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ES-401, Rev. 9E **PWR Examination Outline** **Form ES-401-2**

Facility: **Harris 2011-301** Date of Exam: **July 2011**

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	2				1	2			1 / 9	2	2	4
	Tier Totals	4	5	5				4	5			4 / 27	5	5	10
2. Plant Systems	1	3	2	3	1	3	2	3	3	2	3	3 / 28	3	2	5
	2	0	1	1	1	1	1	1	1	1	1	1 / 10	1 / 1	1	3
	Tier Totals	3	3	4	2	4	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: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.

e. 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. 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.

ES-401	PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (**RO** / SRO)							Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1	X						007EK1.05 **Knowledge of the operational implications of the following concepts as they apply to the reactor trip:** Decay power as a function of time.	3.3/3.8	
000008 Pressurizer Vapor Space Accident / 3									
000009 Small Break LOCA / 3						X	009EG2.4.20 **Knowledge of the operational implications of EOP warnings, cautions, and notes.**	3.8/4.3	
000011 Large Break LOCA / 3		X					011EK2.02 **Knowledge of the interrelations between the and the following Large Break LOCA: Pumps**	2.6/2.7	
000011 Large Break LOCA / 3 (SRO)						X	011EG2.4.9 **Knowledge of low power/shutdown implications in accident (e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies.**	3.8/4.2	
000015/17 RCP Malfunctions / 4			X				015AK3.03 **Knowledge of the reasons for the following responses as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow):** Sequence of events for manually tripping reactor and RCP as a result of an RCP malfunction	3.7/4.0	
000022 Loss of Rx Coolant Makeup / 2					X		022AA2.03 **Ability to determine and interpret the following as they apply to the Loss of Reactor Coolant Makeup:** Failures of flow control valve or controller	3.1/3.6	
000025 Loss of RHR System / 4 (SRO)					X		025AA2.02 **Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System:** Leakage of reactor coolant from RHR into closed cooling water system or into reactor building atmosphere	4.0/4.2	
000025 Loss of RHR System / 4					X		025AA2.01 **Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System:** Proper amperage of running LPI/decay heat removal/RHR pump(s)	2.7/2.9	
000026 Loss of Component Cooling Water / 8				X			026AA1.06 **Ability to operate and / or monitor the following as they apply to the Loss of Component Cooling Water:** Control of flow rates to components cooled by the CCWS	2.9/2.9	
000027 Pressurizer Pressure Control System Malfunction / 3	X						027AK1.01 **Knowledge of the operational implications of the following concepts as they apply to Pressurizer Pressure Control Malfunctions:** Definition of saturation temperature	3.1/3.4	

000029 ATWS / 1		X					029EK2.06 **Knowledge of the interrelations between the and the following an ATWS:** Breakers, relays, and disconnects	2.9/3.1	
000029 ATWS / 1 (SRO)					X		029EA2.02 **Ability to determine or interpret the following as they apply to a ATWS:** Reactor trip alarm	4.2/4.4	
000038 Steam Gen. Tube Rupture / 3				X			038EA1.36 **Ability to operate and monitor the following as they apply to a SGTR:** Cooldown of RCS to specified temperature	4.3/4.5	
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4	X						WE12EK1.3 **Knowledge of the operational implications of the following concepts as they apply to the (Uncontrolled Depressurization of all Steam Generators)** Annunciators and conditions indicating signals, and remedial actions associated with the (Uncontrolled Depressurization of all Steam Generators).	3.4/3.7	
000054 (CE/E06) Loss of Main Feedwater / 4				X			054AA1.01 **Ability to operate and / or monitor the following as they apply to the Loss of Main Feedwater (MFW):** AFW controls, including the use of alternate AFW sources	4.5/4.4	
000055 Station Blackout / 6									
000056 Loss of Off-site Power / 6 (SRO)						X	056AG2.2.25 **Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.**	3.2/4.2	
000057 Loss of Vital AC Inst. Bus / 6									
000058 Loss of DC Power / 6 (SRO)					X		058AA2.01 **Ability to determine and interpret the following as they apply to the Loss of DC Power:** That a loss of dc power has occurred; verification that substitute power sources have come on line	3.7/4.1	
000062 Loss of Nuclear Svc Water / 4			X				062K3.04 **Knowledge of the reasons for the following responses as they apply to the Loss of Nuclear Service Water:** Effect on the nuclear service water discharge flow header of a loss of CCW	3.5/3.7	
000065 Loss of Instrument Air / 8						X	065AG2.2.44 **Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.**	4.2/4.4	
000077 Generator Voltage and Electric Grid Disturbances / 6						X	077AG2.2.37 **Ability to determine operability and/or availability of safety related equipment**	3.6/4.6	
W/E04 LOCA Outside Containment / 3					X		WE04EA2.1 **Ability to determine and interpret the following as they apply to the (LOCA Outside Containment)** Facility conditions and selection of appropriate procedures during abnormal and emergency operations.	3.4/4.3	
W/E04 LOCA Outside Containment / 3 (SRO)						X	WE04EG2.1.23 **Ability to perform specific system and integrated plant procedures during all modes of plant operation.**	3.4/4.4	

W/E11 Loss of Emergency Coolant Recirc. / 4			X				WE11EK3.4 **Knowledge of the reasons for the following responses as they apply to the (Loss of Emergency Coolant Recirculation)** RO or SRO function within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facilities license and amendments are not violated.	3.6/3.8	
BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4		X					WE05EK2.1 **Knowledge of the interrelations between the (Loss of Secondary Heat Sink) and the following:** Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.	3.7/3.9	
K/A Category Totals:	3	3	3	3	3	3	Group Point Total:		18
SRO K/A Category Totals:					3	3	Group Point Total:		6

ES-401	PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO / SRO)						Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
000001 Continuous Rod Withdrawal / 1		X					001AK2.01 **Knowledge of the interrelations between the Continuous Rod Withdrawal and the following:** Rod bank step counters	2.9/3.2	
000003 Dropped Control Rod / 1									
000005 Inoperable/Stuck Control Rod / 1									
000024 Emergency Boration / 1									
000028 Pressurizer Level Malfunction / 2		X					028AK2.03 **Knowledge of the interrelations between the Pressurizer Level Control Malfunctions and the following:** Controllers and Positioners	2.6/2.9	
000028 Pressurizer Level Malfunction / 2 (SRO)					X		028AA2.04 **Ability to determine and interpret the following as they apply to the Pressurizer Level Control Malfunctions:** Ammeters and running indicators for CVCS charging pumps	2.6/3.1	
000032 Loss of Source Range NI / 7									
000033 Loss of Intermediate Range NI / 7									
000036 (BW/A08) Fuel Handling Accident / 8									
000037 Steam Generator Tube Leak / 3				X			037AA1.02 **Ability to operate and / or monitor the following as they apply to the Steam Generator Tube Leak:** Condensate exhaust system	3.1/2.9	
000051 Loss of Condenser Vacuum / 4			X				051AK3.01 **Knowledge of the reasons for the following responses as they apply to the Loss of Condenser Vacuum:** Loss of steam dump capability upon loss of condenser vacuum	2.8/3.1	
000051 Loss of Condenser Vacuum / 4 (SRO)						X	051AG2.4.8 **Knowledge of how abnormal operating procedures are used in conjunction with EOPs.**	3.8/4.5	
000059 Accidental Liquid RadWaste Rel. / 9			X				059AK3.01 **Knowledge of the reasons for the following responses as they apply to the Accidental Liquid Radwaste Release:** Termination of a release of radioactive liquid	3.5/3.9	
000060 Accidental Gaseous Radwaste Rel. / 9									
000061 ARM System Alarms / 7									
000067 Plant Fire On-site / 8									

000068 (BW/A06) Control Room Evac. / 8					X		068AA2.03 **Ability to determine and interpret the following as they apply to the Control Room Evacuation:** T-hot, T-cold, and in-core temperatures	4.0/4.2	
000069 (W/E14) Loss of CTMT Integrity / 5									
000074 (W/E06&E07) Inad. Core Cooling / 4					X		074EA2.07 **Ability to determine or interpret the following as they apply to a Inadequate Core Cooling**: The difference between a LOCA and inadequate core cooling, from trends and indicators	4.1/4.7	
000076 High Reactor Coolant Activity / 9									
W/EO1 & E02 Rediagnosis & SI Termination / 3									
W/E13 Steam Generator Over-pressure / 4									
W/E15 Containment Flooding / 5 (SRO)						X	WE15EG2.4.18 **Knowledge of the specific bases for EOPs**	3.3/4.0	
W/E16 High Containment Radiation / 9									
BW/A01 Plant Runback / 1									
BW/A02&A03 Loss of NNI-X/Y / 7									
BW/A04 Turbine Trip / 4									
BW/A05 Emergency Diesel Actuation / 6									
BW/A07 Flooding / 8									
BW/E03 Inadequate Subcooling Margin / 4									
BW/E08; W/E03 LOCA Cooldown - Depress. / 4						X	WE03EG2.1.32 **Ability to explain and apply system limits and precautions.**	3.8/4.0	
BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4	X						WE09EK1.2 **Knowledge of the operational implications of the following concepts as they apply to the (Natural Circulation Operations)** Normal, abnormal and emergency operating procedures associated with (Natural Circulation Operations	3.3/3.7	
BW/E13&E14 EOP Rules and Enclosures									
CE/A11; W/E08 RCS Overcooling - PTS / 4 (SRO)					X		WE08EA2.1 **Ability to determine and interpret the following as they apply to the (Pressurized Thermal Shock)** Facility conditions and selection of appropriate procedures during abnormal and emergency operations.	3.4/4.2	
CE/A16 Excess RCS Leakage / 2									
CE/E09 Functional Recovery									
K/A Category Point Totals:	1	2	2	1	2	1	Group Point Total:		9
K/A Category Point Totals: (SRO)					2	2	Group Point Total:		4

ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO / SRO)											Form ES-401-2		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
003 Reactor Coolant Pump											X	003G2.2.42 **Ability to recognize system parameters that are entry-level conditions for Technical Specifications.**	3.9/4.6	
003 Reactor Coolant Pump						X						003K6.14 **Knowledge of the effect of a loss or malfunction on the following will have on the RCPS:** Starting requirements	2.6/2.9	
004 Chemical and Volume Control								X				004A2.22 **Ability to (a) predict the impacts of the following malfunctions or operations on the CVCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:** Mismatch of letdown and changing flows	3.2/3.1	
005 Residual Heat Removal		X										005K2.03 **Knowledge of bus power supplies to the following:** RCS pressure boundary motor-operated valves	2.7/2.8	
005 Residual Heat Removal			X									005K3.07 **Knowledge of the effect that a loss or malfunction of the RHRS will have on the following:** Refueling operations	3.2/3.6	
006 Emergency Core Cooling							X					006A1.07 **Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ECCS controls including:** Pressure, high and low	3.3/3.6	
006 Emergency Core Cooling (SRO)								X				006A2.10 **Ability to (a) predict the impacts of the following malfunctions or operations on the ECCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:** Low boron concentration in SIS	3.4/3.9	
006 Emergency Core Cooling										X		006A4.04 **Ability to manually operate and/or monitor in the control room:** RHRS	3.7/3.6	

007 Pressurizer Relief/Quench Tank							X					007A1.01 **Ability to predict and/or monito changes in parameters (to prevent exceeding design limits) associated wit operating the PRTS controls including:** Maintaining quench tank water level within limits	2.9/3.1	
008 Component Cooling Water		X										008K2.02 **Knowledge of bus power supplies to the following:** CCW pump, including emergency backup	3.0/3.2	
008 Component Cooling Water			X									008K3.01 **Knowledge of the effect that a loss or malfunction of the CCWS will have on the following** Loads cooled by CCWS	3.4/3.5	
010 Pressurizer Pressure Control						X						010K6.04 **Knowledge of the effect of a loss or malfunction of the following will have on the PZR PCS:** PRT	2.9/3.2	
012 Reactor Protection									X			012A3.06 **Ability to monitor automatic operation of the RPS, including:** Trip logic	3.7/3.7	
013 Engineered Safety Features Actuation	X											013K1.18 **Knowledge of the physical connections and/or cause effect relationships between the ESFAS and the following systems:** Premature reset of ESF actuation	3.7/4.1	
022 Containment Cooling **(SRO)**								X				022A2.03**Ability to (a) predict the impacts of the following malfunctions or operations on the CCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations** Fan motor thermal overload/high-speed operation	2.6/3.0	
022 Containment Cooling										X		022A4.05 **Ability to manually operate and/or monitor in the control room:** Containment readings of temperature, pressure, and humidity system	3.8/3.8	
025 Ice Condenser												N/A		
026 Containment Spray										X		026A4.01 **Ability to manually operate and/or monitor in the control room:** CSS controls	4.5/4.3	
039 Main and Reheat Steam					X							039K5.08 **Knowledge of the operational implications of the following concepts as the apply to the MRSS:** Effect of steam removal on reactivity	3.6/3.6	

039 Main and Reheat Steam (SRO)							X				039A2.02 **Ability to (a) predict the impacts of the following mal-functions or operations on the MRSS; and (b) based on predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:** Decrease in turbine load as it relates to steam escaping from relief valves	2.4/2.7	
059 Main Feedwater							X				059A2.01 **Ability to (a) predict the impacts of the following malfunctions or operations on the MFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:** Feedwater actuation of AFW system	3.4/3.6	
059 Main Feedwater								X			059A3.04 **Ability to monitor automatic operation of the MFW, including:** Turbine driven feed pump	2.5/2.6	
061 Auxiliary/Emergency Feedwater					X						061K5.01 **Knowledge of the operational implications of the following concepts as the apply to the AFW:** Relationship between AFW flow and RCS heat transfer	3.6/3.9	
061 Auxiliary/Emergency Feedwater							X				061A2.04 **Ability to (a) predict the impacts of the following malfunctions or operations on the AFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:** pump failure or improper operation	3.4/3.8	
062 AC Electrical Distribution			X								062K3.03 **Knowledge of the effect that a loss or malfunction of the ac distribution system will have on the following:** DC system	3.7/3.9	
063 DC Electrical Distribution						X					063A1.01 **Ability to predict and/or monitor changes in parameters associated with operating the DC electrical system controls including:** Battery capacity as it is affected by discharge rate	2.5/3.3	
063 DC Electrical Distribution	X										063K1.02 **Knowledge of the physical connections and/or cause-effect relationships between the DC electrical system and the following systems:** AC electrical system	2.7/3.2	
064 Emergency Diesel Generator										X	064G2.4.34 **Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects.**	4.2/4.1	

073 Process Radiation Monitoring					X							073K5.02 **Knowledge of the operational implications as they apply to concepts as they apply to the PRM system:** Relationship between radiation intensity and exposure limits	2.5/3.0	
076 Service Water				X								076K4.06 **Knowledge of SWS design feature(s) and/or interlock(s) which provide for the following:** Service water train separation	2.8/3.2	
076 Service Water (SRO)											X	076G2.4.47 **Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.**	4.2/4.2	
078 Instrument Air											X	078G2.1.19 **Ability to use plant computers to evaluate system or component status.**	3.1/3.1	
103 Containment	X											103K1.08 **Knowledge of the physical connections and/or cause-effect relationships between the containment system and the following systems:** SIS, including action of safety injection reset	3.6/3.8	
103 Containment **(SRO)**											X	103G2.2.36 **Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.**	3.1/4.2	
K/A Category Point Totals:	3	2	3	1	3	2	3	3	2	3	3	Group Point Total:		28
K/A Category Point Totals: **(SRO)**								3			2	Group Point Total:		5

ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 2 (RO / SRO)												Form ES-401-2	
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
001 Control Rod Drive (SRO)											X	001G2.2.12 **Knowledge of surveillance procedures.**	3.7/4.1	
002 Reactor Coolant											X	002G2.2.40 **Ability to apply Technical Specifications for a system.**	3.4/3.7	
011 Pressurizer Level Control														
014 Rod Position Indication										X		014A4.01 **Ability to manually operate and/or monitor in the control room:** Rod selection control	3.3/3.1	
015 Nuclear Instrumentation (SRO)								X				015A2.03 **Ability to (a) predict the impacts of the following malfunctions or operations on the NIS; and (b based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:** Xenon oscillations	3.2/3.5	
016 Non-nuclear Instrumentation														
017 In-core Temperature Monitor						X						017K6.01 **Knowledge of the effect of a loss or malfunction of the following ITM system components:** Sensors and detectors	2.7/3.0	
027 Containment Iodine Removal		X										027K2.01 **Knowledge of bus power supplies to the following:** Fans	3.1/3.4	
028 Hydrogen Recombiner and Purge Control														
029 Containment Purge									X			029A3.01 **Ability to monitor automatic operation of the Containment Purge System including:** CPS isolation	3.8/4.0	
033 Spent Fuel Pool Cooling														
034 Fuel Handling Equipment (SRO)	X											034K1.04 **Knowledge of the physical connections and/or cause-effect relationships between the Fuel Handling System and the following systems:** NIS	2.6/3.5	
034 Fuel Handling Equipment				X								034K4.03 **Knowledge of design feature(s) and/or interlock(s) which provide for the following:** Overload protection	2.6/3.3	
035 Steam Generator														
041 Steam Dump/Turbine Bypass Control														

045 Main Turbine Generator													
055 Condenser Air Removal													
056 Condensate													
068 Liquid Radwaste													
071 Waste Gas Disposal							X				071A1.06 **Ability to predict and/or monitor changes in parameters(to prevent exceeding design limits) associated with Waste Gas Disposal System operating the controls including:** Ventilation system	2.5/2.8	
072 Area Radiation Monitoring			X								072K3.02 **Knowledge of the effect that a loss or malfunction of the ARM system will have on the following:** Fuel handling operations	3.1/3.5	
075 Circulating Water								X			075A2.03 **Ability to (a) predict the impacts of the following malfunctions or operations on the circulating water system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:** Safety features and relationship between condenser vacuum, turbine trip, and steam dump	2.5/2.7	
079 Station Air													
086 Fire Protection					X						086K5.04 **Knowledge of the operational implication of the following concepts as they apply to the Fire Protection System:** Hazards to personnel as a result of fire type and methods of protection	2.9/3.5	
K/A Category Point Totals:	0	1	1	1	1	1	1	1	1	1	1	Group Point Total:	10
K/A Category Point Totals: (SRO)	1							1			1	Group Point Total:	3

Facility:	Harris	Date of Exam:	2011

Category	K/A #	Topic	RO		SRO-Only	
			IR	Q#	IR	Q#
1. Conduct of Operations	2.1.8	Ability to coordinate personnel activities outside the control room.	3.4		4.1	
	2.1.26	Knowledge of industrial safety procedures (such as rotating equipment, electrical, high temperature, high pressure, caustic, chlorine, oxygen and hydrogen).	3.4		3.6	
	2.1.35	Knowledge of the fuel-handling responsibilities of SROs. (SRO)			3.9	
	Subtotal		2		1	
2. Equipment Control	2.2.14	Knowledge of the process for controlling equipment configuration or status. (SRO)			4.3	
	2.2.20	Knowledge of the process for managing troubleshooting activities.	2.6		3.8	
	2.2.38	Knowledge of conditions and limitations in the facility license. (SRO)			4.5	
	2.2.42	Ability to recognize system parameters that are entry-level conditions for Technical Specifications.	3.9		4.6	
	Subtotal		2		2	
3. Radiation Control	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions	3.2		3.7	
	2.3.5	Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc. (SRO)			2.9	
	2.3.7	Ability to comply with radiation work permit requirements during normal or abnormal conditions. (SRO)			3.6	
	2.3.13	Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.	3.4		3.8	
	2.3.14	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.	3.4		3.8	
	Subtotal		3		2	
4. Emergency Procedures / Plan	2.4.12	Knowledge of general operating crew responsibilities during emergency operations.	4.0		4.3	
	2.4.22	Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations.	3.6		4.4	
	2.4.27	Knowledge of "fire in the plant" procedures. (SRO)			3.9	
	2.4.17	Knowledge of EOP terms and definitions. (SRO)			4.3	
	2.4.45	Ability to prioritize and interpret the significance of each annunciator or alarm.	4.1		4.3	
	Subtotal		3		2	
Tier 3 Point Total			10		7	

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ES-301 **Administrative Topics Outline** **Form ES-301-1**

Facility: Harris Nuclear Plant Date of Examination: July 11, 2011

Examination Level: RO ■ SRO ☐ Operating Test Number: 05000400/2011301

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	P, R	Determine Rod Height Misalignment Using Thermocouples (JPM CR-139) Common *K/A G2.1.7* **2011 NRC RO A1-1**
Conduct of Operations	M, R	Determine the Target Rod Height and the Boron Concentration Change Required for a Rapid Power Reduction IAW AOP-038 *K/A G2.1.25* **2011 NRC RO A1-2**
Equipment Control	N, R	Review the Completed OST for Auxiliary Feedwater Pump 1B-SB (JPM ADM-103) *K/A G2.2.12* **2011 NRC RO A2**
Radiation Control	M, R	Using Survey Maps, Simplified Drawings, Plant Maps and Valve Lists, determine stay times while performing a clearance activity. (JPM ADM-100) Common *K/A G2.3.4* **2011 NRC RO A3**
Emergency Procedures/Plan	N/A	NOT SELECTED FOR RO **2011 NRC RO A4**

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 (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) **(0)**
(N)ew or (M)odified from bank (≥ 1) **(3)**
(P)revious 2 exams (≤ 1; randomly selected) **(1)**

2011 NRC RO Admin JPM Summary

2011 NRC RO A1-1 - Determine Rod Misalignment Using Thermocouples
Previous - 2009A NRC Exam JPM *randomly selected from bank

K/A 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) RO 4.4 SRO 4.7

The plant is at 90% power with a load decrease in progress when a control rod is observed indicating 12 steps higher than group demand. The candidate must perform Attachment 2 of AOP-001, Malfunction of Rod Control and Indication System, to calculate the temperature difference between the affected thermocouple and its symmetric thermocouples.

NOTE: Two thermocouple temperatures were changed with the resulting calculation now indicating a difference of greater than 10°F, indicating that the rod is misaligned. The 2009a JPM thermocouple temperatures resulted in a calculation of <10°F. During the 2009a exam the <10°F difference resulted was a rod position indication problem. For the 2011 exam the temperature difference of >10°F will have a concluding result of a rod misalignment.

2011 NRC RO A1-2 - Determine the Target Rod Height and the Boron Concentration Change Required for a Rapid Power Reduction IAW AOP-038 **MODIFIED**

K/A G2.1.25 Ability to interpret reference materials, such as graphs, curves, tables, etc.
(CFR: 41.10 / 43.5 / 45.12) RO 3.9 SRO 4.2

With plant conditions requiring a rapid power reduction to 65% power the candidate will be required to determine the target rod height, the time in core life and the amount of boric acid required for the power reduction.

This JPM was modified by changing the initial power level conditions and final power level.

2011 NRC RO A2 - Review the Completed OST for Auxiliary Feedwater Pump 1B-SB - **NEW**
(JPM ADM-103)

K/A G2.2.12 Knowledge of surveillance procedures.
(CFR: 41.10 / 45.13) RO 3.7 SRO 4.1

The candidate will be supplied a completed copy of OST-1076, Auxiliary Feedwater Pump 1B-SB Operability Test Quarterly Interval Modes 1-4 and be assigned the task of performing a peer check of the procedure prior to approval from the CRS.

2011 NRC RO Admin JPM Summary (continued)

2011 NRC RO A3 (Common) - Using Survey Maps, Simplified Drawings, Plant Maps and valve lists, determine stay times while performing a clearance activity. **MODIFIED**

K/A G2.3.4 - Knowledge of radiation exposure limits under normal or emergency conditions. (CFR: 41.12 / 43.4 / 45.10) RO 3.2 SRO 3.7

The candidate will be supplied a survey map of a location in the RAB and a clearance mission to complete in this radioactive area. The location also contains one or more hot spots. They must determine the individual stay times for two Auxiliary Operators (AO) without exceeding the annual administrative dose limits. They will be provided Survey Maps, Simplified plant drawings to locate valves, Plant Maps of the area and a plant valve list to determine the location of the valves they will be hanging a clearance on. The given information will supply the accumulated annual whole body doses for the two AOs, one of which recently worked for another utility. They must perform their calculations based on Progress Energy Administrative Dose Limits.

This JPM was modified by changing the location of the clearance and values of radiation areas.

2011 NRC RO A4 – Not selected

DRAFT

ES-301 **Administrative Topics Outline** **Form ES-301-1**

Facility: Harris Nuclear Plant Date of Examination: July 11, 2011

Examination Level: RO ☐ SRO ■ Operating Test Number: 05000400/2011301

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	P, R	Determine Rod Height Misalignment Using Thermocouples (JPM CR-139) Common *K/A G2.1.7* **2011 NRC SRO A1-1**
Conduct of Operations	M, R	Determine Subcooling with the Subcooling Margin Monitor Unavailable (JPM ADM-031) *K/A G 2.1.23* **2011 NRC SRO A1-2**
Equipment Control	D, R	Review (for approval) a completed surveillance procedure for PORV block valves. (JPM ADM-035 SRO) *K/A G 2.2.12* **2011 NRC SRO A2**
Radiation Control	M, R	Using Survey Maps, Simplified Drawings, Plant Maps and Valve Lists, determine stay times while performing a clearance activity. (JPM ADM-100) Common *K/A G2.3.4* **2011 NRC SRO A3**
Emergency Procedures/Plan	N, R	Given a Set of Plant Conditions Classify An Event. *K/A G2.4.41* **2011 NRC SRO A4**

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 (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)	**(1)**
	(N)ew or (M)odified from bank (≥ 1)	**(3)**
	(P)revious 2 exams (≤ 1; randomly selected)	**(1)**

2011 NRC SRO Admin JPM Summary

2011 NRC SRO A1-1 - Determine Rod Misalignment Using Thermocouples
Previous - 2009A NRC Exam JPM *randomly selected from bank

K/A 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) RO 4.4 SRO 4.7

The plant is at 90% power with a load decrease in progress when a control rod is observed indicating 12 steps higher than group demand. The candidate must perform Attachment 2 of AOP-001, Malfunction of Rod Control and Indication System, to calculate the temperature difference between the affected thermocouple and its symmetric thermocouples.

NOTE: Two thermocouple temperatures were changed with the resulting calculation now indicating a difference of greater than 10°F, indicating that the rod is misaligned. The 2009a JPM thermocouple temperatures resulted in a calculation of <10°F. With <10°F difference the result was a rod position indication problem. With the temperature difference of >10°F the result is a rod misalignment. In the current JPM the SRO will need to determine Tech Spec requirements for a rod misalignment.

2011 NRC SRO A1-2 - Determine Subcooling with the Subcooling Margin Monitor Unavailable (JPM ADM-031) Bank - **MODIFIED**

K/A G2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation.
(CFR: 41.10 / 43.5 / 45.2 / 45.6) RO 4.3 SRO 4.4

The applicant will be informed that a Small Break LOCA has occurred with SI actuated. They will be provided with copies of the EOP User's Guide and multiple plant parameters. They will be required to determine the RCS Subcooling margin IAW the EOP User's Guide directions.

This JPM was modified by changing the initial conditions to where the Containment pressure will be > 3 psig requiring the candidate to use adverse Containment values. In addition to this change the ERFIS computer will not be available. These two changes will require using different indicators and the results will be completely different values.

2011 NRC SRO A2 - Review (for approval) a completed surveillance procedure for PORV block valves. (JPM ADM-035 SRO) Direct

K/A G2.2.12 - Knowledge of surveillance procedures.
(CFR: 41.10 / 45.13) RO 3.7 SRO 4.1

The applicant will be provided with a handout of a completed copy of a PORV Block Valve full stroke quarterly surveillance. The procedure contains three (3) errors that the candidate must identify.

2011 NRC SRO Admin JPM Summary (continued)

2011 NRC SRO A3 (Common) - Using Survey Maps, Simplified Drawings, Plant Maps and valve lists, determine stay times while performing a clearance activity.
(2009B NRC Admin JPM) - **MODIFIED**

K/A G2.3.4 - Knowledge of radiation exposure limits under normal or emergency conditions.
(CFR: 41.12 / 43.4 / 45.10) RO 3.2 SRO 3.7

The applicant will be supplied a survey map of a location in the RAB and a clearance mission to complete in this radioactive area. The location also contains one or more hot spots. They must determine the individual stay times for two Auxiliary Operators (AO) without exceeding the annual administrative dose limits. They will be provided Survey Maps, Simplified plant drawings to locate valves, Plant Maps of the area and a plant valve list to determine the location of the valves they will be hanging a clearance on. The given information will supply the accumulated annual whole body doses for the two AOs, one of which recently worked for another utility. They must perform their calculations based on Progress Energy Administrative Dose Limits.

This JPM was modified by changing the location of the clearance and radiation area intensities.

2011 NRC SRO A4 - Classify an Event (NEW)

K/A G2.4.41 Knowledge of the emergency action level thresholds and classifications
(CFR: 41.10 / 43.5 / 45.11) RO 2.9 SRO 4.6

Given a set of initial conditions and the EAL Flow Path, the candidate must classify the appropriate Emergency Action Level for the event in progress.

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ES-301 **Control Room/In-Plant Systems Outline** **Form ES-301-2**

Facility: Harris Nuclear Plant		Date of Examination: 07/11/2011	
Exam Level: RO SRO-I **SRO-U (bold)**		Operating Test No.: 05000400/2011301	
Control Room Systems@ (8 for RO); (7 for SRO-I); (**2 or 3 for SRO-U, including 1 ESF - bold**)			
	System / JPM Title	Type Code*	Safety Function
a.	**Continuous Rod Withdrawl of a Control Bank - Pull to POAH / Take Corrective Actions IAW AOP-001 (AOP-001) (JPM-CR-048)** ***K/A APE 001 AA2.03***	**A, M, L, S**	**1**
b.	**Loss of Seal Injection To The RCPs - take corrective actions IAW AOP-018 (AOP-018) (NEW JPM-CR-245)** ***K/A APE 015/017 AA2.10***	**A, N, EN, S**	**2**
c.	SGTR Without Pressurizer Pressure Control (EOP-EPP-022) (JPM-CR-150) *K/A G2.1.20*	A, D, S	3
d.	Loss of RCS Inventory While on RHR MODE 5 (AOP-020) (JPM-CR-60) *K/A 005 A4.01*	A, D, EN, S	4P
e.	Using ESW System As A Backup Source Of Water To AFW (PATH-1 and OP-137) (JPM-CR-107) *K/A 054 AA1.01*	P, S	4S
f.	Reduce Containment Spray Flow (EOP-EPP-012) (JPM-CR-233) **RO ONLY** *K/A 026 A4.01*	M, EN, S	5
g.	Start a Emergency Diesel Generator for Testing (OP-155) (JPM-CR-007) *K/A 064 A4.06*	A, D, EN, S	6
h.	**Respond to a Rupture in the Instrument Air Header at 50% power (AOP-017) (JPM-CR-234)** ***K/A APE 065 AA2.06***	**A, D, S**	**8**

In-Plant Systems[@] (3 for RO); (3 for SRO-I); (**3 or 2 for SRO-U - BOLD**)			
i.	**Reset the Turbine Driven AFW Pump Mechanical Overspeed (pump tripped on start) (OP-137) (JPM-IP-001)** ***K/A 061 K4.07***	**D, E, R**	**4S**
j.	**Align the Train 'A' Battery Charger to the Alternate Power Supply** ***K/A APE 058 AA1.01***	**E, N**	**6**
k.	ATWS – Locally Trip the Reactor (FRP-S.1) (JPM-IP-116) *K/A 029 EA1.11*	D, E	7

@ 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	(6, 6, 3)
(C)ontrol room		
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4	(6, 6, 2)
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1	(3, 3, 2)
(EN)gineered safety feature	- / - / ≥1	(4, 3, 1)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1	(1, 1, 1)
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1	(4, 3, 3)
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2	(1, 1, 0)
(R)CA	≥ 1 / ≥ 1 / ≥ 1	(1, 1, 1)
(S)imulator		

2011 NRC Control Room/In-Plant JPM Summary

JPM a – Continuous Rod Withdrawl of a Control Bank (Pull to POAH / Take Corrective Actions IAW AOP-001 (JPM-CR-048) –**SRO Upgrade**

K/A APE 001 AA2.03 - Ability to determine and interpret the following as they apply to the Continuous Rod Withdrawal: Proper actions to be taken if automatic safety functions have not taken place (CFR: 43.5 / 45.13) RO 4.5 SRO 4.8

The previous crew was performing a Reactor Startup and was taking critical data at $1x10^{-8}$ amps when the RO became ill and needed to be relieved. The candidate will be the relief RO and be directed to continue with the Reactor Startup by increasing Reactor power to the Point Of Adding Heat (1-3% power). The candidate will withdraw control rods in manual IAW OP-104, Rod Control System and GP-004, Reactor Startup (Mode 3 to Mode 2) to raise Reactor power while ensuring that a steady state stable Start Up Rate does not exceed 1DPM. While the control rods are being withdrawn a malfunction will cause the control rods to continue to withdraw when the rods no longer have a demand signal to withdraw. After the candidate releases the rod control out lever the rods will continue to withdraw at 48 steps per minute. The candidate will be expected to analyze the malfunction and determine that entry into AOP-001, Malfunction of Rod Control and Indication System is met. They will then perform immediate actions of AOP-001 and manually trip the Reactor. The JPM is complete after the candidate verifies that the Reactor is tripped IAW PATH-1 step 1.

JPM b – Loss of Seal Injection To The RCPs (ASI pump running, align and start standby CSIP) (**NEW** JPM-CR-245) –**SRO Upgrade**

K/A APE 015/017 AA2.10 Ability to determine and interpret the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): When to secure RCPs on loss of cooling or seal injection (CFR 43.5 / 45.13) RO 3.7 / SRO 3.7

The candidate will assume the Operator at the Controls (OAC) responsibilities with the plant operating at 100% power and the 'B' Charging Safety Injection Pump (CSIP) under clearance for seal repairs. Preparations to place the standby CSIP in service are under way but have not been completed. After taking the watch the 'A' CSIP will trip requiring the candidate to identify that AOP-018, Reactor Coolant Pump Abnormal Conditions, entry conditions are met. The candidate will then perform the immediate action of "Check any CSIP running" answer NO and perform the RNO action of isolating letdown. After completing the immediate action the candidate will obtain a copy of AOP-018 and begin the actions of the AOP. Without any CSIP running a loss of seal flow to the RCPs is occurring. A new CVCS positive displacement pump named the Alternate Seal Injection pump (ASI pump) will auto start 2 minute and 45 seconds after 2 out of 3 flow switches detect RCP seal flows < 4.0 gpm. AOP-018 directs to the operator to trip the Reactor if the ASI pump is operating. Since the ASI pump suction tank boron concentration is required to be 3800 – 4200 ppm any time the ASI pump is in operation a large amount of negative reactivity will be added to the RCS. The candidate is expected to carry out the RNO actions of the procedure and perform a manual Reactor trip. They will then perform the immediate actions of PATH-1. When the immediate actions are completed they will be directed to continue with AOP-018 actions to isolate the Seal Return flowpat. The JPM is complete when RCP seal water return valves are isolated.

JPM c –SGTR Without Pressurizer Pressure Control (JPM-CR-150)

K/A G2.1.20 - Ability to interpret and execute procedure steps.
(CFR: 41.10 / 43.5 / 45.12) RO 4.6 / SRO 4.6

The candidate will be informed that EOP-EPP-022 has just been entered after a transition from PATH-2. The plant conditions are: a SGTR occurred on the 'A' SG, offsite power has been lost, and neither the PZR PORV's or PZR Auxiliary spray is functional. The SG tube rupture will be increasing 'A' SG level as the candidate proceeds through EPP-022. Initially 'A' SG level will be < 78% requiring the candidate to proceed to step 2 of the procedure. Continuing through the procedure the candidate will get to step 5 to check PZR level > 10% answer NO and return to step 1. By this time the 'A' SG level will now be > 78% requiring the candidate to use the RNO step to go to step 6 and terminate SI. The JPM is complete after the candidate has shut the BIT outlet valves 1SI-3 and 1SI-4 and verified Cold Leg and Hot Leg Injection valves are shut.

JPM d – Loss of RCS Inventory While on RHR MODE 5 (JPM-CR-60)

K/A 005 A4.01 Ability to manually operate and/or monitor in the control room: Controls and indication for RHR pumps
(CFR: 41.7 / 45.5 to 45.8) RO 3.6 / SRO 3.4

The candidate will be assigned the role of OAC and be directed to maintain current plant conditions of: the plant in Mode 5 with Containment integrity established, on RHR and a bubble in the PZR, RCS temperature stable at ~ 140°F and all RCP's operating. Soon after assuming the watch a RCS leak will develop requiring the candidate to enter AOP-020, Loss of RCS Inventory or RHR While Shutdown. The candidate will obtain a copy of AOP-020 and perform steps to attempt leak isolation. When unable to isolate the leak the procedure directions are to isolate RHR and secure both RHR pumps (this will isolate the leak). The JPM is complete after RHR is isolated and both 'A' and 'B' RHR pump is secured.

JPM e – Using ESW System As A Backup Source of Water To AFW (JPM-CR-107)
PREVIOUS – 2009a NRC Exam

K/A 054 AA1.01 – Ability to operate and / or monitor the following as they apply to the Loss of Main Feedwater AFW controls, including the use of alternate AFW sources
(CFR 41.7 / 45.5 / 45.6) RO 4.5 / SRO 4.4

Following a LOCA the operator is informed that a leak developed in the Condensate Storage Tank (CST). The CST level has decreased to < 10%. The candidate is directed to supply ESW from the A Header to both the A AFW Pump and the Turbine Driven AFW pumps. This will require shutting down the B MDAFW Pump and 'A' Train of Containment Fan Coolers in addition to the ESW valve alignment.

JPM f – Reduce Containment Spray Flow (JPM-CR-233) **RO ONLY**

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) RO 4.5 SRO 4.3

The candidate will be assigned the OAC position with a large break LOCA in progress. Containment pressure has exceeded 10 psig and the crew transitioned to EPP-012, Loss of Emergency Coolant Recirculation, and step 4 has been completed. The candidate will be instructed to proceed in EPP-012 starting with step 5. They will be expected to determine the number of Containment Spray pumps required to be in operation based on Containment Pressure, Containment fan coolers in operation and RWST level. They should determine that both Containment Spray Pumps can be secured, stop both pumps and shut the associated pump discharge valves. The candidate should also determine that RWST makeup is required based on current level.

JPM g – Start EDG A SA From MCB for Testing (JPM-CR-007) Alternate Path and Engineered Safety Feature

K/A 064 A4.06 Ability to manually operate and/or monitor in the control room: Manual start, loading, and stopping of the ED/G (CFR: 41.7 / 45.5 to 45.8) RO 3.9 SRO 3.9

With the unit operating at 100% power the candidate will be directed to start the 1A-SA EDG from the main control board in accordance with section 5.1 of OP-155. After verifying the EDG is ready to start and contacting and directing the local operator to perform steps prior to starting the EDG, the applicant starts the EDG and a short time after the start the AO reports that the EDG crank case relief is lifting and oil is spraying on the side of the diesel. After the report is made the Simulator Operator will start a trigger that will trip the EDG in 1 minute. The applicant is expected to immediately shut down the diesel in accordance with P & L 2 of OP-155. If the applicant reports the crank case relief to the CRS the response will be to follow your procedures. The EDG will be inoperable after this failure and the SRO applicant can provide TS and LCO associated with the failure.

JPM h – Respond to a Rupture in the Instrument Air Header at 50% power (JPM-CR-234) Alternate Path –**SRO Upgrade**

K/A APE 065 AA2.06 Ability to determine and interpret the following as they apply to the Loss of Instrument Air: When to trip reactor if instrument air pressure is decreasing (CFR: 43.5 / 45.13) RO 3.6 SRO 4.2

The candidate will be assigned the OAC position and be directed to maintain current plant conditions of steady state ~50% power. The plant is on hold for chemistry concerns. Soon after taking the watch an Instrument Air leak will develop. The candidate will be expected to respond to the low pressure annunciators and enter AOP-017. Air pressure will decrease requiring a manual Reactor Trip. The candidate will be expected to perform the immediate actions of PATH-1 then be directed to continue with AOP-017. They will have to contact Auxiliary Operators to vent and depressurize the remaining air from the system. Continuing with the procedure requires the candidate to locate and place multiple MCB controls to manual and zero demand.

JPM i – Reset the Turbine Driven AFW Pump Mechanical Overspeed - pump tripped on start (JPM-IP-001) –SRO Upgrade

K/A 061 K4.07 Knowledge of AFW design feature(s) and/or interlock(s) which provide for the following: Turbine trip, including overspeed

(CFR: 41.7) RO 3.1 SRO 3.3

NOTE: This JPM is inside the RCA

The candidate will be informed that the plant has tripped from 100% power. The Turbine Driven AFW pump started and has tripped on overspeed. The pump is needed for plant cooldown efforts. The cause of the overspeed trip has been identified and corrected by Maintenance. The CRS has directed the candidate to reset the Turbine Driven AFW mechanical overspeed trip linkage. 1MS-70 and 1MS-72 (steam supply valves to the TDAFW pump) are indicating shut from the MCB. The CRS also notifies the candidate that the Trip and Throttle Valve will be reopened from the Control Room.

JPM j – Align a Train 'A' battery Charger to the alternate Power Supply – NEW SRO Upgrade

K/A APE 058 AA1.01 Ability to operate and / or monitor the following as they apply to the Loss of DC Power: Cross-tie of the affected dc bus with the alternate supply

(CFR 41.7 / 45.5 / 45.6) RO 3.4 SRO 3.5

The candidate will be informed that the plant is in Mode 3 following a Reactor Trip from a Loss of Off-Site power and failure of both Emergency Diesel Generators to energize their respective Emergency Buses. The Crew will be implementing EPP-001, Loss of AC Power to 1A-SA and 1B-SB Buses, they have verified that the Dedicated Shutdown Diesel Generator has started, loaded and is now supplying 1D23 bus. The CRS will be directing the candidate to align the 1A-SA battery Charger to the alternate Power Supply IAW EOP-001 step 22 using OP-156.01, AC Electrical Distribution, Section 8.15 with initial conditions met.

NOTE: This is a new component was installed during the RFO-17 refueling outage.

JPM k – ATWS – Locally Trip the Reactor (FRP-S.1) (JPM-IP-116)

K/A 029 EA1.11 Ability to operate and monitor the following as they apply to a ATWS: Manual opening of the CRDS breakers

(CFR 41.7 / 45.5 / 45.6) RO 3.9 SRO 4.1

The candidate will be informed that a Reactor trip signal has been received, but the Reactor did not trip. The control room is implementing FRP-S.1. They will be directed to respond as if they were the Turbine Building operator and had responded to a page from the Main Control Room.