

Facility: J.A. FitzPatrick		Date of Exam: May 16 – 20, 2005						Operating Test No.: LOI-05-01							
A P P L I C A N T	E V E N T T Y P E	SCENARIOS													
		1			2			3			4			T O T A L	M I N I M U M
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION				
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P		
RO (SRO-I) SRO-U 1	RX													0	1*
	NOR				1									1	1*
	I/C	4, 6, 7, 9, 10			2, 4, 6, 9									9	4*
	MAJ	8			8, 11									3	2
	TS	2, 5												2	2
RO (SRO-I) SRO-U 2	RX		3											1	1*
	NOR		1											1	1*
	I/C		6, 7, 10		2, 4, 6, 9									7	4*
	MAJ		8		8, 11									3	2
	TS				3, 5									2	2
RO (SRO-I) SRO-U 3	RX													0	1*
	NOR				1									1	1*
	I/C	4, 6, 7, 9, 10			2, 4, 6, 9									9	4*
	MAJ	8			8, 11									3	2
	TS	2, 5												2	2
RO (SRO-I) SRO-U 4	RX		3											1	1*
	NOR		1											1	1*
	I/C		6, 7, 10		2, 4, 6, 9									7	4*
	MAJ		8		8, 11									3	2
	TS				3, 5									2	2

A P P L I C A N T	E V E N T T Y P E	S C E N A R I O S													T O T A L	M I N I M U M
		1			2			3			4					
		C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N					
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P			
R O <u>S R O</u> - I S R O - U 5	R X													0	1*	
	N O R					1								1	1*	
	I / C	4, 6, 7, 9, 10				2, 4, 6, 9								9	4*	
	M A J	8				8, 11								3	2	
	T S	2, 5												2	2	
C a n d i d a t e 6 D r o p p e d	R X													1	1*	
	N O R													1	1*	
	I / C													7	4*	
	M A J													3	2	
	T S													2	2	
C a n d i d a t e 7 D r o p p e d	R X													0	1*	
	N O R													1	1*	
	I / C													9	4*	
	M A J													3	2	
	T S													2	2	

Instructions:

1. Circle the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must do one scenario, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position.
2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. * Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.
3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirement.

Author: _____

NRC Reviewer: _____

Facility: J.A. FitzPatrick			Date of Exam: May 16 – 20, 2005									Operating Test No.: LOI-05-01									
Competencies	APPLICANTS																				
	RO (SRO-U) SRO-U 1			RO (SRO-U) SRO-U 2			RO (SRO-U) SRO-U 3			RO (SRO-U) SRO-U 4			RO (SRO-U) SRO-U 5			Candidate 6 Dropped			Candidate 7 Dropped		
	SCENARIO			SCENARIO			SCENARIO			SCENARIO			SCENARIO			SCENARIO			SCENARIO		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Interpret / Diagnose Events and Conditions	ALL	ALL		ALL	ALL		ALL	ALL		ALL	ALL		ALL	ALL							
Comply With and Use Procedures (1)	ALL	ALL		ALL	ALL		ALL	ALL		ALL	ALL		ALL	ALL							
Operate Control Boards (2)		1,2, 4,8, 9, 11		1,3, 6,7, 8, 10				1,2, 4,8, 9, 11		1,3, 6,7, 8, 10				1,2, 4,8, 9, 11							
Communicate and Interact	ALL	ALL		ALL	ALL		ALL	ALL		ALL	ALL		ALL	ALL							
Demonstrate Supervisory Ability (3)	3,4, 6,7, 8, 10				1,2, 4,6, 8,9, 11		3,4, 6,7, 8, 10				1,2, 4,6, 8,9, 11		3,4, 6,7, 8, 10								
Comply With and Use Tech. Specs. (3)	2,5				3,5		2,5				3,5		2,5								
Notes:																					
(1) Includes Technical Specification compliance for an RO.																					
(2) Optional for an SRO-U.																					
(3) Only applicable to SROs.																					

Instructions: Circle the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Author: _____

NRC Reviewer: _____

LOI-05-01 NRC EXAM SCENARIO 3 NARRATIVE

The scenario will begin with the reactor at 75% Core Thermal Power. A seismic event will result in several failures starting with a 'crywolf' RFP Turbine alarm on high vibration. Vibration will be slightly elevated and monitored by the crew. The following event will be a HPCI power supply loss that will disable HPCI. The CRS will declare HPCI inoperable. The crew will then notice a slow loss of condenser vacuum and perform the AOP actions including a power reduction using recirculation flow. The major event will be a Main Steam Line Break in the Turbine Building that will fail to automatically isolate. A manual scram will be inserted followed by manually isolating the steam lines. During the scram, one control rod will fail to scram but will be inserted using RMCS. RCIC will be operated for Level Control and the SRVs will be operated in Pressure Control. Several SRVs will fail to open forcing alternative SRV selection. The scenario will terminate upon stabilization of Pressure and Level Control.

Facility: J. A. FitzPatrick Scenario No.: 3-1 Op-Test No.: LOI-05-01

****MODIFIED CONTINGENCY SCENARIO FROM LOI-03-01 EXAMINATION****

Examiners:		Operators:	CRS:
			SNO:
			RO:

Initial

Conditions: 75% CTP

Turnover: "Alpha" Circulating Water Pump Just Repaired and Returned to Service; Return Power to 92% Using Recirculation Flow; Hold at 92% for Reactor Engineer's Ramp Guidance.

Event No.	Malf. No.	Event Type*	(Credited Position) / Event Description
1	RFI EP09 FW05:A	-----	Seismic Event (Cry Wolf RFP Turbine Vibration Alarm, RFP Vibration)
2	RFI HP15	C	(SNO) HPCI Power Supply Loss (Aux Oil Pump, MOV)
-----	-----	TS	(CRS) HPCI Inoperable
3	MC01	C	(SNO) Slow Loss of Condenser Vacuum
4	-----	R	(SNO) AOP-Required Power Reduction
5	RP13 (Pre) MS05	M	(ALL) Main Steam Line Break in Turbine Building (w/ Failure to Auto-Isolate, Manual Scram); EOP-2
6	RD13(X)	C	(RO) One (1) Control Rod Fails to Scram
7	-----	-----	RCIC for Level Control; SRVs for Pressure Control (Note 1/2)
8	AD07(X)	I/C	(SNO/RO) Several SRVs Fail to Open

NOTE 1 – RCIC is an IPE Risk-Reduction System

NOTE 2 – Use of RCIC for Level Control Upon HPCI Failure is an IPE Key Operator Action

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

ANTICIPATED EAL: 8.4.4 – ALERT

Facility: J. A. FitzPatrick Scenario No.: **3-2** Op-Test No.: LOI-05-01

Examiners:	

Operators:	CRS:	
	SNO:	
	RO:	

Facility: J. A. FitzPatrick Scenario No.: **3-3** Op-Test No.: LOI-05-01

Examiners:	

Operators:	CRS:	
	SNO:	
	RO:	

LOI-05-01 NRC EXAM SCENARIO 2 NARRATIVE

The scenario will begin with a reactor startup in progress at 3-5% Core Thermal Power. Turnover information will indicate that repairs to the 'A' Circulating Water Pump have just been completed. Crew will be directed to place the 'A' CW pump in service and secure 'B'. The "selected" Reactor Water Level Transmitter will fail downscale resulting in a slow rise in RPV Water Level. The crew will take manual control of RPV water level, swap level columns and return to automatic level control. The CRS will declare the failed transmitter inoperable. An individual Control Rod will Scram due to an airline rupture. The CRS will declare the Control Rod inoperable. SRV leakage will result in mechanical opening of the SRV (industry OE) requiring the crew to manually scram the reactor. Additionally, this will result in actions to place Torus cooling in service and remove the SRV fuses. A 4160 VAC bus loss will remove / degrade the containment cooling functions of the loop in Torus Cooling. The crew will enter and perform EOP-2. The leaking SRV tailpipe will start leaking into the Torus air space resulting in EOP-4 entry. Torus spray will have to occur on the opposite RHR loop; and shortly after initiation, the only RHR pump in that loop will trip unexpectedly. This will force the crew to conclude that an Emergency Depressurization (contingency) is or will soon be required. The scenario will terminate upon the opening of 7 ADS valves.

Facility: J. A. FitzPatrick Scenario No.: 2-1 Op-Test No.: LOI-05-01

Examiners:		Operators:	CRS:	SROI-2
			SNO:	SROI-1
			RO:	SURROGATE

Initial

Conditions: 3% - 5% CTP, Reactor Startup In-Progress

Turnover: Reactor Startup In-Progress at 3 – 5% CTP; Currently at OP-65, Step D.19; Reactor Mode Switch in “Startup”; Continue Power Ascent to 25% CTP Using Control Rods; Reactor Engineer is present in Control Room; “Alpha” Circulating Water Pump Has Just Been Repaired; Start Up “Alpha” CW Pump and Secure “Bravo” CW Pump for Inspection.

Event No.	Malf. No.	Event Type*	(Credited Position) / Event Description
1	-----	N	(SNO) Swap Circulating Water Pumps
2	RR19(X)	I	(SNO) Selected Level Transmitter Fails Downscale
3	-----	TS	(CRS) Level Transmitter Inoperable
4	RD12:(XXYY)	I	(SNO) Control Rod Scram
5	-----	TS	(CRS) SRV Inoperable
6	ED18(X)	C	(SNO) 10500 / 10600 Bus Loss
-----	-----	-----	Degraded Containment Cooling on Operating Side
7	AD05(X) AD06(X) AD08(X)	C	(SNO) Leaking SRV Opens Mechanically
8	-----	M	(ALL) Manual Scram; EOP-2
9	MS16(X)	C	(SNO) SRV Tailpipe Failure in Torus; EOP-4
10	RH01(X)	C	(SNO) RHR Pump Trip During Torus Spray
11	-----	M	(ALL) RPV Emergency Depressurization

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

ANTICIPATED EAL: 3.1.1 – ALERT

Facility: J. A. FitzPatrick Scenario No.: 2-2 Op-Test No.: LOI-05-01

Examiners:	

Operators:	CRS:	SROI-4
	SNO:	SROI-3
	RO:	SURROGATE

Facility: J. A. FitzPatrick Scenario No.: 2-3 Op-Test No.: LOI-05-01

Examiners:	

Operators:	CRS:	SURROGATE
	SNO:	SROI-5
	RO:	SURROGATE

LOI-05-01 NRC EXAM SCENARIO 1 NARRATIVE

The scenario will begin with the plant operating normally at 100% Core Thermal Power. HPCI surveillance testing has just been completed and the Torus Cooling Mode of RHR is to be secured. During the shutdown of the Torus Cooling Mode, the "A" RHR/SW pump will trip. Dispatch of the NPO will produce a local report of "A" RHR/SW pump breaker charring. The CRS will declare the RHR/SW Subsystem inoperable. Per Reactor Engineer's guidance, a power reduction to 95% will then be commenced for performance of ST-20B. During the power reduction, "C" APRM will not respond as expected. The APRM will be declared inoperable and bypassed. An NPO performing rounds will report a sizable EHC leak in the running "A" EHC pump discharge filter. The crew will swap the running EHC pumps isolating the leak. A rupture in the RHR suction piping will then start a slow reduction in Torus Water Level. AOP-9 may be entered momentarily resulting in immediate direction to enter EOP-4/EOP-5. EOP-4 will be entered on low Torus water level and EOP-5 will be entered on High Sump/Floor Water Level in the Crescent Area. Local investigation will reveal that the leak is isolable and isolation actions will commence. Before Torus Water Level reaches 10.75 feet, HPCI will be tripped and a manual scram inserted. Shortly after the manual scram occurs, the leak will be reported isolated. The manual scram will result in a power reduction to 20-30% due to a blockage in the SDIV(s). EOP-2 will be entered then exited to EOP-3 resulting in a start of either SLC pump. SLC injection will fail resulting in a manual start of the other SLC pump which will also fail shortly after start. The Level/Power Control contingency will be exercised by first terminating and preventing injection sources followed by re-injection at a reduced RPV water level. A loss of the remaining EHC pump will result in a turbine trip and a loss of the bypass valves shortly thereafter. This will force transitioning pressure control to the SRV's and trending the approach to the Boron Injection Initiation Temperature (BIIT). If BIIT is reached, another Terminate and Prevent will result in RPV water level control at an even lower level. Timely action to complete rod insertion may avoid exceeding BIIT. The control rod insertion success path will require resetting the scram signal, draining the SDIV(s) and re-inserting a manual scram. Upon inserting the second manual scram, all control rods will be reported full-in and the scenario will be terminated.

Facility: J. A. FitzPatrick Scenario No.: 1-1 Op-Test No.: LOI-05-01

Examiners:	

Operators:	CRS:	SROI-1
	SNO:	SROI-2
	RO:	SURROGATE

Initial

Conditions: Operating normally at 100% CTP

Turnover: Operating normally at 100% CTP; RHR Loop "Alpha" in Torus Cooling Mode; HPCI Surveillance Testing recently completed successfully; Torus Cooling needs to be secured; Then, reduce power to 95% per Reactor Engineer's guidance and perform ST-20B.

Event No.	Malf. No.	Event Type*	(Credited Position) / Event Description
1	-----	N	(SNO) Shut down Torus Cooling
2	SW04:A	TS	(CRS) Running RHR/SW Pump Trip (Before S/D)
3	-----	R	(SNO) Power Reduction to 95%
4	NM14(X)	I	(RO) APRM Fails to Respond to Power Reduction
-----	-----	-----	APRM Bypassed
5	-----	TS	(CRS) APRM Declared Inoperable
6	-----	C	(SNO) NPO Reports EHC Leak; Swap EHC Pumps
7	RH10:A	C	(SNO) Torus Rupture in RHR Suction; Level Drops; EOP-5/4
8	RD22(A/B)	M	(ALL) Manual Scram; ATWS; SDIV Blockage; EOP-3; Level/Power Control
9	SL01:A/B	C	(RO) SLC Pump Start Failure (NOTE 1)
10	TC02:B	C	(SNO) EHC Pump Trip; Turbine Trip; Bypass Valve Failure
11	-----	M	(ALL) Level / Power Control

NOTE 1 – SLC initiation is related to the JAF IPE ATWS Dominant Accident Sequence

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: J. A. FitzPatrick Scenario No.: 1-2 Op-Test No.: LOI-05-01

Examiners:	

Operators:	CRS:	SROI-3
	SNO:	SROI-4
	RO:	SURROGATE

Facility: J. A. FitzPatrick Scenario No.: 1-3 Op-Test No.: LOI-05-01

Examiners:	

Operators:	CRS:	SROI-5
	SNO:	SURROGATE
	RO:	SURROGATE

ANTICIPATED EAL: 2.2.2 – SITE AREA

Facility:		J.A. FitzPatrick													Date of Exam: May 16 – 20, 2005			
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	1	4	4	N/A				4	2	N/A		5	20	3	4	7	
	2	1	2	0	N/A				2	0	N/A		2	7	1	2	3	
	Tier Totals	2	6	4	N/A				6	2	N/A		7	27	4	6	10	
2. Plant Systems	1	1	2	2	2	3	3	2	1	3	4	3	26	3	2	5		
	2	1	0	0	2	2	2	1	4	0	0	0	12	1	2	3		
	Tier Totals	2	2	2	4	5	5	3	5	3	4	3	38	4	4	8		
3. Generic Knowledge and Abilities Categories				1		2		3		4		10		1	2	3	4	7
				2		3		3		2				2	2	2	1	

- Notes:
1. Ensure that at least two topics from every 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 or 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 (IR) 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. 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.

INFO STARTS ON PAGE 2...

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 1 (RO / SRO)						Form ES-401-1	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4				1			AA1.07 Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION : ♦ Nuclear Boiler Instrumentation System	3.1	8
295003 Partial or Complete Loss of AC / 6						2	G2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics / reactor behavior / and instrument interpretation.	3.7	14
							G2.1.8 (10CFR 55.43.5 - SRO Only) <i>Ability to coordinate personnel activities outside the control room.</i>	3.6	47
295004 Partial or Total Loss of DC Pwr / 6		1				1	AK2.03 Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF D.C. POWER and the following: ♦ D.C. bus loads	3.3	11
							AA2.02 (10CFR 55.43.5 - SRO Only) <i>Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER:</i> ♦ <i>Extent of partial or complete loss of D.C. power</i>	3.9	33
295005 Main Turbine Generator Trip / 3	1					1	AK1.03 Knowledge of the operational implications of the following concepts as they apply to MAIN TURBINE GENERATOR TRIP: ♦ Pressure effects on reactor level	3.5	45
							G2.2.22 (10CFR 55.43.2 - SRO Only) <i>Knowledge of limiting conditions for operations and safety limits.</i>	4.1	31

SRO only K/As shown in italics

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 1 (RO / SRO)						Form ES-401-1	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295006 SCRAM / 1		1				1	AK2.01 Knowledge of the interrelations between SCRAM and the following: ♦ RPS	4.3	38
							<i>G2.4.29 (10CFR 55.43.5 - SRO Only)</i> <i>Knowledge of the emergency plan.</i>	4.0	6
295016 Control Room Abandonment / 7						1	G2.1.30 Ability to locate and operate components / including local controls.	3.9	27
295018 Partial or Total Loss of CCW / 8		1			1		AK2.01 Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER and the following: ♦ System loads	3.3	10
							AA2.05 Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER: ♦ System pressure	2.9	37
295019 Partial or Total Loss of Inst. Air / 8				1			AA1.04 Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR: ♦ Service air isolation valves: Plant-Specific	3.3	13
295021 Loss of Shutdown Cooling / 4				1			AA1.06 Ability to operate and/or monitor the following as they apply to LOSS OF SHUTDOWN COOLING: ♦ Containment / drywell temperature	2.8	39

SRO only K/As shown in italics

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 1 (RO / SRO)					Form ES-401-1		
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295023 Refueling Acc Cooling Mode / 8			1				AK3.02 Knowledge of the reasons for the following responses as they apply to REFUELING ACCIDENTS: ♦ Interlocks associated with fuel handling equipment	3.4	12
295024 High Drywell Pressure / 5			1			1	EK3.05 Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL PRESSURE: ♦ RPV flooding	3.5	15
							G2.4.44 (10CFR 55.43.2 - SRO Only) <i>Knowledge of emergency plan protective action recommendations.</i>	4.0	40
295025 High Reactor Pressure / 3						1	G2.2.12 Knowledge of surveillance procedures.	3.0	46
295026 Suppression Pool High Water Temp. / 5						1	G2.1.18 Ability to make accurate / clear and concise logs / records / status boards / and reports.	2.9	76
							EA2.01 (10CFR 55.43.2/5 - SRO Only) <i>Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE:</i> ♦ <i>Suppression pool water temperature</i>	4.2	98
295027 High Containment Temperature / 5	--	--	--	--	--	--	N/A for JAF – K/A for Mark III Containments ONLY-----	-----	-----

SRO only K/As shown in italics

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 1 (RO / SRO)					Form ES-401-1		
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295028 High Drywell Temperature / 5			1				EK3.04 Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL TEMPERATURE: ♦ Increased drywell cooling	3.6	93
295030 Low Suppression Pool Wtr Lvl / 5				1			EA1.06 Ability to operate and/or monitor the following as they apply to LOW SUPPRESSION POOL WATER LEVEL: ♦ Condensate storage and transfer (make-up to the suppression pool): Plant-Specific	3.4	79
295031 Reactor Low Water Level / 2					1		EA2.02 Ability to determine and/or interpret the following as they apply to REACTOR LOW WATER LEVEL: ♦ Reactor power	4.0	74
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1			1				EK3.01 Knowledge of the reasons for the following responses as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: ♦ Recirculation pump trip/runback: Plant-Specific	4.1	82
295038 High Off-site Release Rate / 9		1					EK2.03 Knowledge of the interrelations between HIGH OFF-SITE RELEASE RATE and the following: ♦ Plant ventilation systems	3.6	94

SRO only K/As shown in italics

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 1 (RO / SRO)						Form ES-401-1	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
600000 Plant Fire On Site / 8					1	1	G2.1.22 Ability to determine Mode of Operation.	2.8	75
							AA2.09 (10CFR 55.43.2/5 - SRO Only) <i>Ability to determine and interpret the following as they apply to PLANT FIRE ON SITE:</i> ♦ <i>That a failed fire alarm detector exists</i>	2.8	57
K/A Category Totals: (RO)	1	4	4	4	2	5		Group Point Total: (RO)	20
K/A Category Totals: (SRO)					3	4		Group Point Total: (SRO)	7

SRO only K/As shown in italics

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 2 (RO / SRO)					Form ES-401-1		
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295002 Loss of Main Condenser Vac / 3	--	--	--	--	--	--	NOT RANDOMLY SELECTED-----	-----	-----
295007 High Reactor Pressure / 3	1						AK1.01 Knowledge of the operational implications of the following concepts as they apply to HIGH REACTOR PRESSURE: ♦ Pump shutoff head	2.9	84
295008 High Reactor Water Level / 2	--	--	--	--	--	--	NOT RANDOMLY SELECTED-----	-----	-----
295009 Low Reactor Water Level / 2	--	--	--	--	--	--	NOT RANDOMLY SELECTED-----	-----	-----
295010 High Drywell Pressure / 5				1			AA1.02 **Plant OE** Ability to operate and/or monitor the following as they apply to HIGH DRYWELL PRESSURE: ♦ Drywell floor and equipment drain sumps	3.6	99
295011 High Containment Temp / 5	--	--	--	--	--	--	N/A for JAF – K/A for Mark III Containments ONLY-----	-----	-----
295012 High Drywell Temperature / 5		1				1	AK2.02 Knowledge of the interrelations between HIGH DRYWELL TEMPERATURE and the following: ♦ Drywell cooling	3.6	91
							G2.1.20 (10CFR 55.43.5 - SRO Only) <i>Ability to execute procedure steps.</i>	4.2	53
295013 High Suppression Pool Temp / 5	--	--	--	--	--	--	NOT RANDOMLY SELECTED-----	-----	-----
295014 Inadvertent Reactivity Addition / 1	--	--	--	--	--	--	NOT RANDOMLY SELECTED-----	-----	-----

SRO only K/As shown in italics

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 2 (RO / SRO)					Form ES-401-1		
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295015 Incomplete SCRAM / 1						1	G2.4.20 Knowledge of operational implications of EOP warnings / cautions / and notes.	3.3	92
295017 High Off-site Release Rate / 9	-	-	-	-	-	-	NOT RANDOMLY SELECTED	---	---
295020 Inadvertent Cont. Isolation / 5 & 7	-	-	-	-	-	-	NOT RANDOMLY SELECTED	---	---
295022 Loss of CRD Pumps / 1	-	-	-	-	-	-	NOT RANDOMLY SELECTED	---	---
295029 High Suppression Pool Wtr Lvl / 5				1		1	EA1.01 Ability to operate and/or monitor the following as they apply to HIGH SUPPRESSION POOL WATER LEVEL: ♦ HPCI: Plant-Specific <i>G2.4.8 (10CFR 55.43.5 - SRO Only)</i> <i>Knowledge of how the event-based emergency/abnormal operating procedures are used in conjunction with the symptom-based EOPs.</i>	3.4	73
								3.7	59
295032 High Secondary Containment Area Temperature / 5	-	-	-	-	-	-	NOT RANDOMLY SELECTED	---	---
295033 High Secondary Containment Area Radiation Levels / 9	-	-	-	-	-	-	NOT RANDOMLY SELECTED	---	---
295034 Secondary Containment Ventilation High Radiation / 9		1					EK2.01 Knowledge of the interrelations between SECONDARY CONTAINMENT VENTILATION HIGH RADIATION and the following: ♦ Process radiation monitoring system	3.9	54
295035 Secondary Containment High Differential Pressure / 5						1	G2.1.21 Ability to obtain and verify controlled procedure copy.	3.1	67

SRO only K/As shown in italics

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 2 (RO / SRO)						Form ES-401-1	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295036 Secondary Containment High Sump/Area Water Level / 5	-	-	-	-	-	-	NOT RANDOMLY SELECTED-----	-----	-----
500000 High CTMT Hydrogen Conc. / 5					1		<i>EA2.02 (10 CFR 55.43.2 - SRO Only)</i> <i>Ability to determine and/or interpret the following as they apply to HIGH PRIMARY CONTAINMENT HYDROGEN CONCENTRATIONS:</i> ♦ <i>Oxygen monitoring system availability</i>	3.5	51
K/A Category Totals: (RO)	1	2	0	2	0	2		Group Point Total: (RO)	7
K/A Category Totals: (SRO)					1	2		Group Point Total: (SRO)	3

SRO only K/As shown in italics

ES-401	BWR Examination Outline Plant Systems – Tier 2/Group 1 (RO / SRO)										Form ES-401-1			
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	#
203000 RHR/LPCI: Injection Mode											1	G2.3.4 Knowledge of radiation exposure limits and contamination control / including permissible levels in excess of those authorized.	2.5	26
205000 Shutdown Cooling		1										K2.02 Knowledge of electrical power supplies to the following: ♦ Motor operated valves	2.5	1
206000 HPCI					1		1					K5.05 Knowledge of the operational implications of the following concepts as they apply to HIGH PRESSURE COOLANT INJECTION SYSTEM: ♦ Turbine speed control: BWR-2,3,4	3.3	48
												A1.07 Ability to predict and/or monitor changes in parameters associated with operating the HIGH PRESSURE COOLANT INJECTION SYSTEM controls including: ♦ System discharge pressure: BWR-2,3,4	3.7	43
207000 Isolation (Emergency) Condenser	-	-	-	-	-	-	-	-	-	-	-	N/A for JAF – No Isolation Condenser(s)		
209001 LPCS						1						K6.03 Knowledge of the effect that a loss or malfunction of the following will have on the LOW PRESSURE CORE SPRAY SYSTEM: ♦ Torus/suppression pool water level	3.3	29
200002 HPCS	-	-	-	-	-	-	-	-	-	-	-	N/A for JAF – No HPCS System		

SRO only K/As shown in italics

ES-401												BWR Examination Outline Plant Systems – Tier 2/Group 1 (RO / SRO)		Form ES-401-1	
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	#	
211000 SLC									1			A3.07 Ability to monitor automatic operations of the STANDBY LIQUID CONTROL SYSTEM including: ♦ Lights and alarms: Plant-Specific	3.7	24	
212000 RPS			1									K3.12 Knowledge of the effect that a loss or malfunction of the REACTOR PROTECTION SYSTEM will have on the following: ♦ Secondary containment integrity	3.2	32	
215003 IRM					1	1						K5.01 Knowledge of the operational implications of the following concepts as they apply to INTERMEDIATE RANGE MONITOR (IRM) SYSTEM: ♦ Detector operation	2.6	44	
												K6.05 Knowledge of the effect that a loss or malfunction of the following will have on the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM: ♦ Trip units	3.1	25	

SRO only K/As shown in italics

ES-401											BWR Examination Outline Plant Systems – Tier 2/Group 1 (RO / SRO)		Form ES-401-1	
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	#
215004 Source Range Monitor				1							1	K4.04 Knowledge of SOURCE RANGE MONITOR (SRM) SYSTEM design feature(s) and/or interlocks which provide for the following: ♦ Changing detector position	2.8	7
												A4.05 Ability to manually operate and/or monitor in the control room: ♦ SRM back panel switches, meters, and indicating lights	3.1	34
215005 APRM / LPRM									1			A3.05 Ability to monitor automatic operations of the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM including: ♦ Flow converter/comparator alarms	3.3	49

SRO only K/As shown in italics

ES-401		BWR Examination Outline Plant Systems – Tier 2/Group 1 (RO / SRO)										Form ES-401-1		
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	#
217000 RCIC						1		1			1	K6.04 Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC): ♦ Condensate storage and transfer system	3.5	41
												A2.01 Ability to (a) predict the impacts of the following on the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: ♦ System initiation signal	3.8	58
												G2.4.16 (10CFR 55.43.5 - SRO Only) <i>Knowledge of EOP implementation hierarchy and coordination with other support procedures.</i>	4.0	64
218000 ADS										1		A4.02 Ability to manually operate and/or monitor in the control room: ♦ ADS logic initiation	4.2	97

SRO only K/As shown in italics

ES-401		BWR Examination Outline Plant Systems – Tier 2/Group 1 (RO / SRO)										Form ES-401-1		
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	#
223002 PCIS/Nuclear Steam Supply Shutoff								1			1	G2.3.9 Knowledge of the process for performing a containment purge.	2.5	61
												A2.04 (10CFR 55.43.5 - SRO Only) <i>Ability to (a) predict the impacts of the following on the PRIMARY CONTAINMENT ISOLATION SYSTEM /NUCLEAR STEAM SUPPLY SHUT-OFF; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:</i> ♦ <i>Process radiation monitoring system failures</i>	3.2	83
239002 SRVs					1						1	K5.05 Knowledge of the operational implications of the following concepts as they apply to RELIEF/SAFETY VALVES: ♦ Discharge line quencher operation	2.6	95
												G2.1.11 (10CFR 55.43.2 - SRO Only) <i>Knowledge of less than one hour technical specification action statements for systems.</i>	3.8	81
259002 Reactor Water Level Control											1	A4.02 **Recent Plant Modification** Ability to manually operate and/or monitor in the control room: ♦ All individual component controllers in the automatic mode	3.7	88

SRO only K/As shown in italics

ES-401	BWR Examination Outline Plant Systems – Tier 2/Group 1 (RO / SRO)										Form ES-401-1			
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	#
261000 SGTS							1					A1.01 Ability to predict and/or monitor changes in parameters associated with operating the STANDBY GAS TREATMENT SYSTEM controls including: ♦ System flow	2.9	56
262001 AC Electrical Distribution								1			1	G2.4.27 Knowledge of fire in the plant procedure.	3.0	77
												A2.01 (10CFR 55.43.5 - SRO Only) <i>Ability to (a) predict the impacts of the following on the A.C. ELECTRICAL DISTRIBUTION; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:</i> ♦ <i>Turbine/generator trip</i>	3.6	60
262002 UPS (AC/DC)										1		A4.01 Ability to manually operate and/or monitor in the control room: ♦ Transfer from alternative source to preferred source	2.8	87

SRO only K/As shown in italics

ES-401	BWR Examination Outline Plant Systems – Tier 2/Group 1 (RO / SRO)											Form ES-401-1		
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	#
263000 DC Electrical Distribution	1							1	1			K1.04 Knowledge of the physical connections and/or cause-effect relationships between D.C. ELECTRICAL DISTRIBUTION and the following: <ul style="list-style-type: none"> ◆ Ground detection 	2.6	63
												A3.01 Ability to monitor automatic operations of the D.C. ELECTRICAL DISTRIBUTION including: <ul style="list-style-type: none"> ◆ Meters, dials, recorders, alarms, and indicating lights 	3.2	89
													A2.02 (10CFR 55.43.5 - SRO Only) <i>Ability to (a) predict the impacts of the following on the D.C. ELECTRICAL DISTRIBUTION; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:</i> <ul style="list-style-type: none"> ◆ <i>Loss of ventilation during charging</i> 	2.9
264000 EDGs			1									K3.03 Knowledge of the effect that a loss or malfunction of the EMERGENCY GENERATORS (DIESEL/JET) will have on the following: <ul style="list-style-type: none"> ◆ Major loads powered from electrical buses fed by the emergency generator(s) 	4.1	65
300000 Instrument Air		1										K2.01 Knowledge of electrical power supplies to the following: <ul style="list-style-type: none"> ◆ Instrument air compressor 	2.8	90

SRO only K/As shown in italics

ES-401												BWR Examination Outline Plant Systems – Tier 2/Group 1 (RO / SRO)		Form ES-401-1															
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	#															
400000 Component Cooling Water				1								K4.01 Knowledge of CCWS design feature(s) and/or interlocks which provide for the following: ♦ Automatic start of the standby pump	3.4	96															
K/A Category Point Totals: (RO)												1	2	2	2	3	3	2	1	3	4	3	Group Point Total: (RO)	26					
K/A Category Point Totals: (SRO)																										3	2	Group Point Total: (SRO)	5

SRO only K/As shown in italics

ES-401		BWR Examination Outline Plant Systems – Tier 2/Group 2 (RO / SRO)										Form ES-401-1		
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	#
201001 CRD Hydraulic	-	-	-	-	-	-	-	-	-	-	-	NOT RANDOMLY SELECTED	-	-
201002 RMCS							1					A1.01 Ability to predict and/or monitor changes in parameters associated with operating the REACTOR MANUAL CONTROL SYSTEM controls including: ♦ CRD drive water flow	2.8	42
201003 Control Rod and Drive Mechanism						1						K6.02 Knowledge of the effect that a loss or malfunction of the following will have on the CONTROL ROD AND DRIVE MECHANISM: ♦ Reactor pressure	3.0	9
201004 RSCS	-	-	-	-	-	-	-	-	-	-	-	N/A for JAF – BWR 4/5 ONLY	-	-
201005 RCIS	-	-	-	-	-	-	-	-	-	-	-	N/A for JAF – BWR 6 ONLY	-	-
201006 RWM	-	-	-	-	-	-	-	-	-	-	-	NOT RANDOMLY SELECTED	-	-
202001 Recirculation	-	-	-	-	-	-	-	-	-	-	-	NOT RANDOMLY SELECTED	-	-
202002 Recirculation Flow Control					1						1	K5.02 Knowledge of the operational implications of the following concepts as they apply to RECIRCULATION FLOW CONTROL SYSTEM: ♦ Feedback signals	2.6	17
												G2.2.14 (10CFR 55.43.3 - SRO Only) <i>Knowledge of the process for making configuration changes.</i>	3.0	30
204000 RWCU	-	-	-	-	-	-	-	-	-	-	-	NOT RANDOMLY SELECTED	-	-

SRO only K/As shown in italics

ES-401	BWR Examination Outline Plant Systems – Tier 2/Group 2 (RO / SRO)											Form ES-401-1		
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	#
214000 RPIS											1	<i>G2.4.7 (10CFR 55.43.5 - SRO Only) **PLANT OE**</i> <i>Knowledge of event based EOP mitigation strategies.</i>	3.8	36
215001 Traversing In-core Probe	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
215002 RBM	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
216000 Nuclear Boiler Inst.								1				<i>A2.14 (10CFR 55.43.5 - SRO Only)</i> <i>Ability to (a) predict the impacts of the following on the NUCLEAR BOILER INSTRUMENTATION; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:</i> ♦ <i>Recirculation flow: Design-Specific</i>	2.9	5
219000 RHR/LPCI: Torus/Pool Cooling Mode						1						K6.06 Knowledge of the effect that a loss or malfunction of the following will have on the RHR/LPCI TORUS/SUPPRESSION POOL COOLING MODE: ♦ Suppression pool	3.7	28
223001 Primary CTMT and Aux.	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
226001 RHR/LPCI: CTMT Spray Mode					1							K5.06 Knowledge of the operational implications of the following concepts as they apply to RHR/LPCI CONTAINMENT SPRAY SYSTEM MODE: ♦ Vacuum breaker operation	2.6	68
230000 RHR/LPCI: Torus/Pool Spray Mode	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
233000 Fuel Pool Cooling/Cleanup	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
234000 Fuel Handling Equipment	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		

SRO only K/As shown in italics

ES-401	BWR Examination Outline Plant Systems – Tier 2/Group 2 (RO / SRO)											Form ES-401-1		
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	#
230001 Main and Reheat Steam	-	-	-	-	-	-	-	-	-	-	-	NOT RANDOMLY SELECTED	-	-
230003 MSIV Leakage Control	-	-	-	-	-	-	-	-	-	-	-	NOT RANDOMLY SELECTED	-	-
241000 Reactor/Turbine Pressure Regulator	-	-	-	-	-	-	-	-	-	-	-	NOT RANDOMLY SELECTED	-	-
246000 Main Turbine Gen. / Aux.	-	-	-	-	-	-	-	-	-	-	-	NOT RANDOMLY SELECTED	-	-
256000 Reactor Condensate	-	-	-	-	-	-	-	-	-	-	-	NOT RANDOMLY SELECTED	-	-
260001 Reactor Feedwater	-	-	-	-	-	-	-	-	-	-	-	NOT RANDOMLY SELECTED	-	-
268000 Radwaste	1											K1.03 Knowledge of the physical connections and/or cause-effect relationships between RADWASTE and the following: ♦ Reactor building equipment drains: Plant-Specific	2.6	2
271000 Offgas								1				A2.10 Ability to (a) predict the impacts of the following on the OFFGAS SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: ♦ Offgas system high flow	3.1	19
272000 Radiation Monitoring								1				A2.16 Ability to (a) predict the impacts of the following on the RADIATION MONITORING SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: ♦ Instrument malfunctions	2.7	66

SRO only K/As shown in italics

ES-401	BWR Examination Outline Plant Systems – Tier 2/Group 2 (RO / SRO)											Form ES-401-1		
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	#
286000 Fire Protection				1								K4.01 Knowledge of FIRE PROTECTION SYSTEM design feature(s) and/or interlocks which provide for the following: ♦ Adequate supply of water for the fire protection system	3.4	20
288000 Plant Ventilation	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
290001 Secondary CTMT								1				A2.01 Ability to (a) predict the impacts of the following on the SECONDARY CONTAINMENT; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: ♦ Personnel airlock failure	3.3	85
290003 Control Room HVAC								1				A2.03 Ability to (a) predict the impacts of the following on the CONTROL ROOM HVAC; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: ♦ Initiation/reconfiguration failure	3.4	71
290002 Reactor Vessel Internals				1								K4.02 ** INDUSTRY OE** Knowledge of REACTOR VESSEL INTERNALS design feature(s) and/or interlocks which provide for the following: ♦ Separation of fluid flow paths within the vessel	3.1	50
K/A Category Point Totals: (RO)	1	0	0	2	2	2	1	4	0	0	0		Group Point Total: (RO)	12
K/A Category Point Totals: (SRO)								1			2		Group Point Total: (SRO)	3

SRO only K/As shown in italics

Tier / Group	Randomly Selected K/A	Reason for Rejection
1 / 1	295016 G2.1.5	RO K/A < 2.5 (2.3), No Plant-Specific Priority
1 / 1	295023 AK3.05	Plant-Specific BWR-1 Only
1 / 1	295023 AK3.04	No Plant Procedures for Non-Coincident Scram
1 / 1	295024 G2.3.2	No reasonable link between High Drywell Pressure Emergency Procedures and the facility ALARA Program that is testable at the SRO level
1 / 1	295025 G2.2.5	RO K/A < 2.5 (1.6), No Plant-Specific Priority
1 / 1	295026 G2.1.4	RO K/A < 2.5 (2.3), No Plant-Specific Priority
1 / 1	295038 EK2.12	Plant-Specific BWR-6 Only
1 / 1	600000 AA2.01	SRO K/A < 2.5 (2.3), No Plant-Specific Priority
1 / 2	295015 G2.4.44	RO K/A < 2.5 (2.1), No Plant-Specific Priority
1 / 2	295035 G2.1.34	RO K/A < 2.5 (2.3), No Plant-Specific Priority
1 / 2	295035 G2.1.5	RO K/A < 2.5 (2.3), No Plant-Specific Priority
2 / 1	203000 G2.3.7	RO K/A < 2.5 (2.0), No Plant-Specific Priority
2 / 1	215003 K5.02	RO K/A < 2.5 (2.2), No Plant-Specific Priority
2 / 1	215004 K4.03	RO K/A < 2.5 (2.4), No Plant-Specific Priority
2 / 1	223002 G2.3.5	RO K/A < 2.5 (2.3), No Plant-Specific Priority
2 / 1	262002 A1	No K/As > 2.5, No Plant-Specific Priority, Randomly Selected Another Category
2 / 1	300000 A1	No K/As In This Category, Randomly Selected Another Category
2 / 1	300000 K5.03	RO K/A < 2.5 (2.1), No Plant-Specific Priority
2 / 2	201004	N/A JAF – All K/As for BWRs-4&5 Only
2 / 2	214000 G3	No Reasonable Link Between RPIS And Radioactive Control Generic K/As
2 / 2	226001 K5.01	RO K/A < 2.5 (2.2), No Plant-Specific Priority

Facility: <u>J.A. FitzPatrick</u> Date of Exam: <u>May 16 – 20, 2005</u>						
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.	G2.1.20 Ability to execute procedure steps. <i>G2.1.9 (10CFR 55.43.5 – SRO Only)</i> <i>Ability to direct personnel activities inside the control room.</i>	4.3	3	4.0	23
	2.1.	G2.1.27 Knowledge of system purpose and/or function. <i>G2.1.20 (10CFR 55.43.2/6 – SRO Only)</i> <i>Ability to execute procedure steps.</i>	2.8	4	4.2	52
	2.1.	NOT RANDOMLY SELECTED	---	---	---	---
	2.1.	NOT RANDOMLY SELECTED	---	---	---	---
	2.1.	NOT RANDOMLY SELECTED	---	---	---	---
	2.1.	NOT RANDOMLY SELECTED	---	---	---	---
	Subtotal				2	
2. Equipment Control	2.2.	G2.2.24 **Plant OE** Ability to analyze the affect of maintenance activities on LCO status. <i>G2.2.13 (10CFR 55.43.5 – SRO Only)</i> <i>**Plant OE**</i> <i>Knowledge of tagging and clearance procedures.</i>	2.6	80	3.8	86
	2.2.	G2.2.1 Ability to perform pre-startup procedures for the facility / including operating those controls associated with plant equipment that could affect reactivity. <i>G2.2.29 (10CFR 55.43.2/6 – SRO Only)</i> <i>Knowledge of SRO fuel handling responsibilities.</i>	3.7	55	3.8	78
	2.2.	G2.2.30 Knowledge of RO duties in the control room during fuel handling such as alarms from fuel handling area / communication with fuel storage facility / systems operated from the control room in support of fueling operations / and supporting instrumentation.	3.5	35	---	---
	2.2.	NOT RANDOMLY SELECTED	---	---	---	---
	2.2.	NOT RANDOMLY SELECTED	---	---	---	---
	2.2.	NOT RANDOMLY SELECTED	---	---	---	---
	Subtotal				3	

SRO only K/As shown in italics

Facility: <u>J.A. FitzPatrick</u>		Date of Exam: <u>May 16 – 20, 2005</u>				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
3. Radiation Control	2.3	G2.3.4 Knowledge of radiation exposure limits and contamination control / including permissible levels in excess of those authorized. <i>G2.3.2 (10CFR 55.43.2/4 – SRO Only)</i> <i>Knowledge of facility ALARA program.</i>	2.5	18	2.9	69
	2.3	G2.3.9 Knowledge of the process for performing a containment purge. <i>G2.3.7 (10CFR 55.43.4/5 – SRO Only)</i> <i>Knowledge of the process for preparing a radiation work permit.</i>	2.5	16	3.3	70
	2.3	G2.3.11 Ability to control radiation releases.	2.7	21	---	---
	2.3	NOT RANDOMLY SELECTED	---	---	---	---
	2.3	NOT RANDOMLY SELECTED	---	---	---	---
	2.3	NOT RANDOMLY SELECTED	---	---	---	---
	Subtotal				3	
4. Emergency Procedures / Plan	2.4.	G2.4.2 Knowledge of system setpoints / interlocks and automatic actions associated with EOP entry conditions. <i>G2.4.49 (10CFR 55.43.5 – SRO Only)</i> <i>Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.</i>	3.9	100	4.0	22
	2.4.	G2.4.26 Knowledge of facility protection requirements including fire brigade and portable fire fighting equipment usage.	2.9	72	---	---
	2.4.	NOT RANDOMLY SELECTED	---	---	---	---
	2.4.	NOT RANDOMLY SELECTED	---	---	---	---
	2.4.	NOT RANDOMLY SELECTED	---	---	---	---
	2.4.	NOT RANDOMLY SELECTED	---	---	---	---
	Subtotal				2	
Tier 3 Point Total				10		7

SRO only K/As shown in italics

Facility: J.A. FitzPatrick Date of Examination: May 16 – 20, 2005
 Exam Level (circle one): ~~RO~~ (SRO-I) / ~~SRO-U~~ Operating Test No.: LOI-05-01

Control Room Systems® (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)

System / JPM Title	Type Code*	Safety Function
a. ✓ Verify HPCI Isolation	S, A, N	4
b. ✓ Reset PCIS Group I Isolation	S, D, L, P	5
c. ✓ Re-open MSIVs	S, D, L, P	3
d. ✓ Respond to CRD Pump Trip	S, A, N	1
e. ✓ Swap FWLC, Single to 3-Element	S, N	2
f. ✓ Swap Electrical Bus, Reserve to Normal Service	S, M, A	6
g. ✓ Perform APRM Gain Adjustments	S, A, P	7
h. N/A SRO		

In-Plant Systems® (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)

i. ✓ Remove a HCU from Service	D, R	1
j. ✓ Start Up Main Steam Leakage Collection System	N, E	9
k. ✓ Cross-tie Fire System to RHR Service Water	D, E	8

@ 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 / SRO-U
(A)lternate	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
(L)ow-Power	≥ 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	

Control Room Systems:**a. Verify HPCI Isolation**

- **New JPM - Simulator**
- **Alternate Path:** 23MOV-15 will require operator closure; may require supervisory interface to close
- OP-15, Section G.1 and Attachment 5
- Operator must start Aux Oil Pump

b. Reset PCIS Group I Isolation

- **Previous:** From LOI-03-01 Exam (**S**imulator/ **L**ow-Power/**D**irect from Bank)
- AOP-15

c. Re-open MSIVs

- **Previous:** From LOI-03-01 Exam (**S**imulator/ **L**ow-Power/**D**irect from Bank)
- OP-1 / EP-9

d. Respond to CRD Pump Trip

- **New JPM - Simulator**
- Set up with 1 CRD Pump recently tripped (will not be returned)
- Perform AOP-69, Section C.1.5
- Second CRD Pump will not start
- **Alternate Path:** Multiple Accumulator lights; Manual Scram

e. Swap FWLC, Single to 3-Element

- **New JPM - Simulator**
- OP-2A, Section G.34
- Recent plant modification to return to service

f. Swap Electrical Bus (10100), Reserve to Normal Service

- **Modified from JPM 26201001A (S**imulator)
- Cannot match incoming and running voltmeters
- **Alternate Path:** match per single meter voltage method
- OP-46A, Section D.20 and then Section G.14

g. Perform APRM Gain Adjustments

- **Previous:** From LOI-03-01 Exam (**Simulator**)
- **Alternate Path:** One APRM will require adjustment
- ST-5D

h. N/A SRO**In-Plant Systems:****i. Remove a HCU from Service**

- **Direct from Bank (JPM 20101012) – RCA Entry**
- Control Rod declared inoperable for maintenance on 03SOV-117/118
- OP-25, Section G.1
- Depressurizing N₂ not required

j. Start Up Main Steam Leakage Collection System

- **New JPM – Emergency or Abnormal In-Plant**
- In AOP-40 due to Main Steam Line leak in Turbine Building
- MSIVs are closed
- Direction to place MSLCS "Alpha" in service per AOP-40
- Standby Gas Treatment System is in service

k. Cross-tie Fire System to RHR Service Water

- **Direct from Bank (JPM 20505005) – Emergency or Abnormal In-Plant**
- EP-8
- Directed by EOP-2
- Have Control Room start Electric Fire Pump

Facility: J.A. FitzPatrick Date of Examination: May 16 – 20, 2005
 Examination Level (circle one): ~~RO~~ SRO Operating Test Number: LOI-05-01

Administrative Topic (see Note)	Type Code *	Describe activity to be performed
Conduct of Operations	P, D, S	G2.1.7 (SRO I/R: 4.4) Ability to evaluate plant performance and make operational judgments based on operating characteristics / reactor behavior / and Instrument Interpretation. Perform Core Thermal Heat Balance Verification (RAP-7.3.03, Section 9.2, Attachment 2)
Conduct of Operations	N	G2.1.25 (SRO I/R: 3.1) Ability to obtain and interpret station reference materials such as graphs / monographs / and tables which contain performance data. Evaluate ST-23C Results (ST-23C)
Equipment Control	N	G2.2.22 (SRO I/R: 4.1) Knowledge of limiting conditions for operations and safety limits. Given a Chemistry Report, Evaluate Technical Specification Compliance (TS 3.4.6, TRM 3.4.B and Table 3.4.B-1)
Radiation Control	N	G2.3.4 (SRO I/R: 3.1) Knowledge of radiation exposure limits and contamination control / including permissible levels in excess of those authorized. Determine Visitor RCA Access Requirements (AP-07.05, Section 8.1 and Attachments 3 & 5)
Emergency Plan	N, S	G2.4.41 (SRO I/R: 4.1) Knowledge of the emergency action level thresholds and classifications. Classify the Event Following NRC Exam Scenarios 1(2) and Implement the E-Plan (IAP-1/2)

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 and RO retakes)
- (N)ew or (M)odified from bank (≥ 1)
- (P)revious 2 exams (≤ 1; randomly selected)
- (S)imulator

Administrative Topics:**a. Perform Core Thermal Heat Balance Verification**

- Previous: From LOI-01-01 Exam
- RAP-7.3.03, Section 9.2 and Attachment 2

b. Evaluate ST-23C Results ✓

- New JPM
- Recently completed ST-23C containing errors to be identified during performance of Management SRO Review

c. Given a Chemistry Report, Evaluate Technical Specification Compliance

- New JPM
- Selected steam flow rate, values for Iodine, chloride, and conductivity
- TS 3.4.6, TRM 3.4.B and Table 3.4.B-1

d. Determine Visitor RCA Access Requirements ✓

- New JPM
- AP-07.05, Section 8.1 and Attachments 3 & 5

e. Classify the Event Following NRC Exam Scenarios 1(2) and Implement the E-plan

- New JPM – Simulator
- IAP-1
- IAP-2

Summary of NRC Changes to LOI-05-01 License Exam Submittal

- Transient and Event Checklist (Form ES-301-5) revised to indicate that events are credited to the "At the Controls" operator position versus the "Balance of Plant" operator position. Revised Scenario template cover page to distinctly identify which JAF operator position would correspond to the Primary At The Controls operator position.
- Transient and Event Checklist, along with Competencies Checklist (Form ES-301-6), revised on two separate occasions to reflect attrition.
- Control Room / In-Plant Systems Outline (Form ES-301-2) revised to remove Alternate Path designation from item Indigo "Remove a HCU From Service."
- Scenario Outline (Form ES-D-1) Event 4 revised to remove inadvertent SRV opening and replace with control rod scram and Event 5 revised to reflect associated Technical Specification call.
- NRC comments on exam submittal prior to site validation visit:

➤ Written Exam (RC revision to either other questions or alterations to questions):
NRC:

at questions (6 RO/1 SRO) needing at least one major modification. Five distractors. Four additional minor changes clarified based on discussion with

- Summary of NRC Changes to LOI*
- SRO # 23 – required in stem
 - SRO # 31 – change both to just "Safety Limit MCP" in distracter (d)
 - SRO # 47 – typo in correct response writeup (10112 versus 10312); also changed to Fundamental Knowledge.
 - SRO # 64 – not enough info in stem; add "required, procedurally-driven order" to stem
 - SRO # 70 – too easy and questioned K/A match; substantial revision to more closely link to K/A and raise level of difficulty
 - SRO # 83 – added reference to ARP 09-4-0-4
 - SRO # 98 – added "All other plant systems functioning normally"
 - RO # 4 – edit stem to add "As reactor power"
 - RO # 9 – edited stem and all four possible answers to eliminate "below" given pressures
 - RO # 18 – questioned K/A match; restructured stem and four possible answers to address limits themselves in addition to previously existing authority to exceed.
 - RO # 19 – plausibility concern on Condenser Air Removal Pumps in distracters; reduced stem-provided power level from 100% to 10% to address concern.
 - RO # 48 – replaced NPSH distracter(s) with more plausible "HPCI Turbine Trip"
 - RO # 77 – added reference to AOP-28 to better focus stem.

- RO # 82 – replaced distracter (c) with more plausible “thermal hydraulic instabilities” versus “increased control rod scram times”
 - RO # 94 – edited stem to focus on EOP required actions
 - RO # 95 – replaced distracter (c) with more plausible “HPCI isolation on high exhaust backpressure”

- Operating Exam: minor editorial corrections to two scenarios and two JPMs. General comment on potential weaknesses of some Admin JPMs to be followed up on during the NRC’s Site Validation Visit:
 - Scenario # 1 – added “EPIC / SPDS alarm (page 9) associated with Torus Rupture; edited page 11 to read “using either loop of RHR” and delineated OP-37 direction; edited critical task specifications on pages 16 through 19 to read with + or – designations where appropriate.
 - Scenario # 3 – edited critical task # 2 writeup to reflect why 200 degrees Fahrenheit was chosen as the standard.
 - JPM Group I Reset – edited step 6 to incorporate Evaluator comment that cause of isolation was not Main Steam Hi Rad condition.
 - JPM Isolate and Disarm HCU – edited step 4 candidate standard/ Evaluator note to include discussion of hanging tag(s).

- NRC comments during site validation:
 - Written Exam (RO and SRO): One additional comment requiring a minor revision to question #12 to reflect “basis for restriction” statement. All previous comments resolved satisfactorily and/or changes accepted by NRC.

 - Operating Exam: one minor editorial correction to one scenario as a result of validation. One Admin JPM rejected on level of difficulty and replaced with new JPM. Eight JPMs required editorial enhancements (additional information added to initiating cue, data benchmark ranges, additional performance steps):
 - Scenario # 1 – minor editorial
 - JPM Verify HPCI Isolation – add steps to include up to procedure step G.1.4
 - JPM CTP Verification – additional data (benchmark ranges) to be added; after subsequent discussion with NRC on value dependency, agreed to add “without mathematical error.”
 - JPM Perform ST-5D – added to initiating cue that 3D Monicore is available and core power has changed 4% since last performance; also, generated acceptable 3D printout with correct MFLPD values to hand to candidate.
 - JPM Swap Electrical Busses – added direction to candidate to perform swap of 10100 bus and eliminated option of 10200 bus.
 - JPM Determine Visitor RCA Access Requirements – added general area dose rates of 0 to 5 mr/hr to cue and requirement to check Entering Radiation Area on form to standard.

- JPM Determine HPCI Hi Level Trip – Rejected on level of difficulty; created new JPM to validate results (perform SRO review) of completed ST-23C, which has errors that will need to be identified for satisfactory performance.
 - Three JPMs for EAL Determinations associated with Simulator Scenarios – added initiating cue and additional performance steps beyond EAL classification, but additional steps not identified as critical steps.

- Changes as a result of final Ops Validation approved by NRC 5/3/05 (via phonecon):
 - Written Exam (RO and SRO):
 - RO # 3 – edit stem to remove first word “With”, added a period and then “I&C is investigating” relative to the logic failure. Replaced “5%” with “7%” in correct answer (a) and distracter (b).
 - SRO # 22 – removed “of the 10300 and 10400 busses” from stem as window-dressing, put “immediately” in all caps, replaced (b) distracter with “Per AOP-11, Loss of RBCLC, align Emergency Service Water for Drywell Cooling”, and added procedure titles to all four possible answers. Also, replaced Explanation section for new distracter (b).
 - SRO # 23 – NRC rejected proposed change to re-order stem bullets.
 - RO # 25 – edited distracter (b) and correct answer (c) to re-order statements for readability (second half first and first half second in both cases); and removed word “also” from both.
 - SRO # 31 – revised first bullet of stem to replace “prior to taking manual control of feedwater” with “on the Narrow Range GEMAC Indicators.”
 - SRO # 40 – revised stem conditions “RPV Pressure 600 psig, rising at 10 psig/min” to “RPV Pressure 600 psig, lowering at 20 psig/min” and “Torus Water Temperature 180° F, Rising 1° F/min” to “Torus Water Temperature 180° F, Rising 0.5° F/min” to fix error in intent.
 - SRO # 51 – revised distracter (c) and correct answer (d) to remove specific timeframes “about 5/15 minutes” and replace with “for readings to stabilize.”
 - SRO # 57 – NRC rejected proposed change to re-order stem.
 - SRO # 83 – NRC rejected proposed change to replace “returned to service” with “repaired” in correct answer (d)
 - RO # 89 – revised all four possible answers to replace “alarming” with “resulting in.”
 - RO # 96 – added stem statement (previously existed in similar form) “The lowest NSW header pressure was 85 psig.”

 - Operating Exam: Three EAL JPMs required editorial enhancements (additional information added for Evaluator to cue further candidate action subsequent to EAL Classification).