

Outline Changes

<i>Original KA</i>	<i>Original Exam Level</i>	<i>New KA</i>	<i>New Exam Level</i>	<i>Reason</i>
201006G449	S	201006G112	S	KA 201006G2.4.49 (Rod Worth Minimizer - Ability to perform without reference to procedures those actions that require immediate operation of system components and controls) is too similar to KA 295015 K3.01 (Knowledge of the reason for the following responses as they apply to INCOMPLETE SCRAM. - Bypassing rod insertion blocks). Both would test bypassing of the Rod Worth Minimizer during an ATWS. Random selected generic 2.1.12 to replace.
226001A107	R	226001A106	R	Original KA 226001 A1.07 Ability to predict and or monitor changes in parameters associated with operating the RHR/LPCI Containment Spray System Mode controls including: System pressure. Hope Creek does not have RHR containment Spray System pressure indications; only flow indications. KA changed to A1.06 System flow as plant priority
226001A302	B	226001A305	B	Original KA 226001 A3.02 Ability to monitor automatic operations of the RHR/LPCI Containment Spray System Mode including: System pressure. Hope Creek does not have RHR containment Spray System pressure indications; only flow indications. Use A3.05 Containment pressure instead as plant priority
295015G206	S	295015G304	S	Original KA 295015 G2.2.6 (INCOMPLETE SCRAM - Knowledge of the process for making changes in procedures as described in the safety analysis report) is too similar to 215004 G2.2.6 (SOURCE RANGE MONITORING SYSTEM - Knowledge of the process for making changes in procedures as described in the safety analysis report) Random picked generic category 2.3.4 for 215004.
290001G111	S	264000G111	S	No one hour Tech Specs for secondary containment other than 3.0.3. Change to Emergency Diesel Generators 264000 as plant priority.

Facility: Hope Creek Generating Station

Form ES-401-2

Exam Date: 03/12/2002

Exam Level: RO

Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	2	3	4				2	1			1	13
	2	5	3	3				4	3			1	19
	3	0	1	1				1	1			0	4
	Totals Tier	7	7	8				7	5			2	36
2. Plant Systems	1	3	2	2	3	2	3	3	2	3	2	3	28
	2	1	2	2	2	2	3	2	2	2	1	0	19
	3	1	0	1	0	0	0	1	1	0	0	0	4
	Tier Totals	5	4	5	5	4	6	6	5	5	3	3	51
3. Generic Knowledge And Abilities					Cat 1		Cat 2		Cat 3		Cat 4		
					3		3		4		3		13

Note:

1. Attempt to distribute topics among all K/A Categories; select at least one topic from every K/A category within each tier.
2. Actual point totals must match those specified in the table.
3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category tier.

ES - 401 Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1 Form ES-401-2

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295006	SCRAM / 1	X						AK1.01 - Decay heat generation and removal.	3.7	1
295006	SCRAM / 1						X	2.1.28 - Knowledge of the purpose and function of major system components and controls.	3.2	1
295007	High Reactor Pressure / 3			X				AK3.04 - Safety/relief valve operation: Plant-Specific	4.0	1
295007	High Reactor Pressure / 3		X					AK2.05 - Shutdown cooling: Plant-Specific	2.9	1
295010	High Drywell Pressure / 5				X			AA1.02 - Drywell floor and equipment drain sumps	3.6	1
295014	Inadvertent Reactivity Addition / 1			X				AK3.01 - Reactor SCRAM	4.1*	1
295014	Inadvertent Reactivity Addition / 1		X					AK2.04 - Void concentration	3.2	1
295015	Incomplete SCRAM / 1			X				AK3.01 - Bypassing rod insertion blocks	3.4	1
295024	High Drywell Pressure / 5				X			EA1.10 - A.C. distribution	3.4	1
295025	High Reactor Pressure / 3					X		EA2.06 - Reactor water level	3.7	1
295025	High Reactor Pressure / 3	X						EK1.05 - †Exceeding safety limits	4.4*	1
295031	Reactor Low Water Level / 2		X					EK2.13 - ARI/RPT/ATWS: Plant-Specific	4.1	1
500000	High Containment Hydrogen Concentration / 5			X				EK3.03 - Operation of hydrogen and oxygen recombiners	3.0	1

K/A Category Totals: 2 3 4 2 1 1

Group Point Total: 13

ES - 401 Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2 Form ES-401-2

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295001	Partial or Complete Loss of Forced Core Flow Circulation / 1				X			AA1.02 - RPS	3.3	1
295002	Loss of Main Condenser Vacuum / 3	X						AK1.04 - Increased offgas flow	3.0	1
295003	Partial or Complete Loss of A.C. Power / 6						X	2.4.9 - Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.	3.3	1
295003	Partial or Complete Loss of A.C. Power / 6					X		AA2.02 - Reactor power, pressure, and level	4.2*	1
295004	Partial or Complete Loss of D.C. Power / 6			X				AK3.03 - Reactor SCRAM: Plant-Specific	3.1	1
295008	High Reactor Water Level / 2			X				AK3.04 - Reactor feed pump trip: Plant-Specific	3.3	1
295008	High Reactor Water Level / 2				X			AA1.01 - Reactor water level control: Plant-Specific	3.7	1
295012	High Drywell Temperature / 5	X						AK1.01 - Pressure/temperature relationship	3.3	1
295013	High Suppression Pool Temperature / 5		X					AK2.01 - Suppression pool cooling	3.6	1
295016	Control Room Abandonment / 7				X			AA1.02 - Reactor/turbine pressure regulating system	2.9*	1
295019	Partial or Complete Loss of Instrument Air / 8					X		AA2.01 - Instrument air system pressure	3.5	1
295019	Partial or Complete Loss of Instrument Air / 8				X			AA1.02 - Instrument air system valves: Plant-Specific	3.3	1
295022	Loss of CRD Pumps / 1		X					AK2.03 - Accumulator pressures.	3.4	1
295026	Suppression Pool High Water Temperature / 5	X						EK1.02 - Steam condensation	3.5	1
295028	High Drywell Temperature / 5	X						EK1.02 - Equipment environmental qualification	2.9	1

Facility: Hope Creek Generating Station

BWR Reactor Examination Outline

Printed: 01/01/02

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-2

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295030	Low Suppression Pool Water Level / 5		X					EK2.03 - LPCS	3.8	1
295038	High Off-Site Release Rate / 9					X		EA2.03 - †Radiation levels	3.5*	1
295038	High Off-Site Release Rate / 9	X						EK1.02 - †Protection of the general public	4.2*	1
600000	Plant Fire On Site / 8			X				AK3.04 - Actions contained in the abnormal procedure for plant fire on site	2.8	1

K/A Category Totals: 5 3 3 4 3 1

Group Point Total: 19

Facility: Hope Creek Generating Station

BWR Reactor Examination Outline

Printed: 01/02

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 3

Form ES-401-2

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295023	Refueling Accidents / 8					X		AA2.05 - †Entry conditions of emergency plan	3.2	1
295023	Refueling Accidents / 8				X			AA1.02 - Fuel pool cooling and cleanup system	2.9	1
295036	Secondary Containment High Sump/Area Water Level / 5			X				EK3.01 - Emergency depressurization	2.6	1
295036	Secondary Containment High Sump/Area Water Level / 5		X					EK2.01 - Secondary containment equipment and floor drain system	3.1	1

K/A Category Totals: 0 1 1 1 1 0

Group Point Total: 4

BWR ROmination Outline

Printed: 01/002

Facility: Hope Creek Generating Station

ES - 401 Plant Systems - Tier 2 / Group 1 Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
201001	Control Rod Drive Hydraulic System / 1									X			A3.05 - Reactor water level	2.8	1
201002	Reactor Manual Control System / 1											X	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.	3.7	1
201002	Reactor Manual Control System / 1				X								K4.08 - Continuous In rod insertion	3.2	1
202002	Recirculation Flow Control System / 1						X						K6.04 - Feedwater flow inputs: BWR-3, 4, 5,6	3.5	1
203000	RHR/LPCI: Injection Mode (Plant Specific) / 2	X											K1.14 - Shutdown cooling system: Plant-Specific	3.6	1
203000	RHR/LPCI: Injection Mode (Plant Specific) / 2										X		A4.07 - Reactor water level	4.5*	1
206000	High Pressure Coolant Injection System / 2									X			A3.07 - Lights and alarms: BWR-2, 3, 4	3.9	1
206000	High Pressure Coolant Injection System / 2							X					A1.06 - System flow: BWR-2, 3, 4	3.8	1
209001	Low Pressure Core Spray System / 2		X										K2.02 - Valve power	2.5*	1
209001	Low Pressure Core Spray System / 2	X											K1.10 - Emergency generator	3.7	1

Facility: Hope Creek Generating Station

ES - 401 Plant Systems - Tier 2 / Group 1 Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
211000	Standby Liquid Control System / 1											X	2.4.10 - Knowledge of annunciator response procedures.	3.0	1
211000	Standby Liquid Control System / 1	X											K1.05 - RWCU	3.4	1
212000	Reactor Protection System / 7											X	2.1.23 - Ability to perform specific system and integrated plant procedures during different modes of plant operation.	3.9	1
212000	Reactor Protection System / 7					X							K5.02 - Specific logic arrangements	3.3	1
215004	Source Range Monitor (SRM) System / 7									X			A3.03 - RPS status	3.6	1
215005	Average Power Range Monitor/Local Power Range Monitor System / 7					X							K5.05 - Core flow effects on APRM trip setpoints	3.6	1
215005	Average Power Range Monitor/Local Power Range Monitor System / 7			X									K3.05 - Reactor power indication	3.8	1
216000	Nuclear Boiler Instrumentation / 7		X										K2.01 - Analog trip system: Plant-Specific	2.8	1
216000	Nuclear Boiler Instrumentation / 7								X				A2.08 - Elevated containment temperature	3.2	1
217000	Reactor Core Isolation Cooling System (RCIC) / 2				X								K4.05 - Prevents radioactivity release to auxiliary/reactor building	3.2	1
217000	Reactor Core Isolation Cooling System (RCIC) / 2								X				A2.01 - System initiation signal	3.8	1
223001	Primary Containment System and Auxiliaries / 5						X						K6.13 - Applicable plant air system/ nitrogen make-up system.	3.2	1

Facility: Hope Creek Generating Station

ES - 401 Plant Systems - Tier 2 / Group 1 Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5			X									K3.16 - Shutdown cooling system/RHR	3.2	1
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5				X								K4.01 - Redundancy	3.0	1
239002	Relief/Safety Valves / 3							X					A1.02 - Acoustical monitor noise: Plant-Specific	3.7	1
239002	Relief/Safety Valves / 3							X					A1.05 - Reactor water level	3.7	1
261000	Standby Gas Treatment System / 9						X						K6.03 - Emergency diesel generator system	3.0	1
261000	Standby Gas Treatment System / 9										X		A4.07 - System flow	3.1	1

K/A Category Totals: 3 2 2 3 2 3 3 2 3 2 3

Group Point Total: 28

BWR ROmination Outline

Printed: 01/002

Facility: Hope Creek Generating Station

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
201003	Control Rod and Drive Mechanism / 1				X								K4.05 - Rod position indication	3.2	1
201006	Rod Worth Minimizer System (RWM) (Plant Specific) / 7			X									K3.01 - Reactor manual control system: P-Spec(Not-BWR6)	3.2	1
202001	Recirculation System / 1			X									K3.07 - Vessel bottom head drain temperature	2.9	1
202001	Recirculation System / 1										X		A4.04 - System flow	3.7	1
204000	Reactor Water Cleanup System / 2								X				A2.14 - System high temperature	3.2	1
219000	RHR/LPCI: Torus/Suppression Pool Cooling Mode / 5									X			A3.01 - Valve operation	3.3	1
226001	RHR/LPCI: Containment Spray System Mode / 5							X					A1.06 - System flow	3.2	1
226001	RHR/LPCI: Containment Spray System Mode / 5									X			A3.05 - Containment pressure	4.0*	1
230000	RHR/LPCI: Torus/Suppression Pool Spray Mode / 5						X						K6.01 - A.C. electrical	3.3	1
245000	Main Turbine Generator and Auxiliary Systems / 4					X							K5.02 - Turbine operation and limitations	2.8	1
256000	Reactor Condensate System / 2				X								K4.06 - Control of extraction steam	2.8	1
256000	Reactor Condensate System / 2								X				A2.13 - Loss of applicable plant air systems	2.9	1

Facility: Hope Creek Generating Station

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
262001	A.C. Electrical Distribution / 6		X										K2.01 - Off-site sources of power	3.3	1
262001	A.C. Electrical Distribution / 6						X						K6.01 - D.C. power	3.1	1
263000	D.C. Electrical Distribution / 6							X					A1.01 - Battery charging/discharging rate	2.5	1
263000	D.C. Electrical Distribution / 6		X										K2.01 - Major D.C. loads	3.1	1
271000	Offgas System / 9	X											K1.02 - Process radiation monitoring system	3.1	1
272000	Radiation Monitoring System / 7						X						K6.03 - A.C. power	2.8	1
290003	Control Room HVAC / 9					X							K5.01 - Airborne contamination (e.g., radiological, toxic gas, smoke) control	3.2	1

K/A Category Totals: 1 2 2 2 2 3 2 2 2 1 0

Group Point Total: 19

BWR RO (mination Outline

Printed: 01(002

Facility: Hope Creek Generating Station

ES - 401

Plant Systems - Tier 2 / Group 3

Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
215001	Traversing In-Core Probe / 7	X											K1.05 - Primary containment isolation system: (Not-BWR1)	3.3	1
268000	Radwaste / 9							X					A1.01 - Radiation level	2.7*	1
290002	Reactor Vessel Internals / 5			X									K3.03 - Reactor power	3.3	1
290002	Reactor Vessel Internals / 5								X				A2.02 - †Overpressurization transient	3.6	1

K/A Category Totals: 1 0 1 0 0 0 0 1 1 0 0 0

Group Point Total: 4

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 01/09/20

BWR RO Examination Outline

Form ES-401-5

Facility: Hope Creek Generating Station

Generic Category	KA	KA Topic	Imp.	Points
Conduct of Operations	2.1.24	Ability to obtain and interpret station electrical and mechanical drawings.	2.8	1
	2.1.31	Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the desired plant lineup.	4.2	1
	2.1.33	Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	3.4	1
Category Total:				3
Equipment Control	2.2.28	Knowledge of new and spent fuel movement procedures.	2.6	1
	2.2.22	Knowledge of limiting conditions for operations and safety limits.	3.4	1
	2.2.27	Knowledge of the refueling process.	2.6	1
Category Total:				3
Radiation Control	2.3.2	Knowledge of facility ALARA program.	2.5	1
	2.3.9	Knowledge of the process for performing a containment purge.	2.5	1
	2.3.11	Ability to control radiation releases.	2.7	1
	2.3.1	Knowledge of 10 CFR 20 and related facility radiation control requirements.	2.6	1
Category Total:				4
Emergency Plan	2.4.18	Knowledge of the specific bases for EOPs.	2.7	1
	2.4.34	Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system implications.	3.8	1
	2.4.5	Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions.	2.9	1
Category Total:				3
Generic Total:				13

Facility: Hope Creek Generating Station

Form ES-401-1

Exam Date: 03/12/2002

Exam Level: SRO

Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	4	5	4				4	5			4	26
	2	3	2	3				3	3			3	17
	Tier Totals	7	7	7				7	8			7	43
2. Plant Systems	1	2	2	2	2	2	2	2	2	2	2	3	23
	2	1	1	2	1	1	2	1	1	1	0	2	13
	3	1	0	0	1	0	0	1	0	0	0	1	4
	Tier Totals	4	3	4	4	3	4	4	3	3	2	6	40
3. Generic Knowledge And Abilities					Cat 1		Cat 2		Cat 3		Cat 4		
					5		4		4		4		17

Note:

1. Attempt to distribute topics among all K/A Categories; select at least one topic from every K/A category within each tier.
2. Actual point totals must match those specified in the table.
3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category tier.

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-1

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295003	Partial or Complete Loss of A.C. Power / 6					X		AA2.02 - Reactor power, pressure, and level	4.3*	1
295006	SCRAM / 1						X	2.1.28 - Knowledge of the purpose and function of major system components and controls.	3.3	1
295006	SCRAM / 1	X						AK1.01 - Decay heat generation and removal.	3.9	1
295007	High Reactor Pressure / 3		X					AK2.05 - Shutdown cooling: Plant-Specific	3.1	1
295007	High Reactor Pressure / 3			X				AK3.04 - Safety/relief valve operation: Plant-Specific	4.1*	1
295009	Low Reactor Water Level / 2						X	2.4.6 - Knowledge symptom based EOP mitigation strategies.	4.0	1
295009	Low Reactor Water Level / 2					X		AA2.01 - Reactor water level	4.2	1
295010	High Drywell Pressure / 5				X			AA1.02 - Drywell floor and equipment drain sumps	3.6	1
295013	High Suppression Pool Temperature / 5		X					AK2.01 - Suppression pool cooling	3.7	1
295014	Inadvertent Reactivity Addition / 1		X					AK2.04 - Void concentration	3.3	1
295014	Inadvertent Reactivity Addition / 1			X				AK3.01 - Reactor SCRAM	4.1	1
295015	Incomplete SCRAM / 1			X				AK3.01 - Bypassing rod insertion blocks	3.7	1
295015	Incomplete SCRAM / 1						X	2.3.4 - Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	3.1	1
295016	Control Room Abandonment / 7				X			AA1.02 - Reactor/turbine pressure regulating system	3.1*	1
295017	High Off-Site Release Rate / 9					X		AA2.01 - †Off-site release rate: Plant-Specific	4.2*	1

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ES - 401 Emergency and Abnormal Plant Evolutions - Tier I / Group 1 Form ES-401-1

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295023	Refueling Accidents / 8				X			AA1.02 - Fuel pool cooling and cleanup system	3.1	1
295023	Refueling Accidents / 8					X		AA2.05 - †Entry conditions of emergency plan	4.6*	1
295024	High Drywell Pressure / 5						X	2.2.7 - Knowledge of the process for conducting tests or experiments not described in the safety analysis report.	3.2	1
295024	High Drywell Pressure / 5				X			EA1.10 - A.C. distribution	3.6	1
295025	High Reactor Pressure / 3	X						EK1.05 - †Exceeding safety limits	4.7*	1
295026	Suppression Pool High Water Temperature / 5	X						EK1.02 - Steam condensation	3.8	1
295030	Low Suppression Pool Water Level / 5					X		EA2.04 - Drywell/ suppression chamber differential pressure: Mark-I&II	3.7	1
295030	Low Suppression Pool Water Level / 5		X					EK2.03 - LPCS	3.9	1
295031	Reactor Low Water Level / 2		X					EK2.13 - ARI/RPT/ATWS: Plant-Specific	4.2	1
295038	High Off-Site Release Rate / 9	X						EK1.02 - †Protection of the general public	4.4*	1
500000	High Containment Hydrogen Concentration / 5			X				EK3.03 - Operation of hydrogen and oxygen recombiners	3.5	1

K/A Category Totals: 4 5 4 4 5 4

Group Point Total: 26

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BWR SR Examination Outline

Printed: 01/02

Facility: Hope Creek Generating Station

ES - 401 Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2 Form ES-401-1

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295001	Partial or Complete Loss of Forced Core Flow Circulation / 1				X			AA1.02 - RPS	3.3	1
295002	Loss of Main Condenser Vacuum / 3	X						AK1.04 - Increased offgas flow	3.3	1
295004	Partial or Complete Loss of D.C. Power / 6					X		AA2.01 - Cause of partial or complete loss of D.C. power	3.6	1
295004	Partial or Complete Loss of D.C. Power / 6			X				AK3.03 - Reactor SCRAM: Plant-Specific	3.5	1
295005	Main Turbine Generator Trip / 3					X		AA2.04 - Reactor pressure	3.8	1
295008	High Reactor Water Level / 2				X			AA1.01 - Reactor water level control: Plant-Specific	3.7	1
295008	High Reactor Water Level / 2			X				AK3.04 - Reactor feed pump trip: Plant-Specific	3.5	1
295012	High Drywell Temperature / 5	X						AK1.01 - Pressure/temperature relationship	3.5	1
295018	Partial or Complete Loss of Component Cooling Water / 8					X		AA2.03 - Cause for partial or complete loss	3.5	1
295019	Partial or Complete Loss of Instrument Air / 8				X			AA1.02 - Instrument air system valves: Plant-Specific	3.1	1
295021	Loss of Shutdown Cooling / 4						X	2.4.41 - Knowledge of the emergency action level thresholds and classifications.	4.1	1
295022	Loss of CRD Pumps / 1						X	2.4.48 - Ability to interpret control room indications to verify the status and operation of system, and understand how operator actions and directives affect plant and system conditions.	3.8	1
295022	Loss of CRD Pumps / 1		X					AK2.03 - Accumulator pressures.	3.4	1

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BWR SRO Elimination Outline

Printed: 01/02

Facility: Hope Creek Generating Station

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
203000	RHR/LPCI: Injection Mode (Plant Specific) / 2										X		A4.07 - Reactor water level	4.5*	1
203000	RHR/LPCI: Injection Mode (Plant Specific) / 2	X											K1.14 - Shutdown cooling system: Plant-Specific	3.7	1
206000	High Pressure Coolant Injection System / 2							X					A1.06 - System flow: BWR-2, 3, 4	3.7	1
209001	Low Pressure Core Spray System / 2	X											K1.10 - Emergency generator	3.8	1
209001	Low Pressure Core Spray System / 2		X										K2.02 - Valve power	2.7*	1
212000	Reactor Protection System / 7					X							K5.02 - Specific logic arrangements	3.4	1
215004	Source Range Monitor (SRM) System / 7											X	2.2.6 - Knowledge of the process for making changes in procedures as described in the safety analysis report.	3.3	1
215004	Source Range Monitor (SRM) System / 7									X			A3.03 - RPS status	3.5	1
215005	Average Power Range Monitor/Local Power Range Monitor System / 7					X							K5.05 - Core flow effects on APRM trip setpoints	3.6	1
215005	Average Power Range Monitor/Local Power Range Monitor System / 7			X									K3.05 - Reactor power indication	3.8	1
216000	Nuclear Boiler Instrumentation / 7								X				A2.08 - Elevated containment temperature	3.4	1
216000	Nuclear Boiler Instrumentation / 7		X										K2.01 - Analog trip system: Plant-Specific	2.8	1

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BWR SRO Elimination Outline

Printed: 01/02

Facility: Hope Creek Generating Station

ES - 401

Plant Systems - Tier 2 / Group I

Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
217000	Reactor Core Isolation Cooling System (RCIC) / 2								X				A2.01 - System initiation signal	3.7	1
217000	Reactor Core Isolation Cooling System (RCIC) / 2				X								K4.05 - Prevents radioactivity release to auxiliary/reactor building	3.5	1
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5			X									K3.16 - Shutdown cooling system/RHR	3.3	1
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5				X								K4.01 - Redundancy	3.2	1
226001	RHR/LPCI: Containment Spray System Mode / 5									X			A3.05 - Containment pressure	4.0*	1
239002	Relief/Safety Valves / 3							X					A1.05 - Reactor water level	3.8	1
259002	Reactor Water Level Control System / 2											X	2.4.32 - Knowledge of operator response to loss of all annunciators.	3.5	1
261000	Standby Gas Treatment System / 9						X						K6.03 - Emergency diesel generator system	3.1	1
261000	Standby Gas Treatment System / 9										X		A4.07 - System flow	3.2	1
262001	A.C. Electrical Distribution / 6						X						K6.01 - D.C. power	3.4	1
264000	Emergency Generators (Diesel/Jet) / 6											X	2.1.11 - Knowledge of less than one hour technical specification action statements for systems.	3.8	1

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BWR SRO Examination Outline

Printed: 01/2002

Facility: Hope Creek Generating Station

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
	K/A Category Totals:	2	2	2	2	2	2	2	2	2	2	3		Group Point Total:	23

BWR SRO Elimination Outline

Printed: 01/02

Facility: Hope Creek Generating Station

ES - 401 Plant Systems - Tier 2 / Group 2 Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
201001	Control Rod Drive Hydraulic System / 1									X			A3.05 - Reactor water level	2.8	1
201002	Reactor Manual Control System / 1				X								K4.08 - Continuous In rod insertion	3.2	1
201006	Rod Worth Minimizer System (RWM) (Plant Specific) / 7			X									K3.01 - Reactor manual control system: P-Spec(Not-BWR6)	3.5	1
201006	Rod Worth Minimizer System (RWM) (Plant Specific) / 7											X	2.1.12 - Ability to apply technical specifications for a system.	4.0	1
202001	Recirculation System / 1			X									K3.07 - Vessel bottom head drain temperature	2.9	1
204000	Reactor Water Cleanup System / 2								X				A2.14 - System high temperature	3.2	1
230000	RHR/LPCI: Torus/Suppression Pool Spray Mode / 5						X						K6.01 - A.C. electrical	3.4	1
234000	Fuel Handling Equipment / 8											X	2.2.25 - Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
263000	D.C. Electrical Distribution / 6		X										K2.01 - Major D.C. loads	3.4	1
263000	D.C. Electrical Distribution / 6							X					A1.01 - Battery charging/discharging rate	2.8	1
271000	Offgas System / 9	X											K1.02 - Process radiation monitoring system	3.3	1
272000	Radiation Monitoring System / 7						X						K6.03 - A.C. power	3.0	1

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BWR SRO Examination Outline

Printed: 01/2002

Facility: Hope Creek Generating Station

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
290003	Control Room HVAC / 9					X							K5.01 - Airborne contamination (e.g., radiological, toxic gas, smoke) control	3.5	1

K/A Category Totals: 1 1 2 1 1 2 1 1 1 0 2

Group Point Total: 13

BWR SRO Examination Outline

Printed: 01/01/02

Facility: Hope Creek Generating Station

ES - 401

Plant Systems - Tier 2 / Group 3

Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
201003	Control Rod and Drive Mechanism / 1				X								K4.05 - Rod position indication	3.3	1
215001	Traversing In-Core Probe / 7	X											K1.05 - Primary containment isolation system: (Not-BWR1)	3.4	1
233000	Fuel Pool Cooling and Clean-up / 9											X	2.1.7 - Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.4	1
268000	Radwaste / 9							X					A1.01 - Radiation level	3.1*	1

K/A Category Totals: 1 0 0 1 0 0 1 0 0 0 1

Group Point Total: 4

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Generic Knowledge / 1 Abilities Outline (Tier 3)

Printed: 01/08/2016

BWR SRO Examination Outline

Form ES-401-5

Facility: Hope Creek Generating Station

Generic Category	KA	KA Topic	Imp.	Points	
Conduct of Operations	2.1.34	Ability to maintain primary and secondary plant chemistry within allowable limits.	2.9	1	S
	2.1.14	Knowledge of system status criteria which require the notification of plant personnel.	3.3	1	S
	2.1.33	Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1	S
	2.1.31	Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the desired plant lineup.	3.9	1	
	2.1.24	Ability to obtain and interpret station electrical and mechanical drawings.	3.1	1	
Category Total:					5
Equipment Control	2.2.29	Knowledge of SRO fuel handling responsibilities.	3.8	1	S
	2.2.26	Knowledge of refueling administrative requirements.	3.7	1	S
	2.2.22	Knowledge of limiting conditions for operations and safety limits.	4.1	1	S
	2.2.27	Knowledge of the refueling process.	3.5	1	S
Category Total:					4
Radiation Control	2.3.1	Knowledge of 10 CFR 20 and related facility radiation control requirements.	3.0	1	S
	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	3.3	1	S
	2.3.11	Ability to control radiation releases.	3.2	1	
	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	3.1	1	S
Category Total:					4

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 01/08/2006

BWR SRO Examination Outline

Form ES-401-5

Facility: Hope Creek Generating Station

Generic Category	KA	KA Topic	Imp.	Points
Emergency Plan	2.4.28	Knowledge of procedures relating to emergency response to sabotage.	3.3	1
	2.4.34	Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system implications.	3.6	1
	2.4.18	Knowledge of the specific bases for EOPs.	3.6	1
	2.4.5	Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions.	3.6	1

Category Total: 4

Generic Total: 17

Facility: <u>HOPE CREEK</u>		Date of Examination: <u>03/11/02</u>
Examination Level: <input checked="" type="checkbox"/> RO <input type="checkbox"/> SRO		Operating Test Number: _____
Administrative Topic/Subject Description		Describe method of evaluation:
		1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Conduct of Operations	2.1.25 Ability to obtain and interpret station reference materials such as graphs/monographs/and tables which contain data. (2.8) Question-Given plant conditions, determine the required Circulation Water System requirements for extreme cold weather. (NEW)
	Plant Parameter Verification	2.1.25 Ability to obtain and interpret station reference materials such as graphs/monographs/and tables which contain data. (2.8) Question-Obtain maximum RWCU return to Feedwater Temperature. (NEW)
	Shift Turnover	2.1.3 Knowledge of shift turnover practices. (3.0) JPM-Complete shift turnover attachment as off-going RO. (Simulator Perform) (5/00 NRC Exam) (Modified)
A.2	Equipment Control Surveillance Procedures	2.2.12 Knowledge of surveillance procedures. (3.0) JPM-Perform alternate determination of Drywell Air Temperature. (Simulator Perform) (NEW)
A.3	Radiation Control Radiation Releases	2.3.11 Ability to control radiation releases (2.7) JPM-Calculate Iodine Release Rates (Simulator Perform) (NEW)
A.4	Emergency Plan Emergency Action Levels and Classifications	2.4.39 Knowledge of the RO's responsibilities in emergency plan implementation. (3.3) JPM-Perform the Licensed Operator Review of the Operational Status Board-Hope Creek (Simulator Perform) (NEW)

Facility: <u>HOPE CREEK</u>		Date of Examination: <u>03/11/02</u>
Examination Level: <input type="checkbox"/> RO <input checked="" type="checkbox"/> SRO		Operating Test Number: _____
Administrative Topic/Subject Description		Describe method of evaluation:
		1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Conduct of Operations	2.1.25 Ability to obtain and interpret station reference materials such as graphs/monographs/and tables which contain data. (3.1) Question-Given plant conditions, determine the required Circulation Water System requirements for extreme cold weather. (NEW)
	Plant Parameter Verification	2.1.25 Ability to obtain and interpret station reference materials such as graphs/monographs/and tables which contain data. (3.1) Question-Calculate time to establish Secondary Containment following a loss of Shutdown Cooling. (NEW)
	Shift Turnover	2.1.3 Knowledge of shift turnover practices. (3.4) JPM-Complete key verification required during CRS shift turnover. (In-plant Perform)(NEW)
A.2	Equipment Control Surveillance Procedures	2.2.12 Knowledge of surveillance procedures. (3.4) JPM-Perform Drywell Air Temperature Operability Check. (Simulator Perform) (NEW)
A.3	Radiation Control Radiation Exposure Control	2.3.11 Ability to control radiation releases (3.2) JPM-Calculate Iodine Release Rates (Simulator Perform) (NEW)
A.4	Emergency Plan Emergency Action Levels and Classifications	2.4.41 Knowledge of the Emergency Action Level thresholds and classifications. (4.1) JPM -Given a set of conditions, classify an event and complete the Initial Contact Message Form. (Modified)

Facility: HOPE CREEK Date of Examination: 03/11/02
 Examinations Developed by: Facility NRC
 Examination Level: RO SRO(I) Operating Test Number: _____

B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
a. CRD-Stuck Rod during Shutdown Rod Exercising	(N), (A), (L), (S)	1
b. EHC-Respond to Low EHC Pressure	(D), (A), (S)	3
c. Recirc-Raise Reactor Recirculation Pump Speed >100%	(N), (S)	4
d. Condensate-Place 2 nd Secondary Condensate Pump In-service	(D), (L), (S)	2
e. RPS-Bypassing Scram during ATWS	(D), (S)	7
f. Instrument Air- Place the Emergency Instrument Air Compressor in service	(M), (A), (S)	8
g. EDG-Non-emergency operations of an EDG	(D), (S), (E)	6

B.2 Facility Walk-Through

a. RPS MG Set Failure to start	(M), (A), (P)	7
b. Sample Primary Containment Atmosphere	(D), (P), (R)	5
c. Respond to a Failed Open Safety Relief Valve (Abnormal)	(D), (P), (E)	3

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (P)lant, (R)CA, (E)SF

Facility: HOPE CREEK Date of Examination: 03/11/02
 Examinations Developed by: Facility NRC
 Examination Level: RO SRO(U) Operating Test Number: _____

B.1 Control Room Systems		
System / JPM Title	Type Code*	Safety Function
a. CRD-Stuck Rod during Shutdown Rod Exercising	(N), (A), (L), (S)	1
b. Instrument Air- Place the Emergency Instrument Air Compressor in service	(M), (A), (S)	8
c. EDG-Non-emergency operations of an EDG	(D), (S), (E)	6
d.		
e.		
f.		
g.		

B.2 Facility Walk-Through		
a. Respond to a Failed Open Safety Relief Valve (Abnormal)	(D), (P), (E)	3
b. Sample Primary Containment Atmosphere	(D), (P), (R)	5
c.		

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (P)lant, (R)CA, (E)SF

Facility: Hope Creek Scenario Number: 1 Operating Test Number: _____

Examiners: _____ Evaluators: _____

Objectives:

Initial Conditions: Plant is operating at 80% power. Shutdown in progress. IO-0004, Step 5.1.5. Shutdown sequence Step 723

Turnover: Continue with plant shutdown. Place C RFP in Recirc. Reduce power with control rods by inserting RWM Group 84, and then contact Reactor Engineer for further guidance.

Event Number	Malf. Number	Event Type*	Event Description
1.		N(PO) N(SRO)	Place 3 rd Reactor Feed Pump in Recirc.
2.		R(RO) N(SRO)	Reduce power with Control Rods
3.	RR-19	I(RO) I(SRO)	Flow Comparator Failure
4.		C(PO) C(SRO)	Loss of Reactor Building Ventilation/Secondary Containment
5.	CD-10A	C(RO) C(SRO)	CRD Pump trip
6.	RC-09/10	M(ALL)	RCIC steam leak w/ failure to isolate/High HPCI Room Temp/Scram
7.		I(PO) I(SRO)	ADS failure to initiate during Emergency Depressurization (Similar event to Audit, different initiating cause and failure.)

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

Facility: Hope Creek Scenario Number: 2 Operating Test Number: _____
 Examiners: _____ Evaluators: _____

Objectives:

Initial Modified ESG-042.

Conditions: Plant is operating at 95% power. D Circulating Water Pump OOS for maintenance.

Turnover: Place B RFP in service. Raise Reactor power to 100% with Recirculation flow.

Event Number	Malf. Number	Event Type*	Event Description
1.		N(PO) N(SRO)	Place RFP in service
2.		C(PO) C(SRO)	Inadvertent Loss of Circulating Water Pump B/Degrading Condenser Vacuum
3.		R(RO)	Reduce power to maintain Condenser Vacuum
4.	RR-05/ RR-06	C(RO) C(SRO)	Dual Recirc Seal Failure
5.	RR-08/ RR-26	I(ALL)	Recirc Pump Speed Control Failure/High Vibrations/Scram
6.	RR-31	M(ALL)	Recirc Line Break/Primary Containment Failure
7.		C(PO) C(SRO)	Containment Spray Valve Failure
8.			

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

Facility: Hope Creek Scenario Number: 3 Operating Test Number: _____

Examiners: _____ Evaluators: _____

_____ **SPARE** _____

Objectives: SPARE SCENARIO

Initial Conditions: 36% Power. Reactor startup in progress.

Turnover: Transfer B RPS to the Alternate Power Supply. Raise Reactor power with Control Rods.

Event Number	Malf. Number	Event Type*	Event Description
1.		N(ALL)	Transfer B RPS to the Alternate Power Supply
2.		R(RO) N(SRO)	Raise power with Control Rods (Similar to Audit, different power)
3.	NM-21	I(RO)	APRM Malfunction (Similar to Audit, failure is different)
4.	CW-08B	C(PO) C(SRO)	Loss of a RACS pump B
5.	EG-04	M(ALL)	Loss of SWC/ATWS/SLC Pump Failure/Loss of Off-site Power
6.	CU-11A/B	I(RO) I(SRO)	Failure of RWCU Isolation Logic
7.	HP-06E	I(PO) I(SRO)	HPCL auto initiation failure

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