Facility: FARLEY Date of Exam: 2010

Tier	Group	RO K/A Category Points												SRO-Only Points					
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2		G*		Total
1. Emergency & Abnormal Plant Evolutions	1	3	3	3	N/A			3	3	N/A		3	18	3		3		6
	2	1	2	1				2	2			1	9	2		2		4
	Tier Totals	4	5	4				5	5			4	27	5		5		10
2. Plant Systems	1	3	3	3	3	2	2	3	2	2	2	3	28	2		3		5
	2	1	1	1	1	1	1	1	1	0	1	1	10	1		2		3
	Tier Totals	4	4	4	4	3	3	4	3	2	3	4	38	3		5		8
3. Generic Knowledge and Abilities Categories		1		2		3		4		10		1	2	3	4	7		
		3		2		3		2				1	2	2	2			

1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ±1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems 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:
007EK2.02	Reactor Trip - Stabilization - Recovery / 1	2.6	2.8	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Breakers, relays and disconnects
008AA2.26	Pressurizer Vapor Space Accident / 3	3.1	3.4	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Probable PZR steam space leakage paths other than PORV or code safety
009EG2.1.23	Small Break LOCA / 3	4.3	4.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to perform specific system and integrated plant procedures during all modes of plant operation.
015AK2.10	RCP Malfunctions / 4	2.8	2.8	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	RCP indicators and controls
022AK3.06	Loss of Rx Coolant Makeup / 2	3.2	3.3	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	RCP thermal barrier cooling
026AA1.04	Loss of Component Cooling Water / 8	2.7	2.8	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	CRDM high-temperature alarm system
027AK1.02	Pressurizer Pressure Control System Malfunction / 3	2.8	3.1	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Expansion of liquids as temperature increases
029EA1.06	ATWS / 1	3.2	3.1	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Operating switches for normal charging header isolation valves
038EA2.07	Steam Gen. Tube Rupture / 3	4.4	4.8	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Plant conditions from survey of control room indications
054AG2.1.7	Loss of Main Feedwater / 4	4.4	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior and instrument interpretation.
055EK3.02	Station Blackout / 6	4.3	4.6	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Actions contained in EOP for loss of offsite and onsite power

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
057AG2.4.49	Loss of Vital AC Inst. Bus / 6	4.6	4.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.
065AK3.04	Loss of Instrument Air / 8	3	3.2	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Cross-over to backup air supplies
077AA1.02	Generator Voltage and Electric Grid Disturbances / 6	3.8	3.7	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Turbine / generator controls
WE04EA2.2	LOCA Outside Containment / 3	3.6	4.2	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.
WE05EK1.1	Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	3.8	4.1	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Components, capacity, and function of emergency systems.
WE11EK1.3	Loss of Emergency Coolant Recirc. / 4	3.6	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Annunciators and conditions indicating signals, and remedial actions associated with the (Loss of Emergency Coolant Recir).
WE12EK2.1	Steam Line Rupture - Excessive Heat Transfer / 4	3.4	3.7	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Components and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes and automatic and manual features.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
001AK2.06	Continuous Rod Withdrawal / 1	3	3.1	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	T-ave./ref. deviation meter
032AK3.02	Loss of Source Range NI / 7	3.7	4.1	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Guidance contained in EOP for loss of source-range nuclear instrumentation
051AA1.04	Loss of Condenser Vacuum / 4	2.5	2.5	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Rod position
059AK2.02	Accidental Liquid RadWaste Rel. / 9	2.7	2.7	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Radioactive-gas monitors
060AA2.02	Accidental Gaseous Radwaste Rel. / 9	3.1	4	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	The possible location of a radioactive-gas leak with the assistance of PEO, health physics and chemistry personnel
069AA2.01	Loss of CTMT Integrity / 5	3.7	4.3	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Loss of containment integrity
074EA1.28	Inad. Core Cooling / 4	3.7	3.9	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Core flood tank isolation valve controls and indicators
we01EG2.2.42	Rediagnosis / 3	3.9	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to recognize system parameters that are entry-level conditions for Technical Specifications
WE08EK1.1	RCS Overcooling - PTS / 4	3.5	3.8	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Components, capacity, and function of emergency systems.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
003A2.03	Reactor Coolant Pump	2.7	3.1	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Problems associated with RCP motors, including faulty motors and current, winding and bearing temperature problems
004G2.4.21	Chemical and Volume Control	4.0	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the parameters and logic used to assess the status of safety functions
004K1.04	Chemical and Volume Control	3.4	3.8	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	RCPS, including seal injection flows
005A1.07	Residual Heat Removal	2.5	3.1	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Determination of test acceptability by comparison of recorded valve response times with Tech-Spec requirements
005K4.03	Residual Heat Removal	2.9	3.2	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	RHR heat exchanger bypass flow control
006K6.13	Emergency Core Cooling	2.8	3.1	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Pumps
007K5.02	Pressurizer Relief/Quench Tank	3.1	3.4	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Method of forming a steam bubble in the PZR
008K3.01	Component Cooling Water	3.4	3.5	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Loads cooled by CCWS
008K4.09	Component Cooling Water	2.7	2.9	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	The "standby" feature for the CCW pumps
010K1.03	Pressurizer Pressure Control	3.6	3.7	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	RCS
012K2.01	Reactor Protection	3.3	3.7	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	RPS channels, components and interconnections

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
012K6.03	Reactor Protection	3.1	3.5	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Trip logic circuits
013K2.01	Engineered Safety Features Actuation	3.6	3.8	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	ESFAS/safeguards equipment control
013K5.01	Engineered Safety Features Actuation	2.8	3.2	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Definitions of safety train and ESF channel
022A1.01	Containment Cooling	3.6	3.7	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Containment temperature
026K1.01	Containment Spray	4.2	4.2	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	ECCS
039K4.05	Main and Reheat Steam	3.7	3.7	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Automatic isolation of steam line
059A2.04	Main Feedwater	2.9	3.4	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Feeding a dry S/G
059G2.1.19	Main Feedwater	3.9	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to use plant computer to evaluate system or component status.
061G2.2.37	Auxiliary/Emergency Feedwater	3.6	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to determine operability and/or availability of safety related equipment
062A1.01	AC Electrical Distribution	3.4	3.8	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Significance of D/G load limits
063A3.01	DC Electrical Distribution	2.7	3.1	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Meters, annunciators, dials, recorders and indicating lights

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
064A4.03	Emergency Diesel Generator	3.2	3.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	Synchroscope
073K3.01	Process Radiation Monitoring	3.6	4.2	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Radioactive effluent releases
076A3.02	Service Water	3.7	3.7	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Emergency heat loads
078K2.02	Instrument Air	3.3	3.5	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Emergency air compressor
103A4.03	Containment	2.7	2.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	ESF slave relays
103K3.03	Containment	3.7	4.1	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Loss of containment integrity under refueling operations.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
001K2.02	Control Rod Drive	3.6	3.7	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	One-line diagram of power supply to trip breakers
011K5.05	Pressurizer Level Control	2.8	3.1	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Interrelation of indicated charging flow rate with volume of water required to bring PZR level back to programmed level hot/cold
027K1.01	Containment Iodine Removal	3.4	3.7	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	CSS
035K3.02	Steam Generator	4.0	4.3	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	ECCS
041K4.14	Steam Dump/Turbine Bypass Control	2.5	2.8	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Operation of loss-of-load bistable taps upon turbine load loss
045A1.05	Main Turbine Generator	3.8	4.1	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Expected response of primary plant parameters (temperature and pressure) following T/G trip
068K6.10	Liquid Radwaste	2.5	2.9	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Radiation monitors
071A4.01	Waste Gas Disposal	2.7	2.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	Valve to put the holdup tank into service; indications of valve positions and tank pressure
072G2.1.27	Area Radiation Monitoring	3.9	4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of system purpose and or function.
075A2.03	Circulating Water	2.5	2.7	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Safety features and relationship between condenser vacuum, turbine trip and steam dump

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
G2.1.17	Conduct of operations	3.9	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to make accurate, clear and concise verbal reports.
G2.1.45	Conduct of operations	4.3	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to identify and interpret diverse indications to validate the response of another indication
G2.1.9	Conduct of operations	2.9	4.5	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to direct personnel activities inside the control room.
G2.2.3	Equipment Control	3.8	3.9	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	(multi-unit license) Knowledge of the design, procedural and operational differences between units.
G2.2.36	Equipment Control	3.1	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions of operations
G2.3.11	Radiation Control	3.8	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to control radiation releases.
G2.3.13	Radiation Control	3.4	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of radiological safety procedures pertaining to licensed operator duties
G2.3.4	Radiation Control	3.2	3.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of radiation exposure limits under normal and emergency conditions
G2.4.13	Emergency Procedures/Plans	4.0	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of crew roles and responsibilities during EOP usage.
G2.4.16	Emergency Procedures/Plans	3.5	4.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of EOP implementation hierarchy and coordination with other support procedures or guidelines.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
007EA2.02	Reactor Trip - Stabilization - Recovery / 1	4.3	4.6	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Proper actions to be taken if the automatic safety functions have not taken place
008AA2.15	Pressurizer Vapor Space Accident / 3	3.9	4.2	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	ESF control board, valve controls and indicators
022AG2.4.50	Loss of Rx Coolant Makeup / 2	4.2	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.
027AA2.17	Pressurizer Pressure Control System Malfunction / 3	3.1	3.3	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Allowable RCS temperature difference vs. reactor power
065AG2.4.47	Loss of Instrument Air / 8	4.2	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.
we11EG2.1.28	Loss of Emergency Coolant Recirc. / 4	4.1	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the purpose and function of major system components and controls.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
024AG2.4.20	Emergency Boration / 1	3.8	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of operational implications of EOP warnings, cautions and notes.
060AA2.03	Accidental Gaseous Radwaste Rel. / 9	3.2	3.9	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	The steps necessary to isolate a given radioactive-gas leak, using P&IDs
we03EG2.4.35	LOCA Cooldown - Depress. / 4	3.8	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of local auxiliary operator tasks during emergency and the resultant operational effects
WE10EA2.2	Natural Circ. With Seam Void/ 4	3.4	3.9	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
005G2.4.18	Residual Heat Removal	3.3	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the specific bases for EOPs.
007G2.4.2	Pressurizer Relief/Quench Tank	4.5	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.
022A2.01	Containment Cooling	2.5	2.7	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Fan motor over-current
026A2.04	Containment Spray	3.9	4.2	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Failure of spray pump
078G2.2.42	Instrument Air	3.9	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to recognize system parameters that are entry-level conditions for Technical Specifications

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
014A2.04	Rod Position Indication	3.4	3.9	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Misaligned rod
015G2.4.9	Nuclear Instrumentation	3.8	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.
027G2.2.42	Containment Iodine Removal	3.9	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to recognize system parameters that are entry-level conditions for Technical Specifications

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
G2.1.31	Conduct of operations	4.6	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the desired plant lineup.
G2.2.36	Equipment Control	3.1	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions of operations
G2.2.37	Equipment Control	3.6	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to determine operability and/or availability of safety related equipment
G2.3.11	Radiation Control	3.8	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to control radiation releases
G2.3.12	Radiation Control	3.2	3.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of radiological safety principles pertaining to licensed operator duties
G2.4.2	Emergency Procedures/Plans	4.5	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.
G2.4.20	Emergency Procedures/Plans	3.8	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of operational implications of EOP warnings, cautions and notes.

DRAFT OPERATING OUTLINE SUBMITTAL

Facility: Farley Nuclear Plant
Examination Level: **SRO + RO**
Date of Examination: March 8, 2010
Operating Test Number: FA2010301

Administrative Topic (see Note)	Type Code *	Describe activity to be performed
Conduct of Operations **RO**	N / R	Given a set of plant conditions with fuel movement in progress, determine if refueling operations can continue, and if not, the reason(s) that prohibit refueling from continuing. UOP-4.1 P&Ls and TS and TRM requirements. G2.1.40 (2.8/3.9) G2.1.36 (3.0/4.1) G2.1.32 (3.8/4.0) Develop a set of conditions that will have RHR flow <3000 GPM AND audible count rate in the control room is not audible, N-32 is broke. There will be a set of other conditions which allow for refueling to continue like the equipment hatch is open, gamma metrics is broke; one train of PRF is operating, etc. I plan to do this in the classroom and use pictures of the NI's that will show that one is not working and the selector switch is selected to that NI and a list of conditions.
Conduct of Operations **SRO portion**	N / R	Given a set of plant conditions with fuel movement in progress, determine if refueling operations can continue, and if not, the reason(s) that prohibit refueling from continuing. G2.1.40 (2.8/3.9) G2.1.36 (3.0/4.1) G2.1.35 (2.2/3.9) G2.1.32 (3.8/4.0) This will be like the JPM above only added to the JPM will be to list the Tech Specs or TRM requirements that cover the conditions given and the REQUIRED ACTIONS and COMPLETION TIMES in order to restart the fuel movement. TS 3.9.2, 3.9.4
Conduct of Operations **SRO ONLY**	D / R	Conduct A Safety Shutdown Assessment and Determine Time to Saturation. G2.1.25 (3.9/4.2) This JPM will have the candidate evaluate plant conditions, use a table to determine time to boiling and then fill out UOP-4.0, figure 1a. This is only performed by the SRO only job function at Farley.
Equipment Control **SRO + RO**	D / R	Perform a Shutdown Margin Calculation in modes 1 & 2 for a stuck rod (STP-29.5) 001A4.11 (3.5/4.1) APE005 AK1.05 (3.3/4.1) One Bank D rod is 30 steps below the other seven Bank D rods. Determine the SDM and that an emergency boration is required.

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Radiation Control **SRO + RO**	M / R	Calculate the Maximum Permissible Stay Time within Emergency Dose Limits. This JPM has the candidate assess a job where two workers will be assigned a task during an emergency event to save a valuable piece of equipment. There will be three stages to the task in which the dose rate is given and time required to complete the task is given. The year to date dose rates will be given and the task will be to determine if either of the workers will exceed their dose limits of EIP-14. Information required to be known is that EDLs do not take into account current dose, admin limits and NRC limits do not apply and the EIP-14 limits must be applied properly.
Emergency Plan – **SRO + RO**	M / S	Monitor the Critical Safety Function Status Trees manually (CSF-0.0) G2.4.14 (SRO 4.5) G2.4.21 (SRO 4.6) The simulator will be used requiring the candidate to determine the appropriate CSF that applies. Plans are to set up a yellow path on FRP-H.5, an Orange path on FRP-Z.1, a red path on P.1 that is not valid due to a loss of power, and a manual determination of CSF-0 as to which FRP is applicable based on the setup.
* Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) **[1/2]** (N)ew or (M)odified from bank (≥ 1) **[3/3]** (P)revious 2 exams (≤ 1; randomly selected) **[0/0]**		

DRAFT OPERATING OUTLINE SUBMITTAL

Facility: Farley Nuclear Plant	Date of Examination: March 8, 2010	
Exam Level (both): RO SRO-I	Operating Test No.: FA2010301	
Control Room Systems (8 for RO; 7 for SRO-i)		
System / JPM Title	Type Code*	Safety Function
a. Perform an emergency boration. CRO-65C 024AA2.02 3.9/4.4 024AA2.01 3.8/4.1 The unit will have entered ESP-0.1. One rod will be stuck out and the candidate will have to determine to emergency borate. The Bat pump will have degraded head and will not deliver the proper flow. The Attachment at the end of the procedure will have to be accomplished to align the RWST to the chg pump suction. The setup will have charging flow low and letdown secured so the candidate will have to increase charging flow and place letdown O/S and get proper flow.	S, M, A, L	1
b. CRO-327A Align PRF System For A Large Break LOCA 011EK3.12 RO-4.4 SRO-4.6 The PRF system is operating during a LB LOCA and one train has to be secured. This is an action required by EEP-1.0.	S, D, L	2 → 3
c. CRO- 333E Perform Required Actions for transfer to simultaneous hot and cold leg recirculation 006 A4.07 SRO 4.4 This JPM transfers from cold leg recirc to simultaneous hot and cold leg recirculation IAW ESP-1.4. The alternate path has RHR TO RCS HOT LEGS ISO Q1/2E11MOV8889 will not open so the RNO column will have to be used. Modify to have the B Train chg pump will not start. The alternate path will align B train HHSI for cold leg recirculation. This will leave one train of LHSI to the cold legs and one train of HHSI to the hot. This will be evaluated in the final step to make sure the alignment is correct.	S, A, L, M	3
d. Perform required actions in response to RCP Seal Failures. CRO-047A K/A APE015AA1.22 4.0/4.2 003A2.02 3.7/3.9 This RCP seal failure has seal flow > 8 gpm and a reactor trip will have to be initiated by the CRO IAW AOP-4.1, Abnormal RCP seal leakage.	S, D, A	4p
e. CRO-133A Start Up The Containment Cooling System 022A4.01 3.6/3.6 022A4.03 3.2/3.2 This JPM is a mode 5 JPM to start up the ctmt cooling system and start the dome recirc fans.	S, D, P, L On the 2007 NRC exam	5
f. CRO-359E Start 1C DG From The EPB And Align To Supply 1F 4160V Bus 055EA1.02 4.3/4.4 055EA1.06 4.1/4.6 055EA2.03 3.9/4.7 This JPM starts the 1C DG per AOP-5.0 and aligns it to unit 1 4160v bus. Unit 2 A Train is de-energized and the Unit 1 A Train SW pumps will not be available. The 1C DG will have to be shutdown IAW attachment or EPB Plaque due to no SW flow.	S, M, A	6

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Facility: Farley Nuclear Plant	Date of Examination: March 8, 2010	
Exam Level (both): RO SRO-I	Operating Test No.: FA2010301	
g. CRO-NEW Perform Corrective Actions In Response To a CCW pump trip 008A2.01 3.3/3.6 026AA1.02 3.2/3.3 This is a new JPM written for the upcoming LOCT JPM exam. It will be a bank JPM in December. Based on the fact that it will be used at our site I decided to classify it as a bank JPM. This is a mode 5 JPM that has the operator respond to a CCW pump trip. AOP-9 is used to secure the charging pump and the RHR pump and transition to AOP-12.	S, D, A, L	8
h. CRO-316A Place one train of Control room air conditioning and the same train CREFs in service after an LOSP without a Phase A actuation. 013A4.01 4.5/4.8 This JPM is to be accomplished in the control room. After an LOSP w/o a phase A signal the control room air conditioners will not auto start. The operator will manually start the A/C units per SOP-56.0. This involves operating thermostats in the control room and selecting the AC unit to be run. Set up that B train was running and the SS has directed the operator to place the A Train A/C i/s. This will entail removing B Train from service also. Sections 4.3 and 4.6	C, D Does not alleviate SF issue but is because it is arbitrarily chosen to be performed in plant CR.	2 RO ONLY

This is my best guess:
a, b, c, d, and g are approx. 10-15 min JPMs.
e, f and h are approx 20 minute JPMs with h being done in the CR as a simulate for 4 RO candidates.

In-Plant Systems (3 for RO; 3 for SRO-i; 3 or 2 for SRO-U)		
System / JPM Title	Type Code*	Safety Function
i. SO – 386 Conduct a Waste Gas release 071A4.26 (3.1/3.9) This is a normal waste gas decay tank release.	D, R	9
j. SO-314A Operate the TDAFW pump locally without control power 061A2.03 3.1/3.4 This will involve resetting the trip throttle valve, setting up the proper steam valve alignment on the TDAFW pump and then controlling the speed with the Trip throttle valve. This is a new Appendix for a loss of all AC to control the TDAFW pump manually.	D, A, L, E	4s
k. SO-347A Place The Swing Battery Charger In Service 058AA1.02 3.1/3.1 058AA1.03 3.1/3.3 This is a Unit 2 only JPM due to the fact that we installed a new battery charger in the system and it is different from unit 1 1C Battery charger.	D	6
The 3 in plants are all approximately 20-30 minutes in length. Two can be decreased in length depending on how much of the procedure is required to be done. I can remove all extraneous steps prior to the major actions taken to decrease the length. I tried to keep in mind having the candidates do more than push a button or operate a valve.		

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All control room (and in-plant) systems must be different and serve different safety functions; in plant systems and functions may overlap those tested in the control room.	
*Type Codes	Criteria for RO/ SRO-i [ACTUAL]
(A)lternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (L)ow-Power / Shutdown (N)ew or (M)odified from bank including 1(A) (P)previous 2 exams (R)CA (S)imulator	4-6 / 4-6 / 2-3 **[6/6]** **[1/0]** ≤ 9 / ≤ 8 / ≤ 4 **[8/7]** ≥ 1 / ≥ 1 **[1/1]** ≥ 1 / ≥ 1 **[6/6]** ≥ 2 / ≥ 2 **[3/3]** ≤ 3 / ≤ 3 / ≤ 2 (randomly selected) **[1/1]** ≥ 1 / ≥ 1 **[1/1]** **[7/7]**