

ES-301

Administrative Topics Outline
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FORM ES-301-1

Facility: HOPE CREEK Date of Examination: 03/11/02
 Examination Level: ☒ RO ☐ 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)

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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)

ES-301 Control Room Systems and Facility Walk-Through Test Outline FORM ES-301-2
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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 Respond to SALS FATE	(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

* (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

Operating Test Number: _____

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			1	2	3	4
RO(1)	Reactivity	1	2			
	Normal	1		1		
	Instrument / Component	4	3,5	2,5,7		
	Major	1	6	6		

As RO	Reactivity	1		3		
	Normal	0				
	Instrument / Component	2		4,5		
	Major	1		6		
SRO-I(6)						
As SRO	Reactivity	0				
	Normal	1	1,2			
	Instrument / Component	2	3,4,5			
	Major	1	6			

SRO-U(7)	Reactivity	0				
	Normal	1	1,2			
	Instrument / Component	2	3,4,5			
	Major	1	6			

- Instructions:
- (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
 - (2) Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.
 - (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 requirements.

Author: _____

NRC Reviewer: _____

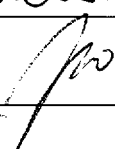
Operating Test Number: _____

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			1	2	3	4
RO(2)	Reactivity	1		3		
	Normal	1	1			
	Instrument / Component	4	4,7	4,5		
	Major	1	6	6		

As RO	Reactivity	1				
	Normal	0				
	Instrument / Component	2				
	Major	1				
SRO-I						
As SRO	Reactivity	0				
	Normal	1				
	Instrument / Component	2				
	Major	1				

SRO-U(8)	Reactivity	0				
	Normal	1	1,2			
	Instrument / Component	2	3,4,5			
	Major	1	6			

- Instructions:
- (4) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
 - (5) Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.
 - (6) 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 requirements.

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Operating Test Number: _____

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			1	2	3	4
RO(3)	Reactivity	1	2			
	Normal	1		1		
	Instrument / Component	4	3,5	2,5,7		
	Major	1	6	6		

As RO	Reactivity	1				
	Normal	0				
	Instrument / Component	2				
	Major	1				
SRO-I						
As SRO	Reactivity	0				
	Normal	1				
	Instrument / Component	2				
	Major	1				

SRO-U	Reactivity	0				
	Normal	1				
	Instrument / Component	2				
	Major	1				

- Instructions:
- (7) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
 - (8) Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.
 - (9) 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 requirements.

Author: _____

NRC Reviewer: _____

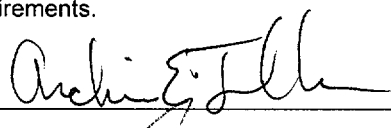
Operating Test Number: _____

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			1	2	3	4
RO(4)	Reactivity	1		3		
	Normal	1	1			
	Instrument / Component	4	4,7	4,5		
	Major	1	6	6		

As RO	Reactivity	1				
	Normal	0				
	Instrument / Component	2				
	Major	1				
SRO-I						
	Reactivity	0				
	Normal	1				
	Instrument / Component	2				
As SRO	Major	1				

SRO-U	Reactivity	0				
	Normal	1				
	Instrument / Component	2				
	Major	1				

- Instructions:
- (10) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
 - (11) Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.
 - (12) 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 requirements.

Author:  _____NRC Reviewer:  _____

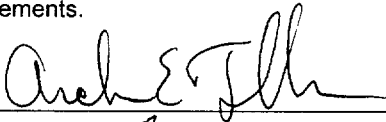
Operating Test Number: _____

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			1	2	3	4
RO(5)	Reactivity	1	2			
	Normal	1		1		
	Instrument / Component	4	3,5	2,5,7		
	Major	1	6	6		

As RO	Reactivity	1				
	Normal	0				
	Instrument / Component	2				
	Major	1				
SRO-I						
As SRO	Reactivity	0				
	Normal	1				
	Instrument / Component	2				
	Major	1				

SRO-U	Reactivity	0				
	Normal	1				
	Instrument / Component	2				
	Major	1				

- Instructions:
- (13) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
 - (14) Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.
 - (15) 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 requirements.

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Competencies Checklist
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FORM ES-301-6

Competencies	Applicant #1 RO/SRO-I/SRO-U				Applicant #2 RO/SRO-I/SRO-U				Applicant #3 RO/SRO-I/SRO-U			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Understand and Interpret Annunciators and Alarms	3,5,6	2,6			2,5,6,7	2,4,5,6			3,5,6	2,6		
Diagnose Events and Conditions	3,5,6	2,6,7			2,6,7	4,5,6			3,5,6	2,6,7		
Understand Plant and System Response	2,3,5,6	1,2,6,7			1,2,5,6,7	2,3,4,5,6			2,3,5,6	1,2,6,7		
Comply With and Use Procedures (1)	2,3,5,6	1,2,5,6,7			1,2,5,6,7	4,5,6			2,3,5,6	1,2,5,6,7		
Operate Control Boards (2)	2,3,5,6	1,2,5,6,7			1,2,5,6,7	3,4,5,6			2,3,5,6	1,2,5,6,7		
Communicate and Interact With the Crew	2,3,5,6	1,2,5,6,7			1,2,5,6,7	3,4,5,6			2,3,5,6	1,2,5,6,7		
Demonstrate Supervisory Ability (3)												
Comply With and Use Tech. Specs. (3)												
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.

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Competencies Checklist
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FORM ES-301-6

Competencies	Applicant #4 RO/SRO-I/SRO-U				Applicant #5 RO/SRO-I/SRO-U				Applicant #6 RO/SRO-I/SRO-U			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Understand and Interpret Annunciators and Alarms	2,5,6,7	2,4,5,6			3,5,6	2,6			2,4,5,6	2,4,5,6		
Diagnose Events and Conditions	2,6,7	4,5,6			3,5,6	2,6,7			2,4,5,6	4,5,6		
Understand Plant and System Response	1,2,5,6,7	2,3,4,5,6			2,3,5,6	1,2,6,7			1,2,3,4,5,6	2,3,4,5,6		
Comply With and Use Procedures (1)	1,2,5,6,7	4,5,6			2,3,5,6	1,2,5,6,7			2,3,4,5,6	4,5,6		
Operate Control Boards (2)	1,2,5,6,7	3,4,5,6			2,3,5,6	1,2,5,6,7				3,4,5,6		
Communicate and Interact With the Crew	1,2,5,6,7	3,4,5,6			2,3,5,6	1,2,5,6,7			1,2,3,4,5,6,7	3,4,5,6		
Demonstrate Supervisory Ability (3)									2,3,4,5,6,7			
Comply With and Use Tech. Specs. (3)									4			
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: _____

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Competencies Checklist
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FORM ES-301-6

Competencies	Applicant #7 RO/SRO-I/SRO-U				Applicant #8 RO/SRO-I/SRO-U							
	SCENARIO				SCENARIO							
	1	2	3	4	1	2	3	4				
Understand and Interpret Annunciators and Alarms	2,4 5,6				2,4 5,6							
Diagnose Events and Conditions	2,4, 5,6				2,4, 5,6							
Understand Plant and System Response	1,2, 3,4, 5,6				1,2, 3,4, 5,6							
Comply With and Use Procedures (1)	2,3, 4,5, 6				2,3, 4,5, 6							
Operate Control Boards (2)												
Communicate and Interact With the Crew	1,2, 3,4, 5,6, 7				1,2, 3,4, 5,6, 7							
Demonstrate Supervisory Ability (3)	2,3, 4,5, 6,7				2,3, 4,5, 6,7							
Comply With and Use Tech. Specs. (3)	4				4							
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: 

ES-401		BWR RO Examination Outline										ES-401-2	
		Emergency and Abnormal Evolutions - Tier 1/Group 1											
System #	Name	K1	K2	K3	A1	A2	G	KA Topic(s)				Imp.	Pts.
295005	Main Turbine Generator Trip												
295006	SCRAM						X	2.1.28 Knowledge of the purpose and function of major system components and controls.				3.2	1
295006	SCRAM	X						AK1.01 Decay heat generation and removal.				3.7	1
295007	High Reactor Pressure		X					AK2.05 Shutdown cooling: Plant-Specific				2.9	1
295007	High Reactor Pressure			X				AK3.04 Safety/relief valve operation: Plant-Specific				4.0	1
295009	Low Reactor Water Level					X		AA2.01 Reactor water level				4.2	1
295010	High Drywell Pressure				X			AA1.02 Drywell floor and equipment drain sumps				3.6	1
295014	Inadvertent Reactivity Addition		X					AK2.04 Void concentration				3.2	1
295014	Inadvertent Reactivity Addition			X				AK3.01 Reactor SCRAM				4.1	1
295015	Incomplete SCRAM												
295024	High Drywell Pressure				X			EA1.10 A.C. distribution				3.4	1
295024	High Drywell Pressure						X	2.1.6 Ability to supervise and assume a management role during plant transients and upset conditions.				2.1	1
295025	High Reactor Pressure					X		EA2.06 Reactor water level				3.7	1
295025	High Reactor Pressure	X						EK1.05 Exceeding safety limits				4.4	1
295031	Reactor Low Water Level		X					EK2.13 ARI/RPT/ATWS: Plant-Specific				4.1	1
295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown												
500000	High Containment Hydrogen Concentration			X				EK3.03 Operation of hydrogen and oxygen recombiners				3.0	1

ES-401		BWR RO Examination Outline											ES-401-2	
		Emergency and Abnormal Evolutions - Tier 1/Group 2												
System #	Name	K1	K2	K3	A1	A2	G	KA Topic(s)					Imp.	Pts.
295001	Partial or Complete Loss of Forced Core Flow Circulation				X			AA1.02 RPS					3.3	1
295002	Loss of Main Condenser Vacuum	X						AK1.04 Increased offgas flow					3.0	1
295003	Partial or Complete Loss of A.C. Power				X			AA1.03 Systems necessary to assure safe plant shutdown					4.4	1
295003	Partial or Complete Loss of A.C. Power						X	2.4.9 Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.					3.3	1
295004	Partial or Complete Loss of D.C. Power			X				AK3.03 Reactor SCRAM: Plant-Specific					3.1	1
295008	High Reactor Water Level			X				AK3.04 Reactor feed pump trip: Plant-Specific					3.3	1
295008	High Reactor Water Level				X			AA1.01 Reactor water level control: Plant-Specific					3.7	1
295011	High Containment Temperature (Mark III Containment Only)													
295012	High Drywell Temperature	X						AK1.01 Pressure/temperature relationship					3.3	1
295013	High Suppression Pool Temperature		X					AK2.01 Suppression pool cooling					3.6	1
295016	Control Room Abandonment				X			AA1.02 Reactor/turbine pressure regulating system					2.9	1
295017	High Off-Site Release Rate													
295018	Partial or Complete Loss of Component Cooling Water													
295019	Partial or Complete Loss of Instrument Air					X		AA2.01 Instrument air system pressure					3.5	1
295019	Partial or Complete Loss of Instrument Air				X			AA1.02 Instrument air system valves: Plant-Specific					3.3	1
295020	Inadvertent Containment Isolation													
295022	Loss of CRD Pumps		X					AK2.03 Accumulator pressures.					3.4	1
295026	Suppression Pool High Water Temperature	X						EK1.02 Steam condensation					3.5	1
295027	High Containment Temperature (Mark III Containment Only)													

RECORD #4

ES-401		BWR RO Examination Outline										ES-401-2	
		Emergency and Abnormal Evolutions - Tier 1/Group 2											
System #	Name	K1	K2	K3	A1	A2	G	KA Topic(s)				Imp.	Pts.
295028	High Drywell Temperature	X						EK1.02 Equipment environmental qualification				2.9	1
295029	High Suppression Pool Water Level												
295030	Low Suppression Pool Water Level		X					EK2.03 LPCS				3.8	1
295033	High Secondary Containment Area Radiation Levels												
295034	Secondary Containment Ventilation High Radiation												
295038	High Off-Site Release Rate	X						EK1.02 Protection of the general public				4.2	1
295038	High Off-Site Release Rate					X		EA2.03 Radiation levels				3.5	1
600000	Plant Fire On Site						X	2.4.25 Knowledge of fire protection procedures.				2.9	1

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ES-401		BWR RO Examination Outline										ES-401-2	
		Emergency and Abnormal Evolutions - Tier 1/Group 3											
System #	Name	K1	K2	K3	A1	A2	G	KA Topic(s)				Imp.	Pts.
295021	Loss of Shutdown Cooling												
295023	Refueling Accidents						X	2.4.11 Knowledge of abnormal condition procedures.				3.4	1
295023	Refueling Accidents				X			AA1.02 Fuel pool cooling and cleanup system				2.9	1
295032	High Secondary Containment Area Temperature												
295035	Secondary Containment High Differential Pressure												
295036	Secondary Containment High Sump/Area Water Level			X				EK3.01 Emergency depressurization				2.6	1
295036	Secondary Containment High Sump/Area Water Level		X					EK2.01 Secondary containment equipment and floor drain system				3.1	1

ES-401		BWR RO Examination Outline Plant Systems - Tier 2/Group 1													ES-401-2	
System	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic(s)	Imp.	Pts.	
201001	Control Rod Drive Hydraulic System									X			A3.05 Reactor water level	2.8	1	
201002	Reactor Manual Control System											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				X								K4.08 Continuous In rod insertion	3.2	1	
201005	Rod Control and Information System (RCIS)															
202002	Recirculation Flow Control System						X						K6.04 Feedwater flow inputs: BWR-3, 4, 5,6	3.5	1	
203000	RHR/LPCI: Injection Mode (Plant Specific)	X											K1.14 Shutdown cooling system: Plant-Specific	3.6	1	
203000	RHR/LPCI: Injection Mode (Plant Specific)										X		A4.07 Reactor water level	4.5	1	
206000	High Pressure Coolant Injection System									X			A3.07 Lights and alarms: BWR-2, 3, 4	3.9	1	
206000	High Pressure Coolant Injection System						X						A1.06 System flow: BWR-2, 3, 4	3.8	1	
207000	Isolation (Emergency) Condenser															
209001	Low Pressure Core Spray System	X											K1.10 Emergency generator	3.7	1	
209001	Low Pressure Core Spray System		X										K2.02 Valve power	2.5	1	
209002	High Pressure Core Spray System (HPCS)															
211000	Standby Liquid Control System											X	2.4.10 Knowledge of annunciator response procedures.	3.0	1	
211000	Standby Liquid Control System	X											K1.05 RWCU	3.4	1	
212000	Reactor Protection System											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					X							K5.02 Specific logic arrangements	3.3	1	

Record 68

System	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic(s)	Imp.	Pts.
215003	Intermediate Range Monitor (IRM) System														
215004	Source Range Monitor (SRM) System									X			A3.03 RPS status	3.6	1
215005	Average Power Range Monitor/Local Power Range Monitor System			X									K3.05 Reactor power indication	3.8	1
215005	Average Power Range Monitor/Local Power Range Monitor System					X							K5.05 Core flow effects on APRM trip setpoints	3.6	1
216000	Nuclear Boiler Instrumentation		X										K2.01 Analog trip system: Plant-Specific	2.8	1
216000	Nuclear Boiler Instrumentation								X				A2.08 Elevated containment temperature	3.2	1
217000	Reactor Core Isolation Cooling System (RCIC)				X								K4.05 Prevents radioactivity release to auxiliary/reactor building	3.2	1
218000	Automatic Depressurization System														
223001	Primary Containment System and Auxiliaries						X						K6.13 Applicable plant air system/ nitrogen make-up system.	3.2	1
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off			X									K3.16 Shutdown cooling system/RHR	3.2	1
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off				X								K4.01 Redundancy	3.0	1
239002	Relief/Safety Valves							X					A1.05 Reactor water level	3.7	1
239002	Relief/Safety Valves							X					A1.02 Acoustical monitor noise: Plant-Specific	3.7	1
241000	Reactor/Turbine Pressure Regulating System														
259001	Reactor Feedwater System														
259002	Reactor Water Level Control System														
261000	Standby Gas Treatment System						X						K6.03 Emergency diesel generator system	3.0	1
261000	Standby Gas Treatment System										X		A4.07 System flow	3.1	1
264000	Emergency Generators (Diesel/Jet)														

Record 73

System	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic(s)	Imp.	Pts.
201003	Control Rod and Drive Mechanism				X								K4.05 Rod position indication	3.2	1
201004	Rod Sequence Control System (Plant Specific)														
201006	Rod Worth Minimizer System (RWM) (Plant Specific)			X									K3.01 Reactor manual control system: P-Spec(Not-BWR6)	3.2	1
202001	Recirculation System			X									K3.07 Vessel bottom head drain temperature	2.9	1
202001	Recirculation System										X		A4.04 System flow	3.7	1
204000	Reactor Water Cleanup System								X				A2.14 System high temperature	3.2	1
205000	Shutdown Cooling System (RHR Shutdown Cooling Mode)														
214000	Rod Position Information System														
215002	Rod Block Monitor System														
219000	RHR/LPCI: Torus/Suppression Pool Cooling Mode									X			A3.01 Valve operation	3.3	1
226001	RHR/LPCI: Containment Spray System Mode									X			A3.05 Containment pressure	4.0	1
226001	RHR/LPCI: Containment Spray System Mode							X					A1.06 System flow	3.2	1
230000	RHR/LPCI: Torus/Suppression Pool Spray Mode						X						K6.01 A.C. electrical	3.3	1
239001	Main and Reheat Steam System														
245000	Main Turbine Generator and Auxiliary Systems					X							K5.02 Turbine operation and limitations	2.8	1
256000	Reactor Condensate System				X								K4.06 Control of extraction steam	2.8	1
256000	Reactor Condensate System								X				A2.13 Loss of applicable plant air systems	2.9	1
262001	A.C. Electrical Distribution						X						K6.01 D.C. power	3.1	1
262001	A.C. Electrical Distribution		X										K2.01 Off-site sources of power	3.3	1
262002	Uninterruptable Power Supply (A.C./D.C.)														

ES-401		BWR RO Examination Outline Plant Systems - Tier 2/Group 2													ES-401-2	
System	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic(s)	Imp.	Pts.	
263000	D.C. Electrical Distribution		X										K2.01 Major D.C. loads	3.1	1	
263000	D.C. Electrical Distribution							X					A1.01 Battery charging/discharging rate	2.5	1	
271000	Offgas System	X											K1.02 Process radiation monitoring system	3.1	1	
272000	Radiation Monitoring System						X						K6.03 A.C. power	2.8	1	
286000	Fire Protection System															
290001	Secondary Containment															
290003	Control Room HVAC					X							K5.01 Airborne contamination (e.g., radiological, toxic gas, smoke) control	3.2	1	
300000	Instrument Air System (IAS)															
400000	Component Cooling Water System (CCWS)															

Record 106

ES-401		BWR RO Examination Outline Plant Systems - Tier 2/Group 3												ES-401-2	
System	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic(s)	Imp.	Pts.
215001	Traversing In-Core Probe	X											K1.05 Primary containment isolation system: (Not-BWR1)	3.3	1
233000	Fuel Pool Cooling and Clean-up														
234000	Fuel Handling Equipment														
239003	MSIV Leakage Control System														
268000	Radwaste							X					A1.01 Radiation level	2.7	1
288000	Plant Ventilation Systems														
290002	Reactor Vessel Internals								X				A2.02 Overpressurization transient	3.6	1
290002	Reactor Vessel Internals			X									K3.03 Reactor power	3.3	1

Facility: Hope Creek

Date of Exam 03/12/2002

Exam Level: RO

Category	KA #	Topic	Imp.	oints
Conduct of Operations	2.1.33	Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	3.4	1
	2.1.3	Knowledge of shift turnover practices.	3.0	1
	2.1.24	Ability to obtain and interpret station electrical and mechanical drawings.	2.8	1
	Total			3
Equipment Control	2.2.27	Knowledge of the refueling process. <i>Record 116</i>	2.6	1
	2.2.22	Knowledge of limiting conditions for operations and safety limits.	3.4	1
	2.2.30	Knowledge of new and spent fuel movement procedures.	2.6	1
	Total			3
Radiological Controls	2.3.1	Knowledge of 10 CFR 20 and related facility radiation control requirements.	2.6	1
	2.3.11	Ability to control radiation releases. <i>Record 120</i>	2.7	1
	2.3.9	Knowledge of the process for performing a containment purge.	2.5	1
	2.3.2	Knowledge of facility ALARA program.	2.5	1
	Total			4
Emergency Procedures and Plan	2.4.5	Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions.	2.9	1
	2.4.34	Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system	3.8	1
	2.4.18	Knowledge of the specific bases for EOPs.	2.7	1
Total				3
Tier 3 Target Point Total (RO/SRO)				13

Record 129

ES-401		BWR SRO Examination Outline										ES-401-1	
		Emergency and Abnormal Evolutions - Tier 1/Group 1											
System #	Name	K1	K2	K3	A1	A2	G	KA Topic(s)				Imp.	Pts.
295003	Partial or Complete Loss of A.C. Power				X			AA1.03 Systems necessary to assure safe plant shutdown				4.4	1
295006	SCRAM						X	2.1.28 Knowledge of the purpose and function of major system components and controls.				3.3	1
295006	SCRAM	X						AK1.01 Decay heat generation and removal.				3.9	1
295007	High Reactor Pressure		X					AK2.05 Shutdown cooling: Plant-Specific				3.1	1
295007	High Reactor Pressure			X				AK3.04 Safety/relief valve operation: Plant-Specific				4.1	1
295009	Low Reactor Water Level					X		AA2.01 Reactor water level				4.2	1
295009	Low Reactor Water Level						X	2.4.6 Knowledge symptom based EOP mitigation strategies.				4.0	1
295010	High Drywell Pressure				X			AA1.02 Drywell floor and equipment drain sumps				3.6	1
295013	High Suppression Pool Temperature		X					AK2.01 Suppression pool cooling				3.7	1
295014	Inadvertent Reactivity Addition			X				AK3.01 Reactor SCRAM				4.1	1
295014	Inadvertent Reactivity Addition		X					AK2.04 Void concentration				3.3	1
295015	Incomplete SCRAM			X				AK3.01 Bypassing rod insertion blocks				3.7	1
295015	Incomplete SCRAM						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				X			AA1.02 Reactor/turbine pressure regulating system				3.1	1
295017	High Off-Site Release Rate					X		AA2.01 Off-site release rate: Plant-Specific				4.2	1
295023	Refueling Accidents				X			AA1.02 Fuel pool cooling and cleanup system				3.1	1
295023	Refueling Accidents						X	2.4.11 Knowledge of abnormal condition procedures.				3.6	1
295024	High Drywell Pressure				X			EA1.10 A.C. distribution				3.6	1
295024	High Drywell Pressure						X	2.1.6 Ability to supervise and assume a management role during plant transients and upset conditions.				4.3	1

ES-401		BWR SRO Examination Outline										ES-401-1	
Emergency and Abnormal Evolutions - Tier 1/Group 1													
System #	Name	K1	K2	K3	A1	A2	G	KA Topic(s)				Imp.	Pts.
295025	High Reactor Pressure	X						EK1.05 Exceeding safety limits				4.7	1
295026	Suppression Pool High Water Temperature	X						EK1.02 Steam condensation				3.8	1
295027	High Containment Temperature (Mark III Containment Only)												
295030	Low Suppression Pool Water Level		X					EK2.03 LPCS				3.9	1
295030	Low Suppression Pool Water Level					X		EA2.04 Drywell/ suppression chamber differential pressure: Mark-I&II				3.7	1
295031	Reactor Low Water Level		X					EK2.13 ARI/RPT/ATWS: Plant-Specific				4.2	1
295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown												
295038	High Off-Site Release Rate	X						EK1.02 Protection of the general public				4.4	1
500000	High Containment Hydrogen Concentration			X				EK3.03 Operation of hydrogen and oxygen recombiners				3.5	1

ES-401		BWR SRO Examination Outline Emergency and Abnormal Evolutions - Tier 1/Group 2										ES-401-1	
System #	Name	K1	K2	K3	A1	A2	G	KA Topic(s)				Imp.	Pts.
295001	Partial or Complete Loss of Forced Core Flow Circulation				X			AA1.02 RPS				3.3	1
295002	Loss of Main Condenser Vacuum	X						AK1.04 Increased offgas flow				3.3	1
295004	Partial or Complete Loss of D.C. Power			X				AK3.03 Reactor SCRAM: Plant-Specific				3.5	1
295004	Partial or Complete Loss of D.C. Power					X		AA2.01 Cause of partial or complete loss of D.C. power				3.6	1
295005	Main Turbine Generator Trip					X		AA2.04 Reactor pressure				3.8	1
295008	High Reactor Water Level				X			AA1.01 Reactor water level control: Plant-Specific				3.7	1
295008	High Reactor Water Level			X				AK3.04 Reactor feed pump trip: Plant-Specific				3.5	1
295011	High Containment Temperature (Mark III Containment Only)												
295012	High Drywell Temperature	X						AK1.01 Pressure/temperature relationship				3.5	1
295018	Partial or Complete Loss of Component Cooling Water					X		AA2.03 Cause for partial or complete loss				3.5	1
295019	Partial or Complete Loss of Instrument Air				X			AA1.02 Instrument air system valves: Plant-Specific				3.1	1
295020	Inadvertent Containment Isolation												
295021	Loss of Shutdown Cooling						X	2.4.41 Knowledge of the emergency action level thresholds and classifications.				4.1	1
295022	Loss of CRD Pumps						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		X					AK2.03 Accumulator pressures.				3.4	1
295028	High Drywell Temperature	X						EK1.02 Equipment environmental qualification				3.1	1
295029	High Suppression Pool Water Level												
295032	High Secondary Containment Area Temperature												
295033	High Secondary Containment Area Radiation Levels												

ES-401		BWR SRO Examination Outline										ES-401-1	
		Emergency and Abnormal Evolutions - Tier 1/Group 2											
System #	Name	K1	K2	K3	A1	A2	G	KA Topic(s)			Imp.	Pts.	
295034	Secondary Containment Ventilation High Radiation						X	2.4.30 Knowledge of which events related to system operations/status should be reported to outside agencies.			3.6	1	
295035	Secondary Containment High Differential Pressure												
295036	Secondary Containment High Sump/Area Water Level			X				EK3.01 Emergency depressurization			2.8	1	
295036	Secondary Containment High Sump/Area Water Level		X					EK2.01 Secondary containment equipment and floor drain system			3.2	1	
600000	Plant Fire On Site												

Plant Systems - Tier 2/Group 1

System	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic(s)	Imp.	Pts.
201005	Rod Control and Information System (RCIS)														
202002	Recirculation Flow Control System														
203000	RHR/LPCI: Injection Mode (Plant Specific)	X											K1.14 Shutdown cooling system: Plant-Specific	3.7	1
203000	RHR/LPCI: Injection Mode (Plant Specific)										X		A4.07 Reactor water level	4.5	1
206000	High Pressure Coolant Injection System							X					A1.06 System flow: BWR-2, 3, 4	3.7	1
207000	Isolation (Emergency) Condenser														
209001	Low Pressure Core Spray System	X											K1.10 Emergency generator	3.8	1
209001	Low Pressure Core Spray System		X										K2.02 Valve power	2.7	1
209002	High Pressure Core Spray System (HPCS)														
211000	Standby Liquid Control System														
212000	Reactor Protection System					X							K5.02 Specific logic arrangements	3.4	1
215004	Source Range Monitor (SRM) System									X			A3.03 RPS status	3.5	1
215004	Source Range Monitor (SRM) System											X	2.2.6 Knowledge of the process for making changes in procedures as described in the safety analysis report.	3.3	1
215005	Average Power Range Monitor/Local Power Range Monitor System					X							K5.05 Core flow effects on APRM trip setpoints	3.6	1
215005	Average Power Range Monitor/Local Power Range Monitor System			X									K3.05 Reactor power indication	3.8	1
216000	Nuclear Boiler Instrumentation	X											K2.01 Analog trip system: Plant-Specific	2.8	1
216000	Nuclear Boiler Instrumentation								X				A2.08 Elevated containment temperature	3.4	1
217000	Reactor Core Isolation Cooling System (RCIC)								X				A2.01 System initiation signal	3.7	1
217000	Reactor Core Isolation Cooling System (RCIC)				X								K4.05 Prevents radioactivity release to auxiliary/reactor building	3.5	1
218000	Automatic Depressurization System														

ES-401		BWR SRO Examination Outline Plant Systems - Tier 2/Group 1													ES-401-1	
System	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic(s)	Imp.	Pts.	
223001	Primary Containment System and Auxiliaries															
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off			X									K3.16 Shutdown cooling system/RHR	3.3	1	
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off				X								K4.01 Redundancy	3.2	1	
226001	RHR/LPCI: Containment Spray System Mode									X			A3.05 Containment pressure	4.0	1	
239002	Relief/Safety Valves							X					A1.05 Reactor water level	3.8	1	
241000	Reactor/Turbine Pressure Regulating System															
259002	Reactor Water Level Control System											X	2.4.32 Knowledge of operator response to loss of all annunciators.	3.5	1	
261000	Standby Gas Treatment System						X						K6.03 Emergency diesel generator system	3.1	1	
261000	Standby Gas Treatment System										X		A4.07 System flow	3.2	1	
262001	A.C. Electrical Distribution						X						K6.01 D.C. power	3.4	1	
264000	Emergency Generators (Diesel/Jet)											X	2.1.11 Knowledge of less than one hour technical specification action statements for systems.	3.8	1	
290001	Secondary Containment															

ES-401		BWR SRO Examination Outline Plant Systems - Tier 2/Group 2													ES-401-1	
System	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic(s)	Imp.	Pts.	
201001	Control Rod Drive Hydraulic System									X			A3.05 Reactor water level	2.8	1	
201002	Reactor Manual Control System				X								K4.08 Continuous In rod insertion	3.2	1	
201004	Rod Sequence Control System (Plant Specific)															
201006	Rod Worth Minimizer System (RWM) (Plant Specific)			X									K3.01 Reactor manual control system: P-Spec(Not-BWR6)	3.5	1	
201006	Rod Worth Minimizer System (RWM) (Plant Specific)										X		2.1.12 Ability to apply technical specifications for a system.	4.0	1	
202001	Recirculation System			X									K3.07 Vessel bottom head drain temperature	2.9	1	
204000	Reactor Water Cleanup System							X					A2.14 System high temperature	3.2	1	
205000	Shutdown Cooling System (RHR Shutdown Cooling Mode)															
214000	Rod Position Information System															
215002	Rod Block Monitor System															
215003	Intermediate Range Monitor (IRM) System															
219000	RHR/LPCI: Torus/Suppression Pool Cooling Mode															
230000	RHR/LPCI: Torus/Suppression Pool Spray Mode					X							K6.01 A.C. electrical	3.4	1	
234000	Fuel Handling Equipment										X		2.2.25 Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1	
239003	MSIV Leakage Control System															
245000	Main Turbine Generator and Auxiliary Systems															
259001	Reactor Feedwater System															
262002	Uninterruptable Power Supply (A.C./D.C.)															
263000	D.C. Electrical Distribution		X										K2.01 Major D.C. loads	3.4	1	
263000	D.C. Electrical Distribution							X					A1.01 Battery charging/discharging rate	2.8	1	

ES-401		BWR SRO Examination Outline Plant Systems - Tier 2/Group 2													ES-401-1	
System	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic(s)	Imp.	Pts.	
271000	Offgas System	X											K1.02 Process radiation monitoring system	3.3	1	
272000	Radiation Monitoring System						X						K6.03 A.C. power	3.0	1	
286000	Fire Protection System															
290003	Control Room HVAC					X							K5.01 Airborne contamination (e.g., radiological, toxic gas, smoke) control	3.5	1	
300000	Instrument Air System (IAS)															
400000	Component Cooling Water System (CCWS)															

ES-401		BWR SRO Examination Outline Plant Systems - Tier 2/Group 3													ES-401-1	
System	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic(s)	Imp.	Pts.	
201003	Control Rod and Drive Mechanism				X								K4.05 Rod position indication	3.3	1	
215001	Traversing In-Core Probe	X											K1.05 Primary containment isolation system: (Not-BWR1)	3.4	1	
233000	Fuel Pool Cooling and Clean-up											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	
239001	Main and Reheat Steam System															
256000	Reactor Condensate System															
268000	Radwaste							X						A1.01 Radiation level	3.1	1
288000	Plant Ventilation Systems															
290002	Reactor Vessel Internals															

Facility: Hope Creek		Date of Exam 03/12/2002		Exam Level: SRO	
Category	KA #	Topic	Imp.	oints	
Conduct of Operations	2.1.14	Knowledge of system status criteria which require the notification of plant personnel.	3.3	1	
	2.1.3	Knowledge of shift turnover practices.	3.4	1	
	2.1.33	Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1	
	2.1.24	Ability to obtain and interpret station electrical and mechanical drawings.	3.1	1	
	2.1.34	Ability to maintain primary and secondary plant chemistry within allowable limits.	2.9	1	
	Total				5
Equipment Control	2.2.26	Knowledge of refueling administrative requirements.	3.7	1	
	2.2.31	Knowledge of SRO fuel handling responsibilities.	3.8	1	
	2.2.27	Knowledge of the refueling process.	3.5	1	
	2.2.22	Knowledge of limiting conditions for operations and safety limits.	4.1	1	
	Total				4
Radiological Controls	2.3.1	Knowledge of 10 CFR 20 and related facility radiation control requirements.	3.0	1	
	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	3.3	1	
	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	3.1	1	
	2.3.11	Ability to control radiation releases.	3.2	1	
	Total				4
Emergency Procedures and Plan	2.4.34	Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system	3.6	1	
	2.4.18	Knowledge of the specific bases for EOPs.	3.6	1	
	2.4.28	Knowledge of procedures relating to emergency response to sabotage.	3.3	1	
	2.4.5	Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions.	3.6	1	
	Total				4
Tier 3 Target Point Total (RO/SRO)					17