5 / 45.6)	RCIC: Plant-Specific.....

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
295036EK1.01	Secondary Containment High Sump/Area Water Level / 5	2.9	3.1	☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the operational implications of the following concepts as they apply to the EMERGENCY PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)	Radiation releases.....

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
203000K5.01	RHR/LPCI: Injection Mode	2.7	2.9	☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the operational implications of the following concepts as they apply to the (SYSTEM):(CFR: 41.5 / 45.7)	Testable check valve operation
205000K2.02	Shutdown Cooling	2.5	2.7	☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of electrical power supplies to the following:(CFR: 41.7)	Motor operated valves
206000K4.16	HPCI	3.1	3.3	☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of (SYSTEM) design feature(s) and or interlock(s) which provide for the following:(CFR: 41.7)	Minimizing fission product concentration in the condensate storage tank (valve closures on system initiation): BWR-2,3,4(P-Spec)
207000A4.03	Isolation (Emergency) Condenser	3	3.2	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ Ability to manually operate and/or monitor in the control room:(CFR: 41.7 / 45.5 to 45.8)	Primary and shell sidetemperatures: BWR-2,3
209001K1.12	LPCS	2.9	3.1	☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)	ECCS room coolers
209002A3.04	HPCS	3.7	3.7	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ Ability to monitor automatic operations of the (SYSTEM) including:(CFR: 41.7 / 45.5)	System flow: BWR-5,6
211000A4.08	SLC	4.2	4.2	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ Ability to manually operate and/or monitor in the control room:(CFR: 41.7 / 45.5 to 45.8)	System initiation: Plant-Specific

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
212000K3.11	RPS	3.0	3.3	☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)	Recirculation system
215003K4.04	IRM	2.9	2.9	☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of (SYSTEM) design feature(s) and or interlock(s) which provide for the following:(CFR: 41.7)	Varying system sensitivity levels using range switches
215004A3.01	Source Range Monitor	3.2	3.2	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ Ability to monitor automatic operations of the (SYSTEM) including:(CFR: 41.7 / 45.5)	Meters and recorders
215005A2.07	APRM / LPRM	3.2	3.4	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Recirculation flow channels flow mismatch
217000K3.02	RCIC	3.6	3.6	☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)	Reactor vessel pressure
217000K3.04	RCIC	3.6	3.6	☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)	Adequate core cooling

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
218000K1.02	ADS	4.0	4.1	☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)	Low pressure core spray: Plant-Specific
223002K1.03	PCIS/Nuclear Steam Supply Shutoff	3.0	3.2	☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)	Plant ventilation
223002K1.13	PCIS/Nuclear Steam Supply Shutoff	2.7	2.9	☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)	Traversing in-core probe system
239002A1.01	SRVs	3.3	3.4	☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including:(CFR: 41.5 / 45.5)	Tail pipe temperature
259002G2.4.45	Reactor Water Level Control	4.1	4.3	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Ability to prioritize and interpret the significance of each annunciator or alarm.
261000K6.09	SGTS	3.1	3.3	☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ Knowledge of the effect that a loss or malfunction of the following will have on the (SYSTEM):(CFR: 41.7 / 45.7)	Primary containment high pressure: Plant-Specific

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
262001G2.2.39	AC Electrical Distribution	3.9	4.5	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge of less than one hour technical specification action statements for systems.
262002K6.02	UPS (AC/DC)	2.8	3.1	☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ Knowledge of the effect that a loss or malfunction of the following will have on the (SYSTEM):(CFR: 41.7 / 45.7)	D.C. electrical power
262002K6.03	UPS (AC/DC)	2.7	2.9	☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ Knowledge of the effect that a loss or malfunction of the following will have on the (SYSTEM):(CFR: 41.7 / 45.7)	Static inverter
263000A2.01	DC Electrical Distribution	2.8	3.2	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Grounds
264000K5.05	EDGs	3.4	3.4	☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the operational implications of the following concepts as they apply to the (SYSTEM):(CFR: 41.5 / 45.7)	Paralleling A.C. power sources
300000K2.01	Instrument Air	2.8	2.8	☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of electrical power supplies to the following:(CFR: 41.7)	Instrument air compressor

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
400000A1.01	Component Cooling Water	2.8	2.8	☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐	CCW flow rate
				Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including:(CFR: 41.5 / 45.5)	

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
201001K6.04	CRD Hydraulic	3.6	3.7	☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ Knowledge of the effect that a loss or malfunction of the following will have on the (SYSTEM):(CFR: 41.7 / 45.7)	RPS
201004A1.01	RSCS	3.3	3.3	☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including:(CFR: 41.5 / 45.5)	Reactor manual control system: BWR-4,5
215001A3.03	Traversing In-core Probe	2.5	2.6	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ Ability to monitor automatic operations of the (SYSTEM) including:(CFR: 41.7 / 45.5)	Valve operation: Not-BWR1
215002K1.02	RBM	3.2	3.1	☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)	LPRM: BWR-3,4,5
219000K2.02	RHR/LPCI: Torus/Pool Cooling Mode	3.1	3.3	☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of electrical power supplies to the following:(CFR: 41.7)	Pumps
239003K4.02	MSIV Leakage Control	3	3.4	☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of (SYSTEM) design feature(s) and or interlock(s) which provide for the following:(CFR: 41.7)	Performance of intended safety function following any single active component failure: BWR-4,5,6(P-Spec)
245000K5.07	Main Turbine Gen. / Aux.	2.6	2.9	☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the operational implications of the following concepts as they apply to the (SYSTEM):(CFR: 41.5 / 45.7)	Generator operations and limitations

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
256000G2.1.30	Reactor Condensate	4.4	4.0	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Ability to locate and operate components, including local controls.
271000A4.06	Offgas	3.3	3.2	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ Ability to manually operate and/or monitor in the control room:(CFR: 41.7 / 45.5 to 45.8)	System indicating lights and alarms
288000A2.05	Plant Ventilation	2.6	2.7	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Extreme outside weather conditions: Plant-Specific
290001K3.01	Secondary CTMT	4.0	4.4	☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)	Off-site radioactive release rates
290002K1.04	Reactor Vessel Internals	3.4	3.5	☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)	HPCI: Plant-Specific

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
G2.1.39	Conduct of operations	3.6	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of conservative decision making practices
G2.1.6	Conduct of operations	3.8	4.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to manage the control room crew during plant transients.
G2.2.20	Equipment Control	2.6	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the process for managing troubleshooting activities.
G2.2.22	Equipment Control	4.0	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of limiting conditions for operations and safety limits.
G2.3.14	Radiation Control	3.4	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities
G2.3.4	Radiation Control	3.2	3.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of radiation exposure limits under normal and emergency conditions
G2.3.7	Radiation Control	3.5	3.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to comply with radiation work permit requirements during normal or abnormal conditions

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
G2.4.18	Emergency Procedures/Plans	3.3	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the specific bases for EOPs.
G2.4.26	Emergency Procedures/Plans	3.1	3.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of facility protection requirements including fire brigade and portable fire fighting equipment usage.
G2.4.6	Emergency Procedures/Plans	3.7	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge symptom based EOP mitigation strategies.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
295003G2.4.50	Partial or Complete Loss of AC / 6	4.2	4.0	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.
295016G2.4.3	Control Room Abandonment / 7	3.7	3.9	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Ability to identify post-accident instrumentation.
295018AA2.01	Partial or Total Loss of CCW / 8	3.3	3.4	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	Component temperatures.....
295023AA2.01	Refueling Acc Cooling Mode / 8	3.6	4.0	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	Area radiation levels.....
295025EA2.01	High Reactor Pressure / 3	4.3	4.3	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	Reactor pressure.....
295027EA2.01	High Containment Temperature / 5	3.7	3.7	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	Containment temperature: Mark-III.....

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
700000G2.4.31	Generator Voltage and Electric Grid Distrurbancecs	4.2	4.1	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge of annunciators alarms, indications or response procedures

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
295012G2.4.34	High Drywell Temperature / 5	4.2	4.1	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects
295013AA2.02	High Suppression Pool Temp. / 5	3.2	3.5	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	Localized heating/stratification.....
295033EA2.03	High Secondary Containment Area Radiation Levels / 9	3.7	4.2	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)	Cause of high area radiation.....

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
206000A2.16	HPCI	4	4.1	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	High drywell pressure: BWR-2,3,4
212000A2.20	RPS	4.1	4.2	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Full system activation (full-SCRAM)
217000G2.4.41	RCIC	2.9	4.6	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge of the emergency action level thresholds and classifications.
239002G2.4.45	SRVs	4.1	4.3	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Ability to prioritize and interpret the significance of each annunciator or alarm.
261000A2.11	SGTS	3.2	3.3	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	High containment pressure

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
202001A2.10	Recirculation	3.5	3.9	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Recirculation pump seal failure
215002A2.05	RBM	3.2	3.3	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	RBM high or inoperable: BWR-3,4,5
233000G2.4.35	Fuel Pool Cooling/Cleanup	3.8	4.0	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge of local auxiliary operator tasks during emergency and the resultant operational effects

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
G2.1.13	Conduct of operations	2.5	3.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of facility requirements for controlling vital / controlled access.
G2.1.4	Conduct of operations	3.3	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, "no-solo" operation, maintenance of active license statur, 10CFR55 etc.
G2.2.19	Equipment Control	2.3	3.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of maintenance work order requirements.
G2.2.23	Equipment Control	3.1	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to track Technical Specification limiting conditions for operations.
G2.3.11	Radiation Control	3.8	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to control radiation releases
G2.3.7	Radiation Control	3.5	3.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to comply with radiation work permit requirements during normal or abnormal conditions
G2.4.8	Emergency Procedures/Plans	3.8	4.5	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of how abnormal operating procedures are used in conjunction with EOPs.

Facility: BFN (**NRC EXAM**)		Date of Examination: 12/08/08
Examination Level (circle one): RO/SRO		Operating Test Number HLT0707
Administrative Topic (see Note)	Type Code*	Describe Activity to be performed
A. Conduct of Operations (550) (Generic 2.1.29) **(Admin A)**	N	Demonstrate correct method for Independent Verification **(SPP-10.3r1)** (RO/SRO)
B. Conduct of Operations (540) (Generic 2.1.5) **(Admin B)**	M	Overtime Eligibility **(OPDP-1,OSIL 25, SPP-1.5)** (RO/SRO)
C. Equipment Control (510) (Generic 2.2.44) **(Admin C)**	D	Evaluate Recombiner Efficiency **(3-OI-66 r56)** (RO/SRO)
D. Radiation Control (511) (Generic 2.3.4) **(Admin D)**	D	Determine Dose Limitations for Pregnant Employee **(SPP-5.1 r6)** (RO/SRO)
E. Emergency Plan (480TC) (Generic 2.4.41) **(Admin E)**	N/S	Classify the Event per the REP (Loss of all Pwr to 4kv S/D bds > 3 hrs) (SRO Only) **(EPIP-1 r 43/ EPIP-5 r37)**
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 (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) (S)imulator		

Facility: BFN (**NRC EXAM**) Date of Examination: 12/08/08
Exam Level (circle one): RO / SRO-I / SRO-U Operating Test Number: HLT0707

Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U, including 1 ESF)			
System / JPM Title	Type Code*	Safety Function	JPM Number
A. SLC Injection – Faulted – 69-1 fails to isolate **(2-EOI App-3A) (211000K4.02) (SIM A)**	AMELS	1	**606F-U2**
B. Inj Sys Lineup – Conds /FW – Faulted – HP Htrs isolated **(EOI App-5A) (295031EA1.08) (SIM B)**	ADELS	2	**14F-U2**
C. Re-open MSIVs following Gp 1 Isolation **(EOI App-8B) (223002K4.03) (SIM C)**	DELS	3	**35-U2**
D. Loss of Shutdown Cooling – Faulted – desired pump fails to start **(AOI-74-1) (RO Only) (295021AA1.02) (SIM D)**	ADELS	4	**201F-U2**
E. CAD Operation to Drywell **(EOI App-14B) (223001A4.04) (SIM E)**	DELPS	5	**376-U3**
F. Tie D/G to 4kv S/D bd at 9-23 – Faulted – Low Oil press **(SR-3.8.1.1(3A or A)) (264000A4.01) (SIM F)**	AMS	6	**385F-U3**
G. RBCCW Pump Discharge Hdr Low Press alarm – Faulted – 70-48 fails to close **(ARP-4C Win 12) (226001A4.12) (SIM G)**	ANS	8	**329F-U3**
H. Primary Containment venting thru 84-19 – Faulted – release rates high **(EOI App-12) (295024EA1.02) (SIM H)**	ALNS	9	**358F-U3**
In-Plant Systems@ (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)			
I. Start RCIC from outside Control Room **(3-AOI-100-2) (217000A4.03) (IN-PLANT A)**	DELR	2	**335-U3**
J. Bypass RCIC High Water Level shutdown interlock **(2-EOI App-16H) (217000A4.03) (IN-PLANT B)**	DEL	4	**99-U2**
K. Place 4kv S/D bd 250v Battery Charger I/S – Faulted – voltage unstable **(0-OI-57D) (263000K1.02) (IN-PLANT C)**	ANL	6	**115F-U2**

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

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