

# Final Submittal

(Blue Paper)

## **FINAL OUTLINES**

*FINAL*

Facility:		0610 NRC Exam Outline										Date of Exam: 02/25/2008						
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 & Plant Evolution	1	3	3	3				3	4			4	20	4	3	7		
	2	1	1	1				1	2			1	7	1	2	3		
	Tier Totals	4	4	4				4	6			5	27	5	5	10		
2. Plant Systems	1	2	3	2	2	2	2	2	3	3	3	2	26	3	2	5		
	2	1	1	1	1	1	2	1	1	1	1	1	12	0	2	3		
	Tier Totals	3	4	3	3	3	4	3	4	4	4	3	38	5	3	8		
3. Generic Knowledge & Abilities Categories					1		2		3		4		10	1	2	3	4	7
					3		2		2		3			1	2	2	2	

**Note:**

- Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).
- The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by  $\pm 1$  from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
- Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to section D.1.b of ES-401, for guidance regarding elimination of inappropriate K/A statements.
- Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.
- Absent a plant specific priority, only those KAs having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.
- Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
- \* The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system. Refer to Section D.1.b of ES-401 for the applicable K/A's
- 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. If fuel handling equipment is sampled in other than Category A2 or G\* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note #1 does not apply). Use duplicate pages for RO and SRO-only exams.
- For Tier 3, select topics from Section 2 of the K/A Catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10CFR55.43

0610 NRC Exam Outline  
Written Examination Outline  
Emergency and Abnormal Plant Evolutions – Tier 1 Group 1

EAPE # / Name Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Q#
295006 SCRAM / 1					X		AA2.01 - Ability to determine and/or interpret the following as they apply to SCRAM : Reactor power	4.6	76
295021 Loss of Shutdown Cooling / 4					X		AA2.07 - Ability to determine and/or interpret the following as they apply to LOSS OF SHUTDOWN COOLING : Reactor recirculation flow	3.1	77
295024 High Drywell Pressure / 5						X	2.1.28 - Conduct of Operations Knowledge of the purpose and function of major system components and controls.	3.3	78
295026 Suppression Pool High Water Temp. / 5					X		EA2.01 - Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool water temperature	4.2	79
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1					X		EA2.05 - Ability to determine and/or interpret the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : Control rod position	4.3	80
295038 High Off-site Release Rate / 9						X	2.2.22 - Equipment Control Knowledge of limiting conditions for operations and safety limits.	4.1	81
600000 Plant Fire On-site / 8						X	2.2.24 - Equipment Control Ability to analyze the affect of maintenance activities on LCO status.	3.8	82
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4						X	2.1.14 - Conduct of Operations Knowledge of system status criteria which require the notification of plant personnel.	2.5	39
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4			X				AK3.01 - Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION : Reactor water level response	3.4	40
295003 Partial or Complete Loss of AC / 6					X		AA2.01 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER : Cause of partial or complete loss of A.C. power	3.4	41
295004 Partial or Total Loss of DC Pwr / 6	X						AK1.03 - Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER : Electrical bus divisional separation	2.9	42
295005 Main Turbine Generator Trip / 3				X			AA1.04 - Ability to operate and/or monitor the following as they apply to MAIN TURBINE GENERATOR TRIP : Main generator controls	2.7	43
295006 SCRAM / 1			X				AK3.05 - Knowledge of the reasons for the following responses as they apply to SCRAM : Direct turbine generator trip: Plant-Specific	3.8	44
295016 Control Room Abandonment / 7					X		AA2.04 - Ability to determine and/or interpret the following as they apply to CONTROL ROOM ABANDONMENT : Suppression pool temperature	3.9	45
295018 Partial or Total Loss of CCW / 8		X					AK2.01 - Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER and the following: System loads	3.3	46
295019 Partial or Total Loss of Inst. Air / 8					X		AA2.02 - Ability to determine and/or interpret the following as they apply to	3.6	47



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EAPE # / Name Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Q#
							PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR : Status of safety-related instrument air system loads (see AK2.1 - AK2.19)		
295021 Loss of Shutdown Cooling / 4						X	2.4.50 - Emergency Procedures / Plan Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	3.3	48
295023 Refueling Acc Cooling Mode / 8	X						AK1.02 - Knowledge of the operational implications of the following concepts as they apply to REFUELING ACCIDENTS : Shutdown margin	3.2	49
295024 High Drywell Pressure / 5						X	2.1.33 - Conduct of Operations Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	3.4	50
295025 High Reactor Pressure / 3		X					EK2.08 - Knowledge of the interrelations between HIGH REACTOR PRESSURE and the following: Reactor/turbine pressure regulating system: Plant-Specific	3.7	51
295026 Suppression Pool High Water Temp. / 5					X		EA2.01 - Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool water temperature	4.1	52
295028 High Drywell Temperature / 5			X				EK3.04 - Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL TEMPERATURE : Increased drywell cooling	3.6	53
295030 Low Suppression Pool Water Level / 5				X			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	54
295031 Reactor Low Water Level / 2						X	2.4.6 - Emergency Procedures / Plan Knowledge symptom based EOP mitigation strategies.	3.1	55
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1		X					EK2.11 - Knowledge of the interrelations between SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN and the following: RMCS: Plant-Specific	3.8	56
295038 High Off-site Release Rate / 9	X						EK1.01 - Knowledge of the operational implications of the following concepts as they apply to HIGH OFF-SITE RELEASE RATE : Biological effects of radioisotope ingestion	2.5	57
600000 Plant Fire On-site / 8				X			AA1.08 - Ability to operate and / or monitor the following as they apply to PLANT FIRE ON SITE: Fire fighting equipment used on each class of fire	2.6	58
K/A Category Totals:	3	3	3	3	8	7	Group Point Total:	20/7	

0610 NRC Exam Outline  
Written Examination Outline  
Emergency and Abnormal Plant Evolutions – Tier 1 Group 2

EAPE # / Name Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Q#
295002 Loss of Main Condenser Vac / 3						X	2.4.6 - Emergency Procedures / Plan Knowledge symptom based EOP mitigation strategies.	4.0	83
295009 Low Reactor Water Level / 2						X	2.4.31 - Emergency Procedures / Plan Knowledge of annunciators alarms and indications, and use of the response instructions.	3.4	84
500000 High CTMT Hydrogen Conc. / 5					X		EA2.02 - Ability to determine and / or interpret the following as they apply to HIGH PRIMARY CONTAINMENT HYDROGEN CONCENTRATIONS: Oxygen monitoring system availability	3.5	85
295009 Low Reactor Water Level / 2		X					AK2.01 - Knowledge of the interrelations between LOW REACTOR WATER LEVEL and the following: Reactor water level indication	3.9	59
295012 High Drywell Temperature / 5						X	2.2.22 - Equipment Control Knowledge of limiting conditions for operations and safety limits.	3.4	60
295015 Incomplete SCRAM / 1	X						AK1.02 - Knowledge of the operational implications of the following concepts as they apply to INCOMPLETE SCRAM : (CFR 41.8 to 41.10) Cooldown effects on reactor power	3.9	61
295020 Inadvertent Cont. Isolation / 5 & 7			X				AK3.08 - Knowledge of the reasons for the following responses as they apply to INADVERTENT CONTAINMENT ISOLATION: Suppression chamber pressure response	3.3	62
295032 High Secondary Containment Area Temperature / 5				X			EA1.01 - Ability to operate and/or monitor the following as they apply to HIGH SECONDARY CONTAINMENT AREA TEMPERATURE : Area temperature monitoring system	3.6	63
295033 High Secondary Containment Area Radiation Levels / 9					X		EA2.01 - Ability to determine and/or interpret the following as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS : Area radiation levels	3.8	64
295035 Secondary Containment High Differential Pressure / 5					X		EA2.02 - Ability to determine and/or interpret the following as they apply to SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE: Off-site release rate: Plant-Specific	2.8	65
K/A Category Totals:	1	1	1	1	3	3	Group Point Total:	7/3	

0610 NRC Exam Outline  
Written Examination Outline  
Plant Systems – Tier 2 Group 1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G		Imp.	Q#
203000 RHR/LPCI: Injection Mode								X				A2.16 - Ability to (a) predict the impacts of the following on the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of coolant accident	4.5	86
215003 IRM											X	2.1.14 - Conduct of Operations Knowledge of system status criteria which require the notification of plant personnel.	3.3	87
259002 Reactor Water Level Control											X	2.1.23 - Conduct of Operations Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.0	88
259002 Reactor Water Level Control								X				A2.06 - Ability to (a) predict the impacts of the following on the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions SDC/RHR pump trips	3.5	89
259002 Reactor Water Level Control								X				A2.12 - Ability to (a) predict the impacts of the following on the REACTOR PROTECTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Main turbine stop control valve closure	4.1	90
203000 RHR/LPCI: Injection Mode							X					A1.01 - Ability to predict and/or monitor changes in parameters associated with operating the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) controls including: Reactor water level	4.2	1
205000 Shutdown Cooling				X								K4.02 - Knowledge of SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) design feature(s) and/or interlocks which provide for the following: High pressure isolation: Plant-Specific	3.7	2
206000 HPCI						X						K6.09 - Knowledge of the effect that a loss or malfunction of the following will have on the HIGH PRESSURE COOLANT INJECTION SYSTEM : Condensate storage and transfer system: BWR-2,3,4	3.5	3
209001 LPCS					X							K5.04 - Knowledge of the operational implications of the following concepts as they apply to LOW PRESSURE CORE SPRAY SYSTEM : Heat removal (transfer) mechanisms	2.8	4
211000 SLC		X										K2.01 - Knowledge of electrical power supplies to the following: SBLC pumps	2.9	5



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Plant Systems – Tier 2 Group 1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G		Imp.	Q#
212000 RPS						X						K6.03 - Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR PROTECTION SYSTEM : Nuclear boiler instrumentation	3.5	6
215003 IRM										X		A4.04 - Ability to manually operate and/or monitor in the control room: IRM back panel switches, meters, and indicating lights	3.1	7
215004 Source Range Monitor									X			A3.03 - Ability to monitor automatic operations of the SOURCE RANGE MONITOR (SRM) SYSTEM including: RPS status	3.6	8
215005 APRM / LPRM								X				A2.03 - Ability to (a) predict the impacts of the following on the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions Inoperative trip (all causes)	3.6	9
217000 RCIC		X										K2.03 - Knowledge of electrical power supplies to the following: RCIC flow controller	2.7	10
218000 ADS	X											K1.05 - Knowledge of the physical connections and/or cause- effect relationships between AUTOMATIC DEPRESSURIZATION SYSTEM and the following: Remote shutdown system: Plant-Specific	3.9	11
218000 ADS										X		2.1.24 - Conduct of Operations Ability to obtain and interpret station electrical and mechanical drawings.	2.8	12
223002 PCIS/Nuclear Steam Supply Shutoff								X				A2.06 - 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 abn cond or ops. Containment instrumentation failures	3.0	13
223002 PCIS/Nuclear Steam Supply Shutoff									X			A3.01 - Ability to monitor automatic operations of the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF including: System indicating lights and alarms	3.4	14
239002 SRVs									X			A3.03 - Ability to monitor automatic operations of the RELIEF/SAFETY VALVES including: Tail pipe temperatures	3.6	15
239002 SRVs										X		A4.08 - Ability to manually operate and/or monitor in the control room: Plant air system pressure: Plant-Specific	3.2	16

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Plant Systems – Tier 2 Group 1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G		Imp.	Q#
259002 Reactor Water Level Control											X		3.8	17
261000 SGTS			X										3.0	18
262001 AC Electrical Distribution				X									2.8	19
262002 UPS (AC/DC)							X						2.5	20
263000 DC Electrical Distribution	X												3.2	21
264000 EDGs					X								3.4	22
300000 Instrument Air		X											3.0	23
300000 Instrument Air			X										2.7	24
400000 Component Cooling Water											X		3.3	25
400000 Component Cooling Water								X					2.8	26
K/A Category Totals:	2	3	2	2	2	2	2	6	3	3	4		Group Point Total: 26/5	



0610 NRC Exam Outline  
Written Examination Outline  
Plant Systems – Tier 2 Group 2

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G		Imp.	Q#
268000 Radwaste								X				A2.01 - Ability to (a) predict the impacts of the following on the RADWASTE ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: System rupture	3.5	91
271000 Off-gas											X	2.4.36 - Emergency Procedures / Plan Knowledge of chemistry / health physics tasks during emergency operations.	2.8	92
288000 Plant Ventilation								X				A2.03 - Ability to (a) predict the impacts of the following on the PLANT VENTILATION SYSTEMS ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of coolant accident: Plant-Specific	3.7	93
201003 Control Rod and Drive Mechanism			X									K3.03 - Knowledge of the effect that a loss or malfunction of the CONTROL ROD AND DRIVE MECHANISM will have on following: Shutdown margin	3.2	27
201006 RWM				X								K4.09 - Knowledge of ROD WORTH MINIMIZER SYSTEM (RWM) (PLANT SPECIFIC) design feature(s) and/or interlocks which provide for the following: System initialization: P-Spec(Not-BWR6)	3.2	28
202001 Recirculation						X						K6.09 - Knowledge of the effect that a loss or malfunction of the following will have on the RECIRCULATION SYSTEM : Reactor water level	3.4	29
215001 Traversing In-core Probe							X					A1.01 - Ability to predict and/or monitor changes in parameters associated with operating the TRAVERSING IN-CORE PROBE controls including: Radiation levels: (Not-BWR1)	2.8	30
216000 Nuclear Boiler Inst.	X											K1.10 - Knowledge of the physical connections and/or cause- effect relationships between NUCLEAR BOILER INSTRUMENTATION and the following: Recirculation flow control system	3.2	31
219000 RHR/LPCI: Torus/Pool Cooling Mode		X										K2.02 - Knowledge of electrical power supplies to the following: Pumps	3.1	32
226001 RHR/LPCI: CTMT Spray Mode										X		A4.12 - Ability to manually operate and/or monitor in the control room: Containment/drywell pressure	3.8	33
234000 Fuel Handling Equipment											X	2.4.50 - Emergency Procedures / Plan Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	3.3	34
245000 Main Turbine Gen. / Aux.						X						K6.04 - Knowledge of the effect that a loss or malfunction of the following will have on the MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS : Hydrogen cooling	2.6	35

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Plant Systems – Tier 2 Group 2

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G		Imp.	Q#
268000 Radwaste								X				A2.01 - Ability to (a) predict the impacts of the following on the RADWASTE ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: System rupture	2.9	36
272000 Radiation Monitoring					X							K5.01 - Knowledge of the operational implications of the following concepts as they apply to RADIATION MONITORING SYSTEM : Hydrogen injection operation's effect on process radiation indications: Plant-Specific	3.2	37
290003 Control Room HVAC									X			A3.01 - Ability to monitor automatic operations of the CONTROL ROOM HVAC including: Initiation/reconfiguration	3.3	38
K/A Category Totals:	1	1	1	1	1	2	1	3	1	1	2	Group Point Total:	12/3	

Facility:	0610 NRC Exam Outline		Date:			
Category	K/A #	Topic	RO		SRO-Only	
			IR	Q#	IR	Q#
1. Conduct of Operations	2.1.12	Ability to apply technical specifications for a system.			4.0	94
	2.1.33	Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	3.4	66		
	2.1.16	Ability to operate plant phone, paging system, and two-way radio.	2.9	67		
	2.1.18	Ability to make accurate, clear and concise logs, records, status boards, and reports.	2.9	68		
	Subtotal			3		1
2. Equipment Control	2.2.22	Knowledge of limiting conditions for operations and safety limits.			4.1	95
	2.2.24	Ability to analyze the affect of maintenance activities on LCO status.			3.8	96
	2.2.13	Knowledge of tagging and clearance procedures.	3.6	69		
	2.2.33	Knowledge of control rod programming.	2.5	70		
	Subtotal			2		2
3. Radiation Control	2.3.3	Knowledge of SRO responsibilities for auxiliary systems that are outside the control room (e.g., waste disposal and handling systems).			2.9	97
	2.3.9	Knowledge of the process for performing a containment purge.			3.4	98
	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	2.9	71		
	2.3.9	Knowledge of the process for performing a containment purge.	2.5	72		
	Subtotal			2		2
4. Emergency Procedures / Plan	2.4.21	Knowledge of the parameters and logic used to assess the status of safety functions including: 1 Reactivity control 2. Core cooling and heat removal 3. Reactor coolant system integrity 4. Containment conditions 5. Radioactivity release control.			4.3	99



	2.4.30	Knowledge of which events related to system operations/status should be reported to outside agencies.			3.6	100
	2.4.47	Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	3.4	73		
	2.4.15	Knowledge of communications procedures associated with EOP implementation	3.0	74		
	2.4.8	Knowledge of how the event-based emergency/abnormal operating procedures are used in conjunction with the symptom-based EOPs.	3.0	75		
Subtotal				3		2
Tier 3 Point Total				10		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
1 / 1	295016 / AA2.07	Replaced by NRC Chief Examiner
2 / 1	218000 / 2.1.14	Replaced by NRC Chief Examiner
2 / 1	600000 / 2.2.25	Replaced by NRC Chief Examiner
2 / 1	212000 / A2.17	Replaced by NRC Chief Examiner
2 / 1	205000 / A2.04	Replaced by NRC Chief Examiner
2 / 1	400000 / 2.4.30	Replaced by NRC Chief Examiner
Admin JPM	AJPM 501	Replaced due to conflict with independently developed Audit examination.
In-plant JPM	PJPM 63	Removed from exam by direction of Chief Examiner.
In-plant JPM	PJPM 66	Removed from exam by direction of Chief Examiner.
In-plant JPM	PJPM 311	Removed from exam by direction of Chief Examiner.
In-plant JPM	PJPM 76F	Removed from exam by direction of Chief Examiner.
In-plant JPM	PJPM 1-8	Developed for Unit-1 by direction of Chief Examiner.
In-plant JPM	PJPM 1-108	Developed for Unit-1 by direction of Chief Examiner.
Simulator Scenario	HLTS 3-3	Revised to remove Event 4 at direction of Chief Examiner.
Simulator Scenario	HLTS 3-4	Revised to add Event 3 at direction of Chief Examiner.
Admin JPM	AJPM 511	Replaced due to unsat evaluation by Chief Examiner.

Facility: BFN

Scenario Number: HLTS-3-1

Op-Test Number: HLT0610

Examiners: \_\_\_\_\_

Operators: \_\_\_\_\_

**Initial Conditions:**

Unit 3 has been operating for 192 days. Unit 2 has been operating for 56 days. Unit 1 has been operating for 274 days. 3ED Diesel Generator is tagged for water jacket leakage repair. Day 2 of the LCO. Expected to be returned to service this shift. Fuel leakers on U3 are currently at RFI 60,000. Thunderstorms are passing through the region, but no watches are in effect for the immediate area. The 3C RFP was oscillating approximating 30 RPM during last shift, but is now working properly and being monitored. The 3C RFP Pump is operating in automatic in order to collect data for the next 24 hours. A trouble shooting plan is being developed.

**Turnover:**

Support scheduled maintenance and testing activities. Alternate Stator Cooling Water Pumps per 3-OI-35A, Sect 6.4 per scheduled OPA.

Event Number	Malfunction Number	Event Type*	Event Description
1a	mrf an01b reset	N-ATC N-BOP N-SRO	The crew will alternate Stator Cooling Water Pumps using 3-OI-35A.
1b	N/A	TS-SRO	The US will respond to a HPCI Rupture Diaphragm pressure switch PS-73-20B failure.
2	imf fw05b 100 8:00	R-ATC C-BOP R-SRO	The crew will respond to a 3B HP FW heater isolation using 3-AOI-6-1. The crew will reduce power to ~91% using a recirc flow reduction. The crew will isolate feedwater to the 3B FW heater string. The crew will further reduce power to <79% using a recirc flow reduction.
3	imf sw10a	C-ATC C-SRO TS-SRO	The crew will respond to a trip of the 3A Fuel Pool Cooling pump using 3-AOI-78-1.
4	imf fw13b	C-ATC C-BOP C-SRO	The crew will respond to a trip of the 3B Reactor Feedwater Pump (RFP) using 3-AOI-3-1 and 3-OI-3.
5	bat rfpactrip	M All	The crew will respond to a total loss of feedwater and reactor scram.
6	bat HLTS3-1	M All	The crew will respond to a RCIC steam leak into secondary containment and a HPCI 120V AC power failure. The crew will anticipate Emergency Depressurization or perform Emergency Depressurization due to secondary containment high radiation.

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



Facility: BFN

Scenario Number: HLTS-3-3

Op-Test Number: HLT0610

Examiners: \_\_\_\_\_

Operators: \_\_\_\_\_

**Initial Conditions:**

The HPCI system is tagged out for 14 hours to repair the Auxiliary Oil Pump. It is expected back in 3 hours. Flow indicator 3-78B is out of service. Instrument Mechanics are looking for a new transmitter. The Main Generator voltage regulator has been placed in Manual for PMs on the Automatic voltage regulator. The spare RBCCW pump in service to Unit 2.

**Turnover:**

Reduce power to 95% using recirculation flow due to low system load requirements. PMs on the voltage regulator are complete. Return the Main Generator voltage regulator to Automatic operation.

Event Number	Malfunction Number	Event Type*	Event Description
1 <i>a</i>	N/A	R-ATC R-SRO	The ATC operator will reduce reactor power to 95% using recirc flow using 3-OI-68.
1 <i>b</i>	N/A	N-BOP N-SRO	The BOP operator will return the Main Generator voltage regulator to Automatic using 3-OI-47.
2	ior zdihs7542a start	C-BOP C-SRO TS-SRO	The crew will recognize and respond to an inadvertent start of the 3D Core Spray pump. The SRO will address Tech Specs.
3	imf rd0718-35	C-ATC C-SRO TS-SRO	The crew will recognize and respond to a control rod drifting into the core using 3-AOI-85-5. The SRO will address Tech Specs.
4	bat NRC/ HLTS10-1	C-ATC C-SRO C-BOP	The crew will recognize and respond to a recirc pump trip, power oscillations, scram and ATWS.
5	Timed out from batch file	M All	The crew will recognize and respond to a fuel failure during the ATWS recovery actions.

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

Facility: BFN      Scenario Number: HLTS-3-4      Op-Test Number: HLT0610

Examiners: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

### Initial Conditions:

The unit is starting up following a refuel outage. Reactor power is at ~ 1%. "C" RFP is uncoupled for performance of turbine overspeed testing. Currently at step 5.76.8 of 3-GOI-100-1A.

### Turnover:

The 3C RFP is uncoupled and the suction and discharge valves are tagged for performance of turbine overspeed. Currently at step 5.76.8 of 3-GOI-100-1A and at step 5.6.13 of 3-OI-3 for warming 3B RFP.

Event Number	Malfunction Number	Event Type*	Event Description
1	none	R-ATC N-BOP R-SRO	Crew will continue to pull rods to increase power and start warming up 2B RFP
2	imf rd14a	I-ATC I-SRO TS-SRO	Crew will respond to a RWM failure. SRO references Tech Specs.
3	imf rd01a	C-ATC C-SRO	Crew will respond to a trip of 3A CRD pump.
4	imf sw02a trip 7048FTC	C-BOP C-SRO	Crew will respond to a RBCCW pump trip Crew manually closes 70-48 after fails to auto close
5	ior zdihs468a imf th23 5	C-BOP C-SRO	Crew will respond to feedwater controller malfunction which results in cold water injection
6	imf th23 5	M All	Crew responds to fuel failure after cold water injection
7	imf cu04 25 ior zdihs691 null	M All	Crew responds to a RWCU line break and scrams reactor before any area reaches max safe value.

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

*FINAL*

Facility: <u>Browns Ferry</u>		Date of Examination: <u>2/25/08</u>
Examination Level (circle one): RO/SRO		Operating Test Number <u>HLT0610</u>
Administrative Topic (see Note)	Type Code*	Describe Activity to be performed
<b>A. Conduct of Operations</b> 0610 AJPM 542	M	Perform 2-SR-3.4.9.3&4 Reactor Recirculation Pump Start Limitations (RO/SRO)
<b>B. Conduct of Operations</b> 0610 AJPM 504	M	Determination of Active/Inactive License Status (RO/SRO)
<b>C. Equipment Control</b> 0610 AJPM 120	P	Perform 2-SR-3.4.2.1 Jet Pump Mismatch and Operability (OPERATION) (RO/SRO)
<b>D. Radiation Control</b> 0610 AJPM 518	M	Calculate Stay Time for Emergency Exposure (RO/SRO)
<b>E. Emergency Plan</b> 0610 AJPM 487TCF	N/S	Classify the Event per the REP (Torus exceeds PSP Curve) (SRO Only)
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 ( $\leq 3$ for ROs; $\leq 4$ for SROs & RO retakes) (N)ew or (M)odified from bank ( $\geq 1$ ) (P)revious 2 exams ( $\leq 1$ ; randomly selected) (S)imulator		



Facility: BFN		Date of Examination: 2/25/08
Exam Level (circle one): <input checked="" type="radio"/> RO / <input type="radio"/> SRO-I / <input type="radio"/> SRO-U		Operating Test Number: HLT0610
Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)		
System / JPM Title	Type Code*	Safety Function
A. Respond to a Dual Recirc Pump Trip (OPRM'S Operable) (0610 SJPM-610F)	ADES	1
B. Perform Control Room Transfer of 4KV Unit Board 2B Power Supplies (0610 SJPM-222)	NS	6
C. Restoration to Normal following RPS Bus Power Loss (0610 SJPM-132)	DES	7
D. Respond to Offgas Post Treat HI HI HI (0610 SJPM-190)	DSP	9
E. Respond to Stuck Open SRV (0610 SJPM-3136F)	AMELS	3
F. Placing Standby Steam Jet Air Ejector in Operation (0610 SJPM-3116F)	AMES	4
G. Respond to Drywell Pressure and/or Temperature High or Excessive Leakage into the Drywell - FAULTED - SBTG C Failed (0610 SJPM-3126F)	ADEMS	5
H. Injection system lineup-CS SYS I (0610 SJPM-322F) (RO Only)	ADELS	2
In-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)		
I. Place a 250V Battery Charger in Service (0610 PJPM-86)	DL	6
J. Vent and Re-pressurize the Scram Pilot Air Header (0610 PJPM-1-8)	DEPR	1
K. Remove a CRD HCU from Service (0610 PJPM-108)	NR	1
*Type Codes	Criteria for RO / SRO-I / SRO-U	
(A)lternate Path	4-6 / 4-6 / 2-3	
(C)ontrol Room		
(D)irect from bank	≤9 / ≤8 / ≤4	
(E)mergency or abnormal in-plant	≥1 / ≥1 / ≥1	
(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	
(R)CA	≥1 / ≥1 / ≥1	
(S)imulator		