Facility: Hope Creek		Date of Exam: 9/17/01						Exam Level: LSRO					
Tier	Group	K/A Category Points											Point Total
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	
1. Emergency & Abnormal Plant Evolutions	1	0	2	0				2	1			1	6
	2	2	1	2				4	0			5	14
	Tier Totals	2	3	2				6	1			6	20
2. Plant Systems	1	1	0	1	0	0	0	1	0	0	0	0	3
	2	1	1	1	1	1	1	1	1	0	0	0	8
	3	1	0	0	0	1	1	1	0	0	1	0	5
	Tier Totals	3	1	2	1	2	2	3	1	0	1	0	16
3. Reactor and fuel characteristics and physical aspects of core construction important to fuel handling or shutdown activities													8
4. Health Physics and Radiation Protection for fuel handling activities and general employee responsibilities													6

Note:

1. 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 exam must total ***50*** points.
2. 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.
3. Systems/evolutions within each group are identified on the associated outline.
4. The shaded areas are not applicable to the category/tier.
5. * The generic 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.
6. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the SRO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.

BWR SRO Examination Outline

Facility: HOPE CREEK

Printed: 09/05/2001

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					AK2.02 – Emergency Diesel Generators	4.2	1
295003	Partial or Complete Loss of A.C. Power / 6				X			AA1.03 - Systems necessary to assure safe plant shutdown	4.4*	1
295014	Inadvertent Reactivity Addition / 1						X	2.1.10 - Knowledge of conditions and limitations in the facility license.	3.9	1
295014	Inadvertent Reactivity Addition / 1					X		AA2.03 - Cause of reactivity addition	4.3	1
295023	Refueling Accidents / 8		X					AK2.07 – Standby Gas Treatment/FRVS	3.9	1
295023	Refueling Accidents / 8				X			AA1.02 - Fuel pool cooling and cleanup system	3.1	1
	K/A Category Totals:	**0**	**2**	**0**	**2**	**1**	**1**	**Group Point Total:**		**6**

BWR SRO Examination Outline

Facility: HOPE CREEK

Printed: 09/05/2001

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
295018	Partial or Complete Loss of Component Cooling Water / 8			X				AK3.05 - Placing standby heat exchanger in service	3.3	1
295018	Partial or Complete Loss of Component Cooling Water / 8				X			AA1.01 - Backup systems	3.4	1
295021	Loss of Shutdown Cooling / 4	X						AK1.03 - Adequate core cooling.	3.9	1
295021	Loss of Shutdown Cooling / 4				X			AA1.04 - Alternate heat removal methods	3.7	1
295021	Loss of Shutdown Cooling / 4						X	2.1.28 - Knowledge of the purpose and function of major system components and controls.	3.3	1
295022	Loss of CRD Pumps / 1				X			AA1.04 - Reactor water cleanup system: Plant-Specific	2.6	1
295033	High Secondary Containment Area Radiation Levels / 9	X						EK1.02 - Personnel protection	4.2*	1
295034	Secondary Containment Ventilation High Radiation / 9			X				EK3.01 - Isolating secondary containment ventilation	4.1	1
600000	Plant Fire On Site / 8		X					AK2.01 - Sensors, detectors and valves	2.7	1

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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
2.1.23	Conduct of Operations						X	G2.1.23 – Ability to perform specific system and integrated plant procedures during different modes of plant operation	4.0	1
2.2.27	Equipment Control						X	G2.2.27 - Knowledge of the refueling process	3.5	1
2.2.28	Equipment Control						X	G2.2.28 - Knowledge of new and spent fuel movement procedures	3.5	1
2.2.29	Equipment Control						X	G2.2.29 - Knowledge of SRO fuel handling responsibilities	3.8	1
	K/A Category Totals:	**2**	**1**	**2**	**4**	**0**	**5**		**Group Point Total:**	**14**

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Printed: 09/05/2001

Facility: HOPE CREEK

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
215004	Source Range Monitor (SRM) System / 7		X										K3.02 – Reactor Manual Control	3.4	1
261000	Standby Gas Treatment System / 9							X					A1.03 - †Off-site release levels	3.8	1
261000	Standby Gas Treatment System / 9	X											K1.08 – Process Radiation Monitoring System	3.1	1
	K/A Category Totals:	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**Group Point Total:**		**3**

BWR SRO Examination Outline

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Facility: HOPE CREEK

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					A1.03 - CRD System flow	2.8	1
202001	Recirculation System / 1		X										K2.02 - MG sets: Plant-Specific	3.3	1
205000	Shutdown Cooling System (RHR Shutdown Cooling Mode) / 4						X						K6.03 - Recirculation system	3.2	1
215003	Intermediate Range Monitor (IRM) System / 7								X				A2.02 - IRM inop condition	3.7	1
234000	Fuel Handling Equipment / 8				X								K4.02 - †Prevention of control rod movement during core alterations	4.1	1
234000	Fuel Handling Equipment / 8					X							K5.05 - †Fuel orientation	3.7	1
272000	Radiation Monitoring System / 7			X									K3.06 - Reactor building ventilation: Plant-Specific	3.6	1
286000	Fire Protection System / 8	X											K1.03 - Reactor water level: Plant-Specific	3.0	1
	K/A Category Totals:	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**0**	**0**	**Group Point Total:**		**8**

BWR SRO Examination Outline

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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		A4.02 - CRD mechanism position: Plant-Specific	3.5	1
215001	Traversing In-Core Probe / 7							X					A1.01 - Radiation levels: (Not-BWR1)	2.9	1
233000	Fuel Pool Cooling and Clean-up / 9	X											K1.01 – RHR Shutdown cooling system	2.9	1
233000	Fuel Pool Cooling and Clean-up / 9						X						K6.07 – Component Cooling Water Systems	2.8	1
290002	Reactor Vessel Internals / 5					X							K5.05 - Brittle fracture	3.3	1
	K/A Category Totals:	**1**	**0**	**0**	**0**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**Group Point Total:**		**5**

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BWR LSRO Examination Outline

Facility: Hope Creek	Date of Exam: 9/17/01		Exam Level: LSRO	
Category	K/A#	Topic	Imp.	Points
3. Reactor and fuel characteristics and physical aspects of core construction important to fuel handling or shutdown activities	G 2.2.27	Knowledge of the refueling process	3.5	1
	G 2.2.32	Knowledge of the effects of alterations on core configuration	3.3	1
	G 2.2.34	Knowledge of the process for determining the internal and external effects on core reactivity	3.2	1
	6.1 292002 K1.11	Reactor Theory – Neutron Life Cycle Define reactivity	3.3	1
	6.1 292004 K1.02	Reactor Theory – Reactivity Coefficients Define the effect on the magnitude of the temperature coefficient of reactivity from changes in moderator temperature and core age	2.6	1
	6.1 292005 K1.01	Reactor Theory – Control Rods Relate notch and rod position	3.3	1
	6.2 293008 K1.36	Thermodynamics -Thermal Hydraulics Describe means by which the operator can determine if natural circulation flow exists	3.3	1
	6.2 293007 K1.07	Thermodynamics - Heat Transfer and Heat Exchangers Describe how the presence of gases or steam can affect heat transfer and fluid flow in a heat exchanger	2.9	1
	Total			8

BWR LSRO Examination Outline

Facility: Hope Creek	Date of Exam: 9/17/01		Exam Level: LSRO	
Category	K/A#	Topic	Imp.	Points
4. Health Physics and Radiation Protection for fuel handling activities and general employee responsibilities	G 2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements	3.0	1
	G 2.3.4	Knowledge of the radiation exposure limits and contamination control / including permissible levels in excess of those authorized	3.1	1
	G 2.3.7	Knowledge of the process for preparing a RWP	3.3	1
	G 2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	3.3	1
	G 2.2.26	Knowledge of refueling administrative requirements	3.7	1
	G 2.2.29	Knowledge of SRO fuel handling responsibilities	3.8	1
	Total			6